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## **J-5 Comments on the Draft EA & FAA Responses**

### **Public Comments 401 (Roitman) through 518 (Zucker) with FAA Responses**

## Comments-Responses

### Comment# 401 Submitted by: Roitman, DAVID

**Comment Received:** "On behalf of the people in my neighborhood and expanded neighborhoods that would be affected as well as myself and my family I respectfully request that you do NOT implement your proposed Denver Metroplex plan. The Environmental Assessment Draft is a manipulation of data created to calm public outcry as it reaches a conclusion that concurs with your agenda. The FAA offers false reassurances and promises it cannot keep. It is patently wrong immoral and totally unacceptable for you to spin the facts and the truth to people at your workshops in order for you to go ahead with your agenda. In fact the FAA has NO control over the number of flights that will fly over homes in and surrounding my area as months and years go on. With DIA expanding the present number of gates by nearly 40 more air traffic will dramatically increase. The pattern proposed concentrates those planes into a path assuring constant noise and air pollution over our homes. We live in the areas we chose because we wanted to insure a peaceful quiet environment. There was no reason to believe the atmosphere would change. Our health...physical mental and financial will be jeopardized if your plan goes through. We will be inundated by constant noise...as much as every minute of every day all day and night interrupting conversations and sleep. The negative impact on our lives would be immeasurable. Citizens have long been aware of the deleterious effects of excess noise on the ground so we have laws to maintain peace and quiet. It is illegal to make too much noise in our homes or on the road. We get ticketed and fined for that. Nonstop airplane noise overhead will be much worse than occasional loud music or malfunctioning car mufflers on the ground. It is blatantly unethical for you to impose this nightmare upon the people living in the flight paths you are proposing. The lives of citizens need to be the priority over any corporate profits. Would you personally accept the 24/7 thunderous noise and pollution over your homes? Studies have shown the stress caused by this kind of noise causes physical and mental ill health. You are not considering the very real terrible consequences to our neighborhoods of the proposed change in flight patterns. DO NOT GO FORWARD with the Denver Metroplex NextGen plan. You are opening a Pandora's Box of noise and pollution that will also drastically lower the value of our homes. It should not have to take thousands of objections to stop this unconscionable plan. It should only take common decency and an application of the Golden Rule NOT to foist this onto people."

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Frequency of Aircraft Overflights
- NEPA and FAA Order 1050.1F
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Property Values
- Purpose and Need of Project

### FAA Response for Comment #401 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide

(NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Property Values:** The proposed Denver Metroplex Project involves air traffic control routing changes for airborne aircraft only; and does not involve land acquisition, physical disturbance, or construction activities. The determination of whether a proposed action may have a significant environmental impact under the National Environmental Policy ACT (NEPA) is made by considering the relevant environmental impact categories and comparing impact to the FAA's thresholds of significance as outlined in FAA Order 1050.1F. The assessment of property values is not an environmental impact category as outlined in FAA Order 1050.1F. To the extent applicable, and as there are no significant impacts under noise or compatible land use, the proposed Denver Metroplex Project is compatible with existing and planned land uses, and the applicable regulations and policies of federal, state, and local agencies. A limited number of studies have attempted to measure the impact of aircraft noise on property values. Specific studies of the impact of noise at the Study Airports on real property values have not been conducted and are not required. Studies conducted at other national airports have concluded that airport noise only has a slight impact on property values within the Day Night Average Sound Level 65 decibels or greater noise contour around airports. Additionally, comparison of older studies to more recent studies indicates that the impact was greater in the 1960s, when jet aircraft first entered the fleet. This decrease presumably is the result of stabilization of real estate markets following an initial adjustment to noisier jets, and of noise reduction in more modern Stage 3 or better aircraft.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Comments-Responses****Comment# 402 Submitted by: Ross, Deedee**

**Comment Received:** I have noticed such an increase of air traffic over the past 6 months over our neighborhood and Boulder's open space. We moved here to enjoy the outdoors and all the natural sounds. It is so disappointing to be informed that air traffic is scheduled to increase over the next years? Please help to reroute the planes either North or South of the Flatirons! Thank you!

**Topics Identified in the Comment**

- Suggestions to Change Air Traffic Patterns

**FAA Response for Comment #402 Topics**

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 403 Submitted by: Rothaker, Bill

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimate the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems. The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #403 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 404 Submitted by: Rothaker, Christine

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems.

The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #404 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 405 Submitted by: Rowland, Tracy

**Comment Received:** "Dear FAA I am one of the many unhappy and frazzled citizens living in South Boulder frustrated with the incredible increase of noise from jets over our neighborhood. I have lived in Boulder for 65 years and in Table Mesa (south Boulder for 35 years. Yesterday I counted 15 contrails in the sky. Sometimes I am out gardening and I hear almost consistent jet take off noise. Please find another path to get west from DIA. Our mental and physical health is severely affected by this noise. Thank you."

### Topics Identified in the Comment

- Existing Aircraft Noise
- Physical and Mental Health
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #405 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport

303-271-4850

<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 406 Submitted by: Roy, Nicholas

**Comment Received:** As a resident of Centennial underneath the proposed flight path into KAPA I am opposed to the new proposed flight path. It will cause significant additional noise for the hundreds of thousands of residents under the flight path.

### Topics Identified in the Comment

- General Aviation/Visual Flight Rules
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #406 Topics

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as

reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 407 Submitted by: Ruffing, Mary

**Comment Received:** I would like to see air traffic DECREASE over South Boulder. We have noticed more air traffic especially over the last few years. Please direct the traffic further south where it won't hit residential neighborhoods. Noise level testing should be done on the ground in reality not on computer modeling.

### Topics Identified in the Comment

- Frequency of Aircraft Overflights
- Noise Modelling
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #407 Topics

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise

modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA's required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 408 Submitted by: Ryan, Melissa

**Comment Received:** We are extremely concerned with the potential of many planes flying as much as every minute, day and night, overhead in increasing numbers producing loud, disruptive noise and air pollution. Constant noise is known to cause mental and physical ill health in humans. It isn't allowed on the ground. It shouldn't be imposed from overhead. Before implementing such a significant change in air traffic, please create a detailed, honest, accurate, transparent Environmental Impact Statement that considers all who will be affected by this change. This study should be followed by citizen review, discussion, and APPROVAL prior to implementation of the Denver Metroplex plan. \*Please keep my personal information (name, email, phone, and address) private and do not share publicly.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Forecast/Future Operations
- Level of NEPA Review
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Withold Personal Identifying Information

### FAA Response for Comment #408 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in

places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91-53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental

responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise

exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Withhold Personal Identifying Information:** Commenters were made aware of the following statement with their comment submission - "Please be aware that your name, address, phone number, email address, or other personal identifying information in your comment may be made publicly available at any time. You may include in your comment a request to withhold your personal identifying information, however we cannot guarantee that we will be able to do so".

## Comments-Responses

### Comment# 409 Submitted by: S, Z

**Comment Received:** No more noise pollution! We want the FAA to incorporate Complete ZIMMR Noise Solution as the official map of DIA Departure flight paths adopt as the final choice of flight paths for the Denver NEXTGEN portion of the DIA Metroplex project.

### Topics Identified in the Comment

- Existing Aircraft Noise
- ZIMMR SID

### FAA Response for Comment #409 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 410 Submitted by: Sachs, Jeffrey

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems.

The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #410 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 411 Submitted by: Sackheim, Jonathan

**Comment Received:** Thank you for working on the NextGEN project in Colorado. As part of that I hope you are able to reroute jets away from South Boulder since I'm often very disturbed by their noise at nearly all hours of the day. There is open space further south that would be better to send air traffic over. I'm thinking closer to between Boulder and Golden. Thank you for your consideration.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #411 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 412 Submitted by: Sades, Nancy

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems.

The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #412 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### **Comment# 413 Submitted by: Safavi, Afshin**

**Comment Received:** "Dear Sir/Madam I am opposed to moving forward with the NextGen project at this point until more safety data and detailed environmental impact to our city (Cherry Hills Village) is provided."

### **Topics Identified in the Comment**

- NEPA and FAA Order 1050.1F

### **FAA Response for Comment #413 Topics**

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

## Comments-Responses

### Comment# 414 Submitted by: Schall, Jason

**Comment Received:** Measure twice, cut once. Your plan hurts more people than it helps.

"Aircraft noise is one, if not the most detrimental environmental effect of aviation.

It can cause community annoyance, disrupt sleep, adversely affect academic performance of children, and could increase the risk for cardiovascular disease....There is sufficient evidence for a negative effect of aircraft noise exposure on children's cognitive skills such as reading and memory, as well as on standardized academic test scores. .... Undisturbed sleep is a prerequisite for high daytime performance, well-being and health. Aircraft noise can disturb sleep and impair sleep recuperation ...."

This study was funded by the FAA

### Topics Identified in the Comment

- Children's Environmental Health and Safety
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Sleep Disturbance/Speech Interference

### FAA Response for Comment #414 Topics

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there would be no increase in environmental health and safety risks that could disproportionately affect children.

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed

Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Sleep Disturbance/Speech Interference:** The commenter recommended calculating different types of supplemental noise metrics to explain sleep disturbance and/or speech interference. A benefit of supplemental noise metrics is to help the public reach a better understanding of potential noise impacts. If the noise modelling analysis indicates a potential significant impact, FAA Order 1050.1F recommends additional information related to the human response to noise that is appropriate for the specific proposal. Additional information may include supplemental metrics applicable to sleep disturbance and/or speech interference. Such supplemental noise analysis is not, by itself, a measure of adverse aircraft noise or significant aircraft noise impact. As discussed in Chapter 5 of the EA, the noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. Therefore, the use of optional supplemental noise metrics are not warranted because they not would help explain the potential for cumulative noise exposure.

## Comments-Responses

### Comment# 415 Submitted by: Schmidt, Martha

**Comment Received:** The noise from airplanes is disruptive to normal suburban life. It detracts from the quality of life in our communities and the ability to fully enjoy our outdoor lifestyles so cherished by many of us. Please carefully consider the recommendations to limit noise in this proposal.

### Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #415 Topics

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 416 Submitted by: Schneider, Mark

**Comment Received:** Hello

We are writing concerning the proposed changes to the flightpath corridor at Centennial airport. The proposed change that would take air traffic along Arapahoe Road is a bad idea. Thousands of residents who bought homes along this corridor did so with the intention of being far away from both the interstate (I-25) and Centennial Airport. These are older very quiet and peaceful neighborhoods and that is a big part of their appeal and the value of the property. The airport flight paths in their current geometry have been the same for over 30 years. I suspect that this change is being driven by newer more wealthy property owners who have built homes in the last 10 to 15 years who are annoyed by now owning expensive property along a noisy airport flight path.... most of the traffic in and out of Centennial is private planes and corporate aircraft whose beneficiaries are primarily wealthy people... The same wealthy people who don't want their own airplanes flying over their houses. This is an example of government not considering the needs of the majority of the people in deference to giving more consideration to a small group of people with more wealth and power. This is also a public safety issue. If you count the number of residential homes along the existing flight path versus the new flight path I think you will find that with respect to the city of Centennial there are many more homes along the proposed flight path that could be adversely impacted in the case of a crash in addition to the noise pollution.

Currently it is a rare exception at our home when we hear any sort of aircraft noise typically it is associated with the helicopter and generally we all go outside to see what's going on because it is very anomalous in an otherwise quiet environment. Directing all the centennial air traffic down Arapahoe Road would be a fundamental change to 30+ years of quiet solitude in our neighborhood Not why people moved to these neighborhoods... and a definite adverse impact to our quality-of-life for virtually NO benefits to the residents....

Mark and Deana Schneider

### Topics Identified in the Comment

- NEPA and FAA Order 1050.1F
- Projected Changes in Aircraft Noise Exposure
- Property Values
- Purpose and Need of Project

### FAA Response for Comment #416 Topics

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a

proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Property Values:** The proposed Denver Metroplex Project involves air traffic control routing changes for airborne aircraft only; and does not involve land acquisition, physical disturbance, or construction activities. The determination of whether a proposed action may have a significant environmental impact under the National Environmental Policy ACT (NEPA) is made by considering the relevant environmental impact categories and comparing impact to the FAA's thresholds of significance as outlined in FAA Order 1050.1F. The assessment of property values is not an environmental impact category as outlined in FAA Order 1050.1F. To the extent applicable, and as there are no significant impacts under noise or compatible land use, the proposed Denver Metroplex Project is compatible with existing and planned land uses, and the applicable regulations and policies of federal, state, and local agencies. A limited number of studies have attempted to measure the impact of aircraft noise on property values. Specific studies of the impact of noise at the Study Airports on real property values have not been conducted and are not required. Studies conducted at other national airports have concluded that airport noise only has a slight impact on property values within the Day Night Average Sound Level 65 decibels or greater noise contour around airports. Additionally, comparison of older studies to more recent studies indicates that the impact was greater in the 1960s, when jet aircraft first

entered the fleet. This decrease presumably is the result of stabilization of real estate markets following an initial adjustment to noisier jets, and of noise reduction in more modern Stage 3 or better aircraft.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 417 Submitted by: Schouten, Dennis

**Comment Received:** I am a private citizen and request that my personal identifying information be withheld.

The Next Generation Air Transformation System is flawed and appears that it will not solve significant airplane noise problems for people living the Denver metro area. By concentrating flights over certain areas (flight patterns) has resulted in increased air traffic over certain area at certain times of the day. These flights should be disbursed so that certain geographical areas are not unfairly bearing the brunt of air traffic noise.

We live 30 miles from DIA (Denver International Airport) and for 15 years air traffic from DIA was not been a problem until the past few years when flight pattern became more concentrated.

When DIA air traffic began to be more concentrated to certain flight patterns it has become a significant and unpleasant problem affecting our peace and quiet.

Just because some people have organized (south Boulder) for example, that should not result in more traffic being routed to the south of Boulder which affects North Broomfield, Louisville and Lafayette, CO. We attended a meeting at Rocky Mountain Metro Airport on May 1, 2019 and learned of the possible new suggested flight pattern proposals for our area.

You need to go back to the drawing board regarding flight patterns. Flights need to be disbursed over a large geographical area so that no one is unfairly burdened by constant air traffic noise.

Also, it appears that over \$35 billion has been spent on this project with an unsatisfactory result.

What other ideas have resulted from this study related to new technology jet engines), regulation of aircraft height and power levels when leaving DIA that can be implemented to lower the noise level until aircraft are out of the Denver metro area?

### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- New Technology - Aircraft Engines
- Projected Changes in Aircraft Noise Exposure
- Suggestions to Change Air Traffic Patterns
- Withold Personal Identifying Information

### FAA Response for Comment #417 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at

designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**New Technology - Aircraft Engines:** The FAA is committed to reducing aircraft noise through a “balanced approach” through the reduction of noise at its source (i.e., the aircraft); improved land use planning around airports; and, a wider use of aircraft operating procedures and restrictions that abate noise. Beginning in January 1, 2018, the FAA requires newly designed aircraft to be quieter which will help toward lowering noise around airports and surrounding communities. Called “Stage 5 Airplane Noise Standards,” this FAA rule ensures that the latest available noise reduction technology is incorporated into new aircraft designs. As a result, new airplane type designs in the subsonic jet airplanes and subsonic transport category large airplanes will operate at least 7 decibels (dBs) quieter than airplanes in the current fleet. The aim of the new standard is to harmonize the noise certification standards for U.S.-certified aircraft with those that are internationally certified. The U.S.-certified aircraft now in operation as well as the new aircraft type designs that were submitted prior to December 31, 2017 would not be affected by the new ruling. However, there are several aircraft with a maximum takeoff weight in excess of 121,254 pounds in production already meet the Stage 5 noise limits, including Airbus A380 and A350 family models and Boeing 747-8 and 787 family models.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

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**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

**Withhold Personal Identifying Information:** Commenters were made aware of the following statement with their comment submission - "Please be aware that your name, address, phone number, email address, or other personal identifying information in your comment may be made publicly available at any time. You may include in your comment a request to withhold your personal identifying information, however we cannot guarantee that we will be able to do so".

## Comments-Responses

### Comment# 418 Submitted by: Schuster, Lori

**Comment Received:** I live in The Pinery. Our development is a rustic quiet place. We have abundant wildlife a large herd of deer coyotes foxes wild turkeys and such. The properties are on larger lots some up to 5 acres. We bought homes here for the quiet and the nature. Commercial aircraft flying over regularly will absolutely destroy what we have bought and paid for here. There are still miles of undeveloped land all around us. Please do not ruin our retirements our quiet way of life what we have worked hard all of our lives for. Our homes are our biggest investment! Aircraft flying low over us will lower the value of our investments! We also do not want to breathe the fumes and have chemical residue falling on us. There must be another way as you have been using this other route for years. Do not include the Pinery the Timbers in your very disruptive plans.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Property Values
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #418 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for

NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Property Values:** The proposed Denver Metroplex Project involves air traffic control routing changes for airborne aircraft only; and does not involve land acquisition, physical disturbance, or construction activities. The determination of whether a proposed action may have a significant environmental impact under the National Environmental Policy ACT (NEPA) is made by considering the relevant environmental impact categories and comparing impact to the FAA's thresholds of significance as outlined in FAA Order 1050.1F. The assessment of property values is not an environmental impact category as outlined in FAA Order 1050.1F. To the extent applicable, and as there are no significant impacts under noise or compatible land use, the proposed Denver Metroplex Project is compatible with existing and planned land uses, and the applicable regulations and policies of federal, state, and local agencies. A limited number of studies have attempted to measure the impact of aircraft noise on property values. Specific studies of the impact of noise at the Study Airports on real property values have not been conducted and are not required. Studies conducted at other national airports have concluded that airport noise only has a slight impact on property values within the Day Night Average Sound Level 65 decibels or greater noise contour around airports. Additionally, comparison of older studies to more recent studies indicates that the impact was greater in the 1960s, when jet aircraft first entered the fleet. This decrease presumably is the result of stabilization of real estate markets following an initial adjustment to noisier jets, and of noise reduction in more modern Stage 3 or better aircraft.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding

satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 419 Submitted by: Schwall, Kevin

**Comment Received:** "Please withhold my personal information. FAA: Please do not proceed with the current Denver Metroplex plan. I applaud the FAA's desire to modernize our air traffic control system and reduce fuel usage but current studies have simply missed the real-world impact on the residents of Denver. We moved Denver airport from a convenient location at Stapleton to well outside of our city for the purpose of reducing noise impact on residents. That was not a small project and underscores our city's values. The Metroplex plan goes a long way to reversing that benefit. The 1970's era homes in our neighborhood--despite vastly improved insulation and modern windows--simply cannot cope with the noise of low-flying aircraft. We routinely get woken up by planes flying routes which did not exist when we purchased this home a decade ago. The new plan would make this unbearable and we have yet to identify an engineering solution to solve it on our end economical or not. Please revise your planning to increase the weight given to quality of live and quality of sleep issues for neighborhoods previously not impacted by noise. We paid a premium for these locations for a reason and it is not within your mandate to destroy that. Thank you Kevin"

### Topics Identified in the Comment

- Existing Aircraft Noise
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise
- Exposure
- Property Values
- Purpose and Need of Project
- Withhold Personal Identifying Information

### FAA Response for Comment #419 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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Greeley-Weld County Airport  
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Northern Colorado Regional Airport  
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Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

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procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

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**Withhold Personal Identifying Information:** Commenters were made aware of the following statement with their comment submission - "Please be aware that your name, address, phone number, email address, or other personal identifying information in your comment may be made publicly available at any time. You may include in your comment a request to withhold your personal identifying information, however we cannot guarantee that we will be able to do so".

## Comments-Responses

### Comment# 420 Submitted by: Seideman, Chris

**Comment Received:** "Hi there I was to leave a couple comments. When I built my house 25 years ago Stapleton Airport was in operation and I had very little or no airplane traffic flying overhead. Since the opening of DIA that has changed depending on the year it can be bad or good. But the last few years is gotten much worse at times the planes are flying very low and accelerating hard out of town and are quite loud. They seem to come in groups of a minimum of three when this happens counted up to six at a time. To be nice they spread out flight patterns or have them gain altitude before they fly over the mountains subdivisions. I live in Boulder Canyon or Highway 119 area. Anything you do to minimize the impact that I'm experiencing would be great thank you Chris Seideman"

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #420 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### **Comment# 421 Submitted by: Selitrennikoff, Dr. Claude**

**Comment Received:** Hello: i addended the FAA meeting in Aurora and i wanted to say that all the FAA folks and consultants were very helpful (and nice). i live a number of miles due south of DIA in SE Aurora CO. As such we are directly under the flight path of aircraft arriving on the N/S runways. The number of aircraft above and near our house is impressive. This area of Aurora is undergoing tremendous growth and the noise from the aircraft will be an increasing issue esp for families with young children. The proposed Nexgen flight patterns will be identical to the current ones with a predicted increase in dB. While i understand it is nearly impossible to reroute traffic (esp if aircraft are on the current ILS approach) there must be alternatives e.g. aircraft flying at a higher (and therefore creating less noise) altitude until they are over significantly less populated areas north of SE aurora. This would require adjusting the ILS profile of course. I urge the FAA to explore alternatives to reduce the noise impact over the expanding SE aurora area.

### **Topics Identified in the Comment**

- Projected Changes in Aircraft Noise Exposure
- Suggestions to Change Air Traffic Patterns

### **FAA Response for Comment #421 Topics**

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further

investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 422 Submitted by: Sereika, Kourtney

**Comment Received:** I see that your new flight path will be over our house although this maybe a more efficient route as a home owner I can't see the benefits for us. This is a quite community and semi rule area that attracted us to this location. To have the noise of planes already flying way to low as it is now from Buckley AFB I can only imagine what commercial jets will bring. I know this community as a whole is not happy about it and our voices should be heard! Please take our comments into consideration. Thank you for your time.

### Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #422 Topics

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not

equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 423 Submitted by: Sheldon, Daniel

**Comment Received:** After reviewing the conclusions of the EA, I remain very concerned. They appear to be seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030-2035.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The F AA's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, hospitals, parks and schools. In the Denver region, the majority of residences and schools in the suburbs predate DIA and currently experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally, it has been shown to cause lower test scores in children along with both cognitive and behavioral problems.

The EA contains assumptions, that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the true environmental impact of Denver Metroplex on the Denver Region. Please consider this before proceeding.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #423 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the

National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA’s de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91-53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height “would have little if any effect on

emissions and ground concentrations.” (72 Fed. Reg. 6641 (February 12, 2007). Accordingly, there would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA’s primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centenniairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed

the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis

evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact

(FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 424 Submitted by: Sherry, Lorraine

**Comment Received:** I am concerned that one of the proposed flight paths takes the planes right over our rooftops in Westminster and Broomfield. These are quiet residential communities not open land like east of DIA. Noise levels for us could increase dramatically.

### Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #424 Topics

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Comments-Responses****Comment# 425 Submitted by: Shettle, Norma**

**Comment Received:** Than you for the presentation - I appreciate the model of the presentation - We can look at the displays at our own pace. I especially appreciated being able to speak to & ask questions of the various Air Taffic Controllers, they know their subject. I learned a lot. Thank you for not materially changing departures over Centennial. I & my neighbors can keep the peaceful enjoyment of our homes. Thank you, too, for this project that will benefit our environment & Improve safety?

**Topics Identified in the Comment**

- No Concerns Identified

**FAA Response for Comment #425 Topics**

**No Concerns Identified:** Thank you for your comment.

## Comments-Responses

### Comment# 426 Submitted by: Short, Yvonne

**Comment Received:** To whom it may concern: I and my family have lived in Boulder County, outside Nederland, for the past 32 years. We, our mountain community of Magnolia west of Boulder, and the rest of the 100,000 people who live in the vicinity of the “newer” ZIMMR flight paths since \*approximately\* 2013 have been directly and negatively affected by this acknowledged type of noise pollution, just as exposure to polluted air or water affects anyone living in that situation! Since moving here in 1987 we can validate the dramatic change in flight path and frequency as the group CADN have attested to. We certainly didn’t have frequent jet flights in the previous 20+ years. In the ensuing time of flight path changes and frequency on occasion I’ve been able to visibly see color and writing of low flying aircraft at our 8,000 ft. elevation. The difference between military jets, commercial and fire related is clear. Many who move to the mountains claim “peace & quiet” as a top reason for living where we do; being in nature is associated with restorative peace, and constant jet noise isn’t apart of that. Our area is designated as WUI, Wildland Urban Interface, a title coined by the National Park Service. Tourism is a major source of state income and people visit here in-part for the peace they can’t experience in a city. Mental health is seriously eroding in our culture and places where you can experience nature without mechanized sounds are getting more rare. Visitors are seeking out places of stillness in nature, this area being one of them; by not helping to preserve this peace has negative effects on many, not just those that live here. Where we live is heavily flanked by rock mountains and draws making sound very magnified, jet noise being one of the loudest. I hear it inside our home and we have a considerable amount of insulation; this wasn’t the case before the FAA’s adoption of the ZIMMR flight path changes. For the FAA to say “simulations” of noise for our area show no significant affect is a \*false\* statement. The FAA has acted in a most disingenuous way with regards to public complaints and public officials working on constituents behalf. We strongly support CADN’s “well-crafted technical proposal, the Complete ZIMMR Noise Solution, recommending the needed minor and simple changes required to the proposed nextgen project flightpaths to resolve this issue. It is based on FAA technical rules the FAA follows to determine flight paths. It will restore some peace and quiet to the citizens affected and protect them from projected future increases in flight path traffic and associated noise. CADN strongly recommends the FAA adopt and incorporate the entire Complete ZIMMR Noise Solution into the final nextgen flight paths document for Denver”, and we do as well. Please restore the natural peace again to pre-ZIMMR changes. It is important for many people, not just those of us who choose to live in the mountains. Yvonne Short and George Blakey

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Noise Modelling
- Physical and Mental Health
- ZIMMR SID

### FAA Response for Comment #426 Topics

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F.

This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight

path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA's required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 427 Submitted by: Sidles, Darla

**Comment Received:** The National Park Service (NPS) appreciates the opportunity to review and comment on the Draft Environmental Assessment (EA) for the Denver Metroplex Project. We value the relationship built between Rocky Mountain National Park (RMNP) and Federal Aviation Administration (FAA) staff over the last ten years, and thank you for meeting with staff from RMNP and the NPS Natural Sounds and Nights Skies Division (NSNSD) on May 7, 2019 in Lakewood, Colorado for an informative Metroplex meeting.

The NPS was engaged in the initial development of the FAA Area Navigation (RNAV) and Required Navigation Performance (RNP) Procedures for the major Denver Metropolitan Area airports from 2010 to 2012. The NPS initially commented on the June 2012 Draft EA to express concerns about the Northwest Standard Terminal Arrival Route (ST AR) that crosses over RMNP. As a result of these discussions, the FAA designed the northwest RNAV STAR to more closely align with Trail Ridge Road.

The NPS continues to be interested in the FAA's Section 4(f) evaluation process and all possible measures to minimize harm to the park's 4(f) resources. This includes the following measures, which we previously identified in 2012:

1. Aircraft use Required Navigation Performance (RNP) and Optimized Profile Descent (OPD) to the maximum extent possible;
  2. Aircraft are sequenced west of RMNP;
  3. Aircraft follow the STAR on a narrow flight path over RMNP to the TOMSN waypoint east of the park; and
  4. To the maximum extent possible, aircraft are not vectored off the STAR prior to arrival at TOMSN.
- The draft 2019 Denver Metroplex EA includes the following critical elements:
1. New merge point RAPEL will be located 14.74 nautical miles further west of the park, thereby reducing vectoring (addressing element 2, above);
  2. The number of enroute transitions will be reduced from three to two at RAPEL (helping to address element 3 above);
  3. Altitude restrictions will be higher over the park; and
  4. Two additional fixes, BIVVY and VESTL, between the transition merge point RAPEL and the park boundary.

The NPS greatly appreciates the 2019 changes to the EA to address our concerns, and we agree with the FAA that the above changes to the procedure should help minimize harm to 4(f) resources in the park. It is our understanding from the May 7 meeting that the number and scheduling of aircraft over the park is determined by the airlines. The new procedures outlined above do not allow narrower "in trail" separation, although the number of flights over the park could increase due to passenger demand. The NPS respectfully requests additional information about the analysis and impacts to the park, as outlined below.

Outstanding information previously requested per our June 7, 2016 letter, (refer to the Appendix A of the EA, pp. A-69 to A-75)

1. Current aircraft numbers and percentages (no action alternative) and the predicted number and percentages of aircraft (preferred alternative) that will be directed to the Northwest STAR:
  1. Using RNP;
  2. Using OPD;
  3. Sequenced west of the park, following the procedures, and using the defined flightpath over Trail Ridge Road; and
  4. Traveling over the park without following the procedures and not using the defined flightpath over Trail Ridge Road.
2. Inclusion of national park boundaries on all maps in the EA where they are present. In order to better identify potentially affected 4(f) resources for the reader, we suggest that, in addition to Exhibit 4-2,

FAA should identify national park unit boundaries (parks, monuments, historic sites, etc.) and national park wildernesses on all other maps which show state, county, and other federal boundaries.

3. Analysis of direct, indirect, and cumulative effects to the acoustic environment at NPS units using appropriate supplemental metrics and methods for noise-sensitive areas. Understanding that the day-night average sound level (DNL) is an energy-based noise averaging metric based largely on community response data, the NPS believes the impact analysis for RMNP would benefit from supplemental noise analyses, e.g. maximum sound level (Lmax) and time above (TA), per FAA Order 1050.1F and Desk Reference Exhibit 11-2.

Supplemental noise analysis with respect to natural ambient sound conditions. The natural ambient sound level is a critical baseline condition which NPS uses to evaluate and understand noise impacts. The NPS seeks to better understand days with higher numbers of overflights that are anticipated and how often those conditions are expected to occur.

5. Analysis of the effects of the No Action and Preferred Alternative on visitor response to noise. We respectfully suggest an analysis that incorporates the methodology in ANSI S12.9, Quantities and Procedures for Description and Measurement of Environmental Sound - Part 4, with an adjustment in day-night-sound level for quiet rural or remote settings (like RMNP) where there is a greater expectation for, and value placed on, peace and quiet.

6. Analysis of the effects of the No Action and Preferred Alternative to wildlife, including any federally listed species that reside in the park.

#### 7. Noise Analysis Protocol.

New comments based on the draft EA

1. We respectfully request confirmation that the purpose of the additional fixes BIVVY and VESTL are to measure in trail separation, altitude, and speed and that these fixes will not be used as merge points.

2. We continue to be concerned that the number and location of 4(f) resources in the park are incorrect in the EA. Draft EA Appendix I, the Denver Metroplex Aircraft Noise Technical Report, lists just two park historic properties in Table A5.2, Section 4(f) Single Point Properties and Historic and Cultural Resource Inventory and Noise Exposure Results. While we do not have an exhaustive list of 4(f) resources, we respectfully request that the draft EA Appendix I, Table A5 .2 and Table A 7 .1, Noise Sensitive Land Use Area Location and Noise Exposure Results, be updated to include the following high-priority 4(f) resources in the park: Rocky Mountain National Park Wilderness, Aspenglen Campground, Glacier Basin Campground, Timber Creek Campground, Longs Peak Campground, and Moraine Park Campground.

3. As mentioned at our May 7, 2019 meeting, the draft EA appears to be missing Table 4-4, Unique Points for Noise Sensitive Areas. The table is referenced on EA p. 4-19 under Unique Points - Noise Sensitive Areas and Uses, but it is incorrectly referred to as Table 4- 6.

The NPS appreciates the efforts FAA has made, consistent with FAA Strategic Plan objectives to mitigate environmental impacts from aviation, to work with the NPS on the Denver Metroplex project. These include mitigating impacts to NPS natural and cultural resources and values, which include wilderness, healthy ecosystems, and public enjoyment of these places.

We look forward to working with the FAA as you complete the EA process. If you have questions or need further assistance, please feel free to contact Cheri Yost, Branch Chief of Planning and Project Stewardship, at Cheri.yost@nps.gov or at (970) 586-1320.

#### Topics Identified in the Comment

- BIVVY and VESTL Waypoints
- DOT Section 4(f) Resources
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure

- Purpose and Need of Project
- Supplemental Noise Metrics

**FAA Response for Comment #427 Topics**

The complete written response to this NEPA and Section 4(f) comment letter can be found in the Final Environmental Assessment, Appendix A: Agency Coordination, Public Involvement, and List of Receiving Parties.

## Comments-Responses

### Comment# 428 Submitted by: Simmons, Shannon

**Comment Received:** Lack of transparency and confusing info on this change. I do NOT want this change to take place due to noise overhead traffic and pollution concerns. Go further east where the land use is less and stay away from our neighborhoods!

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Projected Changes in Aircraft Noise Exposure
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #428 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA’s de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de

minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 429 Submitted by: Skinner, William

**Comment Received:** Reference: Denver Metroplex Draft Environmental Assessment To Whom It May Concern; Arapahoe County Staff reviewed and are providing comment pertaining to the Denver Metroplex Draft Environmental Assessment, which was provided to for public review on April 22, 2019. Arapahoe County Staff reviewed the Draft Environmental Assessment for the Denver Metroplex Project document, discussed the proposal with staff at the May 9th, 2019 Denver Metroplex open house held at Arapahoe Community College, and attended the Centennial Airport Staff discussion of the proposal as [resented at the May 1st, 2019 Centennial Airport Noise Roundtable meeting. General Comments Concentration of aircraft in a smaller airspace - The Denver Metroplex Environmental Assessment discusses the ability of air traffic controllers to minimize aircraft separation (including following distances) using RNAV procedures. This implies the ability to handle more aircraft in a smaller airspace and time frame. The County staff are concerned that the capacity to decrease aircraft separation and concentrate aircraft along narrower flight corridors will result in a disproportionate increase in noise related nuisance for citizens and homeowners living under the revised flight corridors. Increases in noise and pollution are not addressed - The study contains multiple references to the conclusion or assumption that implementation of the Denver Metroplex Environmental Assessment will result in no increases in noise or air pollution. In some cases this is attributed to increases in technology. An Increase in aviation technology may result in quieter and cleaner operation of individual aircraft, but does not consider the impact of an increase in the number of overflights, and the potential for an increase in air traffic is not directly addressed in the study. This is inconsistent with information published by the FAA, or with recent and ongoing activities pertaining to Denver Internal Airport (DIA) including the following:

- Published data in the FAA's Aerospace Forecast for 2018 – 2038 which predicts an overall increase in aviation activity.
- The recent approval of 39 additional gates at DIA.
- Ongoing discussions pertaining to the planning and impending construction of a 7th primary runway at DIA.
- The FAA's published DIA Master Plan which predicts a 100% increase in DIA traffic between 2010 and 2030.

Specific Comments Page 1-14, end of Section 1.3.1 – last sentence ends with “and” Page 1-19. Exhibit 1-7 – missing several key highways such as C-470 & E-470, no I-70 label east of I-225. This is true of all of the base maps in the report. Exhibits 2-3 and 2-4 seem to be reversed. Page 3-33, Section 3.3.1 and Table 3-3 – It would be helpful if this section tallied the points and transitions for each airport. Exhibit 4-4 – It would be great to get this noise data at a scale where we could see the blocks in Arapahoe County. Shouldn’t there be two maps, one for each alternative. Exhibit 4-5 – exhibit is missing a legend for the land uses. Page 5-1 – Air quality impacts. The analysis only considered whether the proposed action would exceed the NAAQS for any pollutant. Since the region already exceeds the NAAQS for ozone, that is the wrong criterion. The analysis should evaluate whether proposed action will emit more ozone precursors than the no action alternative. Further discussed on page 5-16, which states that the preferred alternative would result in an increase in emissions. The EA uses the fact that the emissions would be above 3000 feet as a reason for “no impact” finding. For the Denver area’s ozone, 3000 feet may be just as critical as ground level concentrations as the ozone cloud moves up and down the South Platte valley. Page 5-2 – similar to the air quality analysis, the climate impacts should be based on the difference in CO<sub>2</sub> emissions between the proposed action and the no action alternatives. Page 5-19f states that the Preferred Alternative would increase CO<sub>2</sub> emissions by 1.8 percent. When Colorado is trying to reduce CO<sub>2</sub>, not increase it, this seems a significant negative factor of the Preferred Alternative. Why does an increase in efficiency result in higher fuel consumption? Page 5-23, Historic and cultural resources – it would be helpful to know the impacts to the 17 mile house historic park near Centennial Airport. Table A5.2 in Appendix I lists the 17 Mile House and states that the noise is currently 44.24 dB DNL and would drop by .9 db under the Preferred Alternative. This information is not included in the Historical and cultural resources section of the EA Thank you for this opportunity to comment. Sincerely, William Skinner,

AICP, Senior Planner Arapahoe County Public Works Department Additional copy to be send by U.S. Post

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Alternatives to Abate Existing Air Quality/Pollution Issues
- Forecast/Future Operations
- Health Impacts Associated with Inhalation of Pollutants
- Historical and Cultural Resources
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #429 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA’s de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would

have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Alternatives to Abate Existing Air Quality/Pollution Issues:** The commenter suggested the FAA help ameliorate existing air quality issues through the proposed Denver Metroplex Project. The commenter requested alternative procedures should be designed to route aircraft over unpopulated areas that would abate existing air quality issues. The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA) is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex area. Furthermore, addressing current air quality issues in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Final EA.

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**Health Impacts Associated with Inhalation of Pollutants:** As discussed in Section 5.2.1 of the Final Environmental Assessment, changes associated with proposed Denver Metroplex Project would occur

at or above 3,000 feet above ground level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height “would have little if any effect on emissions and ground concentrations.” (72 Fed. Reg. 6641 (February 12, 2007)) Accordingly, the proposed Denver Metroplex Project would not impact human health due to increases in pollutant emissions at ground level.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA’s primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property’s historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property’s characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 430 Submitted by: Skok, John

**Comment Received:** To the FAA: Cherry Hills Village has worked hard for more than 70 years to preserve a safe, low-density, quiet residential oasis. The Village boasts many historic properties and many natural public parks whose quiet and tranquility is shared and cherished by all Denver residents. The FAA's noise modeling promises that adoption of the Preferred Alternative will decrease aircraft noise levels throughout Cherry Hills Village. We therefore welcome the Preferred Alternative implementation so long as the FAA in the final EA represents and expressly commits that if the modeling is wrong and noise levels in Cherry Hills Village increase after the route changes, the FAA will re-implement the No Action Alternative and conduct a full Environmental Impact Study evaluating the noise effect on all public properties and historic parks in our community. In the event it is determined that the FAA Environmental Assessment conclusions re: Denver Metroplex are flawed or misleading, it is imperative that the FAA complete an updated detailed, accurate, and realistic Environmental Impact Study relevant to our community, followed by open public review and discussion, before any implementation of Denver Metroplex NextGen. Thank you for your consideration. Sincerely, John S. Skok

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Historical and Cultural Resources
- Level of NEPA Review
- NEPA and FAA Order 1050.1F
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #430 Topics

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated

with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport

303-271-4850

<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be

affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative

would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 431 Submitted by: Skok, Monica

**Comment Received:** To the FAA: Cherry Hills Village has worked hard for more than 70 years to preserve a safe, low-density, quiet residential oasis. The Village boasts many historic properties and many natural public parks whose quiet and tranquility is shared and cherished by all Denver residents. The FAA's noise modeling promises that adoption of the Preferred Alternative will decrease aircraft noise levels throughout Cherry Hills Village. We therefore welcome the Preferred Alternative implementation so long as the FAA in the final EA represents and expressly commits that if the modeling is wrong and noise levels in Cherry Hills Village increase after the route changes, the FAA will re-implement the No Action Alternative and conduct a full Environmental Impact Study evaluating the noise effect on all public properties and historic parks in our community. In the event it is determined that the FAA Environmental Assessment conclusions re: Denver Metroplex are flawed or misleading, it is imperative that the FAA complete an updated detailed, accurate, and realistic Environmental Impact Study relevant to our community, followed by open public review and discussion, before any implementation of Denver Metroplex NextGen. Thank you for your consideration. Sincerely, Monica Liley Skok

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Historical and Cultural Resources
- Level of NEPA Review
- NEPA and FAA Order 1050.1F
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #431 Topics

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated

with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport

303-271-4850

<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be

affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative

would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 432 Submitted by: Sloane, Hyla

**Comment Received:** As a 40 year resident of Cherry Hills Village I am greatly concerned about the FAA reinstating a process that will allow for the implementation of NexGen. This would direct flights in and out of DIA. This flight plan would direct planes over our homes 24 hours a day equaling over 100 flights hourly. To make matters even worse NexGen will also put more flights from the general aviation airport, Centennial, over our homes.

The implementation of NexGen will most definitely cause an environmental problem for those of us living under this path by causing a great deal of noise and pollution both dangerous to our health. Our formerly peaceful and quiet homes will be turned into a chaotic area in which to live. Needless to say the property value of our homes will plummet which will affect us all.

I implore the FAA to give up the implementation of NexGen for the good of all living in Cherry Hills Village. Nothing positive can come from this implementation.

\*\*I would appreciate personal identifying information not be made publically available at this time.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- General Aviation/Visual Flight Rules
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Property Values
- Purpose and Need of Project
- Withhold Personal Identifying Information

### FAA Response for Comment #432 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental

effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Property Values:** The proposed Denver Metroplex Project involves air traffic control routing changes for airborne aircraft only; and does not involve land acquisition, physical disturbance, or construction activities. The determination of whether a proposed action may have a significant environmental impact under the National Environmental Policy ACT (NEPA) is made by considering the relevant environmental impact categories and comparing impact to the FAA's thresholds of significance as outlined in FAA Order 1050.1F. The assessment of property values is not an environmental impact category as outlined in FAA Order 1050.1F. To the extent applicable, and as there are no significant impacts under noise or compatible land use, the proposed Denver Metroplex Project is compatible with existing and planned land uses, and the applicable regulations and policies of federal, state, and local agencies. A limited number of studies have attempted to measure the impact of aircraft noise on property values. Specific studies of the impact of noise at the Study Airports on real property values have not been conducted and are not required. Studies conducted at other national airports have concluded that airport noise only has a slight impact on property values within the Day Night Average Sound Level 65 decibels or greater noise contour around airports. Additionally, comparison of older studies to more recent studies indicates that the impact was greater in the 1960s, when jet aircraft first entered the fleet. This decrease presumably is the result of stabilization of real estate markets following an initial adjustment to noisier jets, and of noise reduction in more modern Stage 3 or better aircraft.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older

RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Withhold Personal Identifying Information:** Commenters were made aware of the following statement with their comment submission - "Please be aware that your name, address, phone number, email address, or other personal identifying information in your comment may be made publicly available at any time. You may include in your comment a request to withhold your personal identifying information, however we cannot guarantee that we will be able to do so".

## Comments-Responses

### **Comment# 433 Submitted by: Small, Steve**

**Comment Received:** Re: DIA Next Gen DNL dBA Thresholds of Significant Noise in the Timbers/Pinery Area

We are a community of more than 2,500 homes and a population exceeding 10,000, located 11.6 miles southeast of Centennial Airport and 23.3 M south of the threshold of runways 35L & 35R at DIA. The following are factors contributing to cumulative noise exposure impacting our community as of May 2019:

- + DIA arrivals when North Arrivals Ops are authorized
- + Buckley F-16 aircraft in afterburner, accelerating/ climbing to their operational training area
- + Army helicopters frequently below 1,500 AGL, transitioning over our community
- + Centennial Airport jet and prop general aviation arrivals and departures, both IFR and VFR
- + Significant propeller ale noise, both single and multi-engine, again flying below 1,500 AGL

The above noise-generating aircraft combined with our community elevation of approximately 6,400 MSL produce a cumulative noise exposure that can easily exceed your standard of the threshold of significant noise at DNL65 dBA.

Our primary concern is that additional aircraft noise resulting from Next Gen arrival/ departure aircraft will impact our community homes, many of which are fifty years old and built without today's noise insulating construction.

We propose the following action on the part of the Federal Aviation Administration:

1. DIA North bound arriving traffic be no further east than N 39.47 W 104.75 (intersection of Highway 83 and South Pinery Parkway, the western edge of our community).
2. DIA North bound arriving traffic be no further west than N 39 44 W 104 71 (intersection of Democrat Road and Sunridge ).
3. Aircraft on RNAV (RNP) Z Rwy 35R not be routed over our community when cleared to Dorry Intersection for this RNAV approach. (Copy of referenced RNA V approach attached.)
4. On the above RNAV 35R approach, why are aircraft approaching Dorry at 9,000' MSL which is only 2,600" AGL at approximately twenty miles south of the 3 5R landing threshold?

Thank you for considering our proposal. We look forward to discussing and / or providing additional innovative ideas to minimize community noise, while maximizing safety issues.

### **Topics Identified in the Comment**

- Design Proposal - DEN North Arrivals
- Existing Aircraft Noise
- Projected Changes in Aircraft Noise Exposure

### **FAA Response for Comment #433 Topics**

**Design Proposal - DEN North Arrivals:** The commenter requested the FAA consider the proposal of restricting aircraft between specific coordinates to the east and west of the runways for arrivals into Denver International Airport when in a north flow landing configuration. Additionally, it was requested that aircraft utilizing the existing RNAV (RNP) Z RWY 35R approach flight procedure avoid a specific community when air traffic control clear arriving aircraft to the existing DORRY initial fix. The FAA completed an analysis of the proposal and determined that arriving aircraft landing on either Runway 34L or Runway 34R must be established on the runway centerline with proper separation between

aircraft. Preventing arrival aircraft from being east of the specific coordinate or west of the specific coordinate would diminish the level of safety that is required by air traffic control procedures. Arrival aircraft must cross the DORRY initial fix at 9,000 feet mean sea level to provide adequate vertical separation from two parallel/adjacent approach courses during simultaneous approach operations. Accordingly, the FAA determined that arrival aircraft landing on Runway 35R would continue to be vectored to the DORRY initial fix in order to be established on the runway centerline, thereby providing proper separation between aircraft landing on Runway 35R.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under

2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 434 Submitted by: Smith, Christopher

**Comment Received:** I fully support the positions of my neighbor, Larry W Gnuse, who has submitted the following complaints towards respecting the prior agreements that maintain our airspace and peace in our neighborhood. Larry's points listed below pasted from email copy: 1--- Denver Metro Plex public input meetings designed to prevent ,stop public input 2- FAA using DbA, to massively mislead the public. DbA is the mathematical formula used purely because it mathematically excludes most objectionable human damaging aircraft noise heard inside buildings by the body. DbA reduces damaging low frequencies by up to 100 %. Using DbA to discuss aircraft noise has been discredited by world wide research and the FAA's own training manuals. DbA is used only to mislead and confuse and massively understate aircraft noise that impacts the human body. 3 ---People who attended Denver Metro Plex meetings were shown a show lines on maps that meant nothing. The materials gave attendees no useful information they could react to, understand, , like or object too. By this the FAA stonewalled attendees to stop public input. Public cant object if they learned nothing they could possibly relate to. Information on how much actual real human impact noise, not fake DbA noise figures need to be used. DbEq, or DbZ , the real noise that the FAAs own training manuals confirm is what actually correlates to learning loss, loss of sleep, permanent blood pressure increase , stroke and heart attack , higher health insurance costs and noise complaints was not used. DbA is only relevant when measuring noise issues inside a building. The FAAs use of DbA for aircraft noise data is a fraud on the public as their own manuals confirm it does not measure aircraft noise impact on humans. 4--- Centennial Airport approach / departure patterns of 05 North over the middle of the 10 sq miles of purposely created aircraft noise abatement zone was and still is a set in stone, condition under which the airport was allowed to be built and operated. Arapahoe County, Denver, Greenwood Village and Aurora specifically set aside 10 square miles of land on the 05 North heading for the primary use as an aircraft noise buffer. It has been a set in stone expectations and condition of allowing Arapahoe Airport, now Centennial Airport to be built. It is still a set in stone expectation. 5 -Now the FAA has tried to overturn the set rules that governed where communities and schools were built. Despite moving Stapleton 15 miles further away to give Centennial airport quadruple the airspace to stop overflights over homes, the FAA has abandoned the 10 sq miles of aircraft noise abatement zone and instead is directing aircraft low and loud directly over over homes and the largest concentration of schools in the area, built there because the area was explicitly outside the area that should, except in weather emergencies, experience aircraft noise. The FAA in it's gross negligence and total disregard of the of 50 years of community planning, and billions of dollars of spent costs creating that 10 sq mile uninhabited aircraft approach and departure area , and a total disregard of the massive human damage not using that area inflicts is now flying aircraft on routes that inflict maximum human damage and public costs. We demand that the FAA return aircraft to traditional 50 yr, 05 North departure and approach . The public supported the massive costs of moving Stapleton Airport 15 miles further away and travelling 30 miles further each trip specifically so Arapahoe, now Centennial Airport would have massively increased airspace to allow aircraft to descend steeply from 4000 ft on that 05 North 10 sq mile aircraft noise abatement area. Now the FAA has done the exact opposite. Now the FAA, through it's public input designed to stop public input, tried to sneak another unnecessary, damaging to the total economy, damaging to taxpayers , aircraft operation plan into existence, while falsely claiming it allowed public input. Follow the Centennial Roundtable fly Friendly recommendations as mandated policy, as the FAA has prevented all effective public input. Shame, shame on you.

### Topics Identified in the Comment

- Existing Aircraft Noise
- General Aviation/Visual Flight Rules

- Noise Modelling Analysis
- Physical and Mental Health
- Purpose and Need of Project

#### **FAA Response for Comment #434 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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303-790-4709  
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970-336-3000  
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Northern Colorado Regional Airport  
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<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot’s discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the

Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 435 Submitted by: Smith, Jan

**Comment Received:** Please reconsider proposed NextGen flight paths. Moved to Pinery 35 years ago in pursuit of peace and quiet. Still reside in our home and love the quiet. Would appreciate identifying info private. Thank you for your consideration.

### Topics Identified in the Comment

- Purpose and Need of Project
- Withhold Personal Identifying Information

### FAA Response for Comment #435 Topics

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Withhold Personal Identifying Information:** Commenters were made aware of the following statement with their comment submission - "Please be aware that your name, address, phone number, email address, or other personal identifying information in your comment may be made publicly

available at any time. You may include in your comment a request to withhold your personal identifying information, however we cannot guarantee that we will be able to do so".

## Comments-Responses

### Comment# 436 Submitted by: Smith, Lisa

Comment Received: FAA Team

I want to share a few definitions of what I have been dealing with for the past 2 1/2 years of your changes.

Excessive

going beyond what is usual normal or proper

<http://www.learnersdictionary.com/definition/excessive>

More than is necessary normal or desirable; immoderate.

<https://en.oxforddictionaries.com/definition/excessive>

noun: harassment; plural noun: harassments

1. aggressive pressure or intimidation.

"they face daily harassment and assault on the streets"

synonyms: persecution harrying pestering badgering intimidation bother annoyance

aggravation irritation pressure pressurization force coercion molestation;

informalhassle;

informalbadassery;

rareb edevilment

The changes with flight paths over my home has made my home unpleasant to live in. I no longer want to go to my home. You have taken away my pleasure and a source of relaxation. I spend a great deal of time outside and all I hear and experience is aircraft and noise. The noise levels exceed the 70+ dB's I have recorded this multiple times outside of my home. I can hear aircraft inside my home with the doors and windows closed television on and a conversation being carried out. Now please tell me how this is not harassment. When I am outside I can hear planes for up to and over 2 minutes for one plane and before one plane is done you find the need to send another. This can go on up to or over an hour please tell me how this is not excessive noise? I would like to know who has decided my quality of life is no longer allowed? Who are you to decide I am not allowed to live in peace? I moved to the area long before DIA's development. We were promised that we would not be subject to DIA's noise. I do not live in the direct path of any runway and should not be subject to this noise. Your team claims that safety is a priority! But I have watch planes fly directly into storms when the use of the west bound runway would not but planes in the storm clouds. This makes no sense. Your team has stated that there needs to be at least a mile between aircraft then there is no reason to have 5 to 6 miles between planes passing. Are you aware the route directly over my home going south is in a natural bowl???? This increases the noise from these planes. Are you aware there is no natural or man made structures to dampen the noise from aircraft??? Are you aware that the I am subject to aircraft from 3 different directions???. Are you aware that the aircraft flying just north of my home I can hear because it is within 3 miles of my home?? Are you aware of the planes flying directly over my home going south is within 2 miles of my home???? Are you aware of the planes leaving the southbound runway are within 2 miles of my home??? Please tell me how this is not excessive or harassing (reference definitions above). I want to see the noise assessment for my area it is quite clear you have not experience the noise yourself. Are you aware your current flight paths in and around my home can exceed over 250 flights??? Please tell me how this is not excessive and harassing??? I also want to know why my community is being treated as not having any value. Are you aware that my neighbor sold his home for 30 to 40 thousand dollars less than a neighbor who is half a mile away??? You are destroying a community that has been hear since the late 60's and early 70's. The FAA team has failed to reach out to the people in a professional way to ask inform and notify of any changes. This current round of meetings if you have notice do not even cover the people on the eastern plains who currently are subject to a great portion of noise leaving the airport. I also notice there are no meetings for the people

in Kiowa or Elizabeth who I know are dealing with noise. What about Keenesburg Colorado??? Your team has failed to get there thoughts on the matter. What an epic failure all the way around. My home is my place of retirement why is it okay for you to destroy my life?? Please do not tell me that everyone has to be subject to growth and has to deal with the outcome! Denver decide and took advantage of the situation when they built DIA they need to take as much of the noise as possible. Not the surrounding communities that are not in the direct flight path. I also feel that the FAA team is taking some sort of kick back from Denver to ensure the noise leaves the Denver Area and place the burden on the small communities. Since Denver is being sued by a suburb of Denver. Also your team is aware that you have been sued by other communities who have been impacted by your metro plex/nextgen theory. Why is it hard for you to understand that people do not want to be effected by the noise. I also want to know why I am denied privacy?? I have planes flying over and have lights coming at through windows. Why am I awaken in the middle of the night for aircraft flying over my home anywhere between 8:00 pm until 1:30 am??? Why am I subject to planes flying over my home and I can lay in bed and see them fly by at 6:15am. These are all repeat flyovers. Why is this acceptable and that I should have to live with it??? Again why have you decide my quality of life has no value??? Where is my airspace who are you to decide I am not entitled to the same respect as other citizen? Who ever GOD is that made this decision that I have no value needs to come and explain their decisions all of my neighbors and myself. Our community does not gain by any benefit from this airport. We see no tax benefit it does not bring us any revenue to the area or business so we should not be subject to the noise it belongs to Denver. If your team has decided to make the north and southbound runways as the primary landing paths then why can the incoming planes from the east can not fly over the front range communities (on the west side of airport) to loop around and land?? Then any flights you need to use the east bound runway can take off and head south within a mile radius?? This would eliminate a portion of the noise over the eastern communities. I believe and feel your team has failed to respect the communities and have targeted the weaker towns that cannot fight back against a monopoly. I also want to know who is going to pay for my property loss if I had to sell my home????? I moved out here 35 years ago to avoid this type of noise if I wanted to live in town I would have done so. I also want to know how your team is going to reimburse me for my loss of quality of life?? Your team has created a loss of value to my property and who is going to pay me for my loss??? I have watched the planes leave DIA from my home for the last few years and I feel you have other options and are neglecting to consider. The loss of using the west and east runways to land aircraft has create this pressure the FAA is placing on the surrounding communities. I was told this was a safety issue!. I do not understand how it had been going on for over 20 years and now it has been decided it is an issue this makes no sense. Your team has told me that all communities are subject to the noise but they live in or surrounding the Denver area and a decision they made and knew that the air traffic was there. I did not my decision was made long before it was developed. So I do not feel they have much of an argument to the discussion. I am mad and upset that a government agency that my tax dollars pay for failed the citizens and cannot find a better way.

#### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Property Values
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns

#### FAA Response for Comment #436 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Property Values:** The proposed Denver Metroplex Project involves air traffic control routing changes for airborne aircraft only; and does not involve land acquisition, physical disturbance, or construction activities. The determination of whether a proposed action may have a significant environmental impact under the National Environmental Policy ACT (NEPA) is made by considering the relevant environmental impact categories and comparing impact to the FAA's thresholds of significance as outlined in FAA Order 1050.1F. The assessment of property values is not an environmental impact category as outlined in FAA Order 1050.1F. To the extent applicable, and as there are no significant impacts under noise or compatible land use, the proposed Denver Metroplex Project is compatible with existing and planned land uses, and the applicable regulations and policies of federal, state, and local agencies. A limited number of studies have attempted to measure the impact of aircraft noise on property values. Specific studies of the impact of noise at the Study Airports on real property values have not been conducted and are not required. Studies conducted at other national airports have concluded that airport noise only has a slight impact on property values within the Day Night Average Sound Level 65 decibels or greater noise contour around airports. Additionally, comparison of older studies to more recent studies indicates that the impact was greater in the 1960s, when jet aircraft first entered the fleet. This decrease presumably is the result of stabilization of real estate markets following an initial adjustment to noisier jets, and of noise reduction in more modern Stage 3 or better aircraft.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport

operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 437 Submitted by: Smith, Lisa

**Comment Received:** "Lisa Smith 53909 E Bison Dr Strasburg Co. 80136 Lisa3paint@tds.net FAA TEAM Sunday 5/19/2019 Please help me understand why your team feels the need to harass my home & neighbors all day with flights. I can hear them if I am in my home with a TV on or standing next to two farm tractors running having a conversation with my husband. I also heard these planes while I was running a weed trimmer! Please tell me how this is not considered excessive noise and harassment. These planes are flying in a bowl of the landscape this increases noise through this area. Where is our noise assessment? We do not have one for our area; everything I have found has focused on the Metro area population. We do not live in the city we choose to live in the country for a reason. I am sure this team likes to go home or vacation where it is quite! My home is my vacation I no longer feel my home is a safe and quite place since we are harassed daily by flights. Where is my letter explaining I have lost these rights as a citizen?? Why am I denied the ability to sit on my front porch and read a book without noise from above??? Example of what we dealt with on Sunday this does not include all the flights in the afternoon. SWA6400 @ 6:34am - West bound runway not being utilized or use North bound - SWA5099 @ 6:44am- I watched these flights while I was lying in bed looking out the window is this something you want to wake up too??? Why do incoming planes have to fly by the airport and turn into the runways why can't they turn earlier (prior to Limon) and then come up from the south??? You are not losing any mileage. FFT680 (am) over my home AAL1404 (am) over my home FFT124 @ 8:05am - west bound runway open UAL1592 @ 8:10am over my home yet flight UAL237 going to PHX used the west bound runway GIS4552 @ 8:12am going to MUN over my home UAL1692 @ 8:15am over my home UAL370 @ 8:18am over my home SKW1358 @ 8:20am over my home SKW5658 @ 8:21am over my home. No sooner one plane has flew over there is another one right behind it so the noise is constant. Maybe we should have a parade of Harley Davidsons and Hot rods drive by your home in secession. Or we have a Load Rock Band outside your home all day playing while you are reading a book or talking to your spouse. SKW5658 over my home GJS4544 @ 8:31am over my home AAL124 @ 9:00am going to DFW - this flight continued south why??? This makes no sense saving fuel!!! NKS584 @ 9:08am over my home SWA514 @ 9:09am over my home - at this time there was no west bound runway traffic. So explain to me when you send flight out the west bound runway that you do not fly out 16 miles before turning south??? This would but these flights over downtown Denver so how come my community is bombarded by aircraft?? We were promised we would not have this type of impact. Someone owes us all an explanation and proof of our signature that we accepted this harassment. Please show me where I signed a document saying I am okay with this??? Denver's Airport Denver's Noise if I wanted to live where this noise was going to be a daily harassment I would have moved into the surrounding communities of Denver. I feel the FAA is not here to help!! You are here to disrupt as many lives as possible. We do not live in a direct path of any runway and should not be the dumping ground for DENVER's airport. I have to listen to the 200 + flights just north of my home - we should not have to be subject to additional traffic because of volume. You have lowered my quality of life costing me money on my assets my property is no longer a pleasant place to live and I am no longer joy in my life at home. Please let me know where you live so I can share the amount of noise I am subject too daily. This NextGen/Metroplex project is an epic failure you have had multiple responses from other communities in other states the FAA has decide to continue to shove this program onto the public. The FAA supposedly an educated group of people would know that the citizens do not want this based on other forums you have conducted around the country. Now please explain to me why an educated group of people do not get it!! I am all for keeping track of planes in the sky for safety but there should be no reason why they could not continue on the original flight paths prior to this change? Will you not still be tracking the planes? Why isn't the FAA team focusing on carriers or builders to improve the planes for noise placed on the environment?? Why do we need to change our lives for an airline industry that is making money hand over fist by all the charges to customers? How many more lawsuits or complaints does it take for the FAA to

understand?? This team can't keep cramming this down on people. No one is willing to trust or respect the agency. Where is my respect! Where is my airspace! I deserve as a citizen that pays for your wages. I work hard for what I have and the FAA feels I have no value and no respect as a person. Who is going to pay me for my loss??? This is Denver's Airport they should deal with all the noise not the surrounding communities because they are there and have no voice. Why can't the planes landing at the other airports fly at a different level when coming in verses the larger airlines?? Waiting for a response. Frustrated Citizen who does not live anywhere near Denver."

#### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- New Technology - Aircraft Engines
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns

#### FAA Response for Comment #437 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850

<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**New Technology - Aircraft Engines:** The FAA is committed to reducing aircraft noise through a “balanced approach” through the reduction of noise at its source (i.e., the aircraft); improved land use planning around airports; and, a wider use of aircraft operating procedures and restrictions that abate noise. Beginning in January 1, 2018, the FAA requires newly designed aircraft to be quieter which will help toward lowering noise around airports and surrounding communities. Called “Stage 5 Airplane Noise Standards,” this FAA rule ensures that the latest available noise reduction technology is incorporated into new aircraft designs. As a result, new airplane type designs in the subsonic jet airplanes and subsonic transport category large airplanes will operate at least 7 decibels (dBs) quieter than airplanes in the current fleet. The aim of the new standard is to harmonize the noise certification standards for U.S.-certified aircraft with those that are internationally certified. The U.S.-certified aircraft now in operation as well as the new aircraft type designs that were submitted prior to December

31, 2017 would not be affected by the new ruling. However, there are several aircraft with a maximum takeoff weight in excess of 121,254 pounds in production already meet the Stage 5 noise limits, including Airbus A380 and A350 family models and Boeing 747-8 and 787 family models.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 438 Submitted by: Smith, Lisa

**Comment Received:** On 6/3/2019 Lisa Smith lisa3paint@tds.net While I was outside working and trying to enjoy my animals I was under attack from the aircraft flying over my home, these flights are loud enough to interrupt my thinking process for over 1 1/2 hours of time with repeat fly overs. This harassment continues to occur almost daily, I live over 50 miles away from Downtown Denver and should not have to give up my quality of life for the city and county of Denver or the rest of the general public. I observed flights taking off to the east looping back straight west Why??? There is a west bound runway that should have taken these flights, according to your program to save money on fuel - well this is not occurring. Then the remainder of the flights took off from the east and headed south or south west. Please tell me how you are saving fuel??? If this is saving fuel then all incoming planes can head farther south toward Colorado Springs and then come north to land on the south and north bound runways. These flights were every minute to a minute and half. I could still hear the first plane before the next one is coming. Please tell how this is not harassment?? The definition of harassment according to Oxforddictionaries.com is "noun: harassment; plural noun: harassments 1. aggressive pressure or intimidation.synonyms: persecution, harrying, pestering, badgering, intimidation, bother, annoyance, aggravation, irritation, pressure, pressurization, force, coercion" and according to legal dictionary it is the following ". the act of systematic and/or continued unwanted and annoying actions of one party or a group" So please tell me how this is not occurring ??? I recently flew home and my plane from Detroit came over Tribune Kansas to land on the south bound north bound runway. On this flight we were approaching to land, the landing gear was down and then we had to climb and loop back around and try it again. According to the pilot there was crowding on the runway. So if this new system is to be safer than how can this happen??? and this is not the first time I have experienced this situation and I do not fly very often. The other location was at the Phoenix airport which according to you this system is up and running. So please tell me how this is better??? The FAA is just creating more issues with many people regarding this new and improve program. I also understand the FAA has a great amount of responsibility and pressure to ensure safety for all parties. But I don't feel you folks have done a very good job about this plan there seems to be a lack of common sense in these decisions. The logic of engineers only goes so far, there needs to be some consideration to just general common sense thinking. The FAA has failed to review the landscape of the flight paths, my home and community live in a bowl and the noise of these planes increase because the direction of energy is pushed down and stays in the bowl it does not disperse. The environmental team that did (if they did) any research would also know there are no trees or structures to help disperse the noise from the aircraft. I am also still waiting from the environmental impact for my area, since it is a requirement for any airport planning. The report I read from 1995 or so does not even cover my area, it is just a general statement of nothing. So as a government agency why is there not any recourse to DIA or the city and county of Denver for their violation of the required documents??? Next question: According to DIA they send reports to the FAA team regarding noise complaints they receive, but yet when I spoke with your team at the meetings no one new anything about these reports, so how can anyone trust what is said??? If the FAA team would review these complaints you would find the number of times I reached out to get answers to my questions and no one has bothered to explain. It is obvious that the FAA does not listen to the general public's concerns or needs from my point of view. If there is some report to prove me wrong please feel free to send it to me, I would love to read it. Next, the meetings the FAA sent up only catered to the people who live in the Denver Metro area. This team failed to setup meetings in the communities that see a great deal of air traffic, like Strasburg/Bennett area, or Keenesburg or Kiowa. Again this shows how the lack of research the FAA team has done to know who is being impacted. I still want to know who "God" is in the FAA?? Since this person has decided my quality of life has no value and my home is to be deemed a target of excessive harassment. I now longer can watch TV or read a book in quit. I also can no longer sleep due to the number of planes flying over my home at night. I would like to meet this person so they can see I am human and

not some number or statistic on a report. I am not unreasonable, but I deserve just as much respect as they do making decisions. Again, my name is Lisa Smith and you are destroying my life and my home no longer is pleasurable to live in. If this was your goal then this team has a good job!!!! I still want to know were I signed saying I agreed to the harassment??

### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Commercial Airlines Operations Costs
- Noise Modelling
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #438 Topics

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**Commercial Airlines Operations Costs:** The purpose of the proposed Project is to address the problem of inefficiency of the existing aircraft flight procedures in the Denver Metroplex airspace. While fuel savings and/or a reduction in operating costs for commercial airlines may be secondary benefits of implementing the proposed Denver Metroplex Project, it is not a part of the purpose and need for the Project.

**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA's required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and

aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and

general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 439 Submitted by: Smith, Lisa

**Comment Received:** Dear FAA, I just wanted to remind all parties that I have lived in my home for over 35 years. Long before DIA was built or consider, we had seen air traffic at a bare minimum about 3 to 4 flights a day. Over the last several years the FAA has been busing all east bound traffic further south to where this traffic travels just north of my home ( I can hear this noise) these flights can exceed 200 planes in days operations. Over the these years I have become a person who has no longer any joy in going home which should be my sanctuary, my property has no long usable, and I have lost a great deal of sleep due to the aircraft at night. My quality of life has reduce to a point of being miserable. I can hear these planes over my television and all the doors and windows are closed and when I am outside working in my yard I can hear these planes of tractors running, a weed eater running, and a lawn mower running. Please help me understand how this is not excessive harassing noise? Over the last several years your team has been sending planes going to Phoenix, Colorado Springs, Tucson, California, and Latin America directly over my home and the dB's exceed 70+ which affects my ability to sleep at night, enjoy outside activities, relaxing on my front porch in the evening after a long day of work which is noisy and the dB's in my place of employment exceeds 85 dB's. So I am well aware of noise levels due to my position in a manufacturing business. Your team over the past two to three years have been sending aircraft directly over my home from the southbound runways going to Florida, Georgia, and other airports in that area of the country. So I would like to know who in the Denver Metro area that has aircraft coming at them from 3 different directions? Now this does not include people who live in the direct path of any runway. If you are not aware I do NOT live in any direct path of a runway and should not be subject to this much noise or traffic. I also want to remind your team that we live in a bowl based on the land mass in our area. This increases the noise levels when planes fly over. So I would like to know who on your team has even drive the areas where your team sends planes? Because it is quite apparent that no one has stepped out of their car in these flight paths to hear the level of noise from these planes. Just to remind you once again we LIVE IN THE COUNTRY.

Many of us moved to the country to avoid being harassed by excessive noise from aircraft or city traffic. The fact that DIA is becoming more crowded or busier does not mean the communities that live in the country should pay the price of this growth. From my observations for the last few years and trying to look at this situation in an objective manner. I believe there are other solutions to this harassment. Since we are going on the assumption that the current aircraft is being traced with GPS and for whatever reason you are choosing not use the west and east bound runways for landing then why can't the following occur. Since your team is choosing to bring aircraft in from the south that all aircraft from the east swing farther south and come up from the Kansas & Oklahoma boarders and have them use the runways from the southern runways. All incoming from the northern part of the country including west coast use the north bound runways. This would require all traffic from the east to fly over the Denver area to loop around for the north bound runways. There is over 60 miles from the west side of the airport to the mountains and there is plenty of room for aircraft to pass one another and should handle the loop. This would open the aircraft leaving from the east bound runway going south or west to only loop out only 8 miles from airport and if the planes are coming up farther south there should be no interference with the climbing of the planes leaving the airport. But I still do not understand why the west bound runway cannot handle all south or west bound aircraft? Even with incoming planes looping north of the airport, as I stated there is over 60+ miles between the airport and the mountains for separation. The communities east of Denver (DIA) should not be held responsible for DIA's growth. The communities surrounding Denver should deal with the noise since the passengers are supporting these communities with their spending dollars. These communities do not see any sizable revenue from these travelers and should not be punished with the excessive noise! Regarding the surrounding airports like Greeley and Centennial these aircraft can't be taking up that much air space to come in and out of the respectable destinations. They are not handling large aircraft or the number of planes that DIA is handling on a daily bases so they should be able fly a bit lower than the

commercial aircraft. So regarding saving fuel costs - sorry to say this is false because of my observations and complaints to DIA regarding traffic brings question as to how this program is saving money. In close, please reach out to DIA and ask for all the complaints I have made over the past 2 years. I believe this is to be communicated to your department in Denver every quarter according to the DIA representative, but it is amazing that I have never heard anything from the FAA team in Denver. I believe the FAA needs to have a better community outreach programs to share information and receive information from the citizens of the community. Also I would like to know where I can continue complaints to the FAA since the link to the Ombudsmen is no longer working. As citizens that pay for your positions we have a right to share our concerns and comments to the proper people. Finally, I would love to be part of the solution to this issue and not just be some one who will continue to complain. In my current position I spend a great deal of time fixing problems and finding solutions. I have taken a lot of my anger out on people who I know have no way to fix this issue. But I would be willing to have discussions with your team to have a better understanding of the issues. I feel this program has benefits, but there are more issues than gains to the surrounding communities. I look forward to meeting or talking more with someone regarding this problem. A citizen concerned about my community and the mental health of all people. Lisa

#### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Commercial Airlines Operations Costs
- Noise Modelling
- Physical and Mental Health
- Suggestions to Change Air Traffic Patterns

#### FAA Response for Comment #439 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Commercial Airlines Operations Costs:** The purpose of the proposed Project is to address the problem of inefficiency of the existing aircraft flight procedures in the Denver Metroplex airspace. While fuel savings and/or a reduction in operating costs for commercial airlines may be secondary benefits of implementing the proposed Denver Metroplex Project, it is not a part of the purpose and need for the Project.

**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA's required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### **Comment# 440 Submitted by: Soledade, Carlos**

**Comment Received:** The current flight paths need to be dispersed to avoid concentrating flights over the town of Nederland and over Magnolia Rd (County Rd. 132). Often we will get flights every two minutes, one after the other in a clear line. My understanding is that flight paths were concentrated in 2013. As you consider new flight paths please disperse the air traffic and the impact more evenly throughout the region.

### **Topics Identified in the Comment**

- Frequency of Aircraft Overflights
- Suggestions to Change Air Traffic Patterns

### **FAA Response for Comment #440 Topics**

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will

continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 441 Submitted by: Sowders, Family

#### Comment Received: To Whom It May Concern:

On behalf of the people in my neighborhood and expanded neighborhoods that would be affected, as well as myself and my family, I respectfully request that you do NOT implement the proposed Denver Metroplex plan. The Environmental Assessment Draft is a manipulation of data created to calm public outcry as it reaches a conclusion that concurs with your agenda. The FAA offers false reassurances and promises it cannot keep. It is patently wrong, immoral, and totally unacceptable for you to spin the facts and the truth to people at your workshops in order for you to go ahead with your agenda.

In fact, the FAA has NO control over the number of flights that will fly over homes in and surrounding my area as months and years go on. With DIA expanding the present number of gates by nearly 40 more, air traffic will dramatically increase. The pattern proposed concentrates those planes into a path assuring constant noise and air pollution over our homes.

We live in the areas we chose because we wanted to insure a peaceful, quiet environment. There was no reason to believe the atmosphere would change. Our health ... physical, mental, and financial will be jeopardized if your plan goes through. We will be inundated by constant noise ... as much as every minute of every day all day and night, interrupting conversations and sleep. The negative impact on our lives would be immeasurable.

Citizens have long been aware of the deleterious effects of excess noise on the ground, so we have laws to maintain peace and quiet. It is illegal to make too much noise in our homes or on the road. We get ticketed and fined for that. Nonstop airplane noise overhead will be much worse than occasional loud music or malfunctioning car mufflers on the ground. It is blatantly unethical for you to impose this nightmare upon the people living in the flight paths you are proposing. The lives of citizens need to be the priority over any corporate profits.

Would you personally accept the 24/7, thunderous noise and pollution over your homes? Studies have shown the stress caused by this kind of noise causes physical and mental ill health. You are not considering the very real terrible consequences to our neighborhoods of the proposed change in flight patterns.

DO NOT GO FORWARD with the Denver Metroplex NextGen plan. It should not have to take thousands of objections to stop this unacceptable plan. It should only take common decency and an application of the Golden Rule NOT to impose this onto people.

#### Topics Identified in the Comment

- Air Quality/Air Pollution
- Frequency of Aircraft Overflights
- NEPA and FAA Order 1050.1F
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

#### FAA Response for Comment #441 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the

atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA’s de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was

prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed

Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### **Comment# 442 Submitted by: Spicer, Lori**

**Comment Received:** There has recently been much more large plane noise than in the past. I can tell when it is a smaller plane but the huge jets are sooo loud that we cannot hold a conversation outside while they pass. We've been in The Timbers for almost 4 years and it's so bad now that we have discussed moving.

### **Topics Identified in the Comment**

- Existing Aircraft Noise

### **FAA Response for Comment #442 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

## Comments-Responses

### Comment# 443 Submitted by: Spiering, Kimberly

**Comment Received:** "I am a homeowner with young children and on behalf of the people in my neighborhood and expanded neighborhoods that would be affected as well as myself and my family I respectfully request that you do NOT implement your proposed Denver Metroplex plan. The Environmental Assessment Draft is a manipulation of data created to calm public outcry as it reaches a conclusion that concurs with your agenda. The FAA offers false reassurances and promises it cannot keep. It is patently wrong immoral and totally unacceptable for you to spin the facts and the truth to people at your workshops in order for you to go ahead with your agenda. In fact the FAA has NO control over the number of flights that will fly over homes in and surrounding my area as months and years go on. With DIA expanding the present number of gates by nearly 40 more air traffic will dramatically increase. The pattern proposed concentrates those planes into a path assuring constant noise and air pollution over our homes. We live in the areas we chose because we wanted to insure a peaceful quiet environment. There was no reason to believe the atmosphere would change. Our health...physical mental and financial will be jeopardized if your plan goes through. We will be inundated by constant noise...as much as every minute of every day all day and night interrupting conversations and sleep. The negative impact on our lives would be immeasurable. Citizens have long been aware of the deleterious effects of excess noise on the ground so we have laws to maintain peace and quiet. It is illegal to make too much noise in our homes or on the road. We get ticketed and fined for that. Nonstop airplane noise overhead will be much worse than occasional loud music or malfunctioning car mufflers on the ground. It is blatantly unethical for you to impose this nightmare upon the people living in the flight paths you are proposing. The lives of citizens need to be the priority over any corporate profits. Would you personally accept the 24/7 thunderous noise and pollution over your homes? Studies have shown the stress caused by this kind of noise causes physical and mental ill health. You are not considering the very real terrible consequences to our neighborhoods of the proposed change in flight patterns. DO NOT GO FORWARD with the Denver Metroplex NextGen plan. You are opening a Pandora's Box of noise and pollution that will also drastically lower the value of our homes. It should not have to take thousands of objections to stop this unconscionable plan. It should only take common decency and an application of the Golden Rule NOT to foist this onto people."

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Frequency of Aircraft Overflights
- NEPA and FAA Order 1050.1F
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #443 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the

National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA’s de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91-53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories

analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 444 Submitted by: Sprague, Holly

**Comment Received:** We just moved to the Devil's Thumb neighborhood and for such a peaceful beautiful Boulder area the neighbors are distraught over the sound of the planes flying overhead constantly. It is very loud and alarming when you hear them go by. It stops you in your tracks just as you were listening to the birds chirp and being so grateful for living on the foothills of the Rockies. Is there a reason why it can't move back to Rocky Flats? Why would they move it over Boulder's nicest neighborhood? It doesn't make any sense to me.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #444 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport

303-271-4850

<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### **Comment# 445 Submitted by: Stalker, Terry**

**Comment Received:** I strongly oppose the rerouting of Denver Metroplex air traffic with its associated noise pollution over densely populated urban areas in Littleton.

### **Topics Identified in the Comment**

- Projected Changes in Aircraft Noise Exposure

### **FAA Response for Comment #445 Topics**

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 446 Submitted by: Stallworthy, Doug

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and-universities-have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems. The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #446 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 447 Submitted by: Stallworthy, Kay

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems.

The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #447 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### **Comment# 448 Submitted by: Stephans, Jeff**

**Comment Received:** I live in South Boulder and have been negatively impacted by the planes flying overhead. The frequency and level of noise is disruptive to the entire community. Please implement the Complete ZIMMR Noise Solution. Thank you for your consideration.

### **Topics Identified in the Comment**

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- ZIMMR SID

### **FAA Response for Comment #448 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 449 Submitted by: Stewart, Russell

**Comment Received:** "First Comment: The Draft EA does not have a complete list of 4(f) sites especially those listed on the National Register of Historic Places. For example two sites on the National Historic Register of Historic Places in Cherry Hills Village: Buell Mansion. 1 Buell Mansion Parkway Cherry Hills Village CO 80113 Quincy Farm 4400 East Quincy Avenue Cherry Hills Village CO 80113. This 17.5 acre property has development restrictions and has been expressly dedicated to the Village for preservation as a natural area prohibiting all noise producing activities. Second Comment: I currently serve as Mayor of Cherry Hills Village and have lived in the area my entire life. Cherry Hills Village has worked hard for more than 70 years to preserve a safe low-density quiet residential oasis. The Village boasts many historic properties and many natural public parks whose quiet and tranquility is shared and cherished by all Denver residents. The FAA's noise modeling promises that adoption of the Preferred Alternative will decrease aircraft noise levels throughout Cherry Hills Village. Relying on these representations I welcome the Preferred Alternative implementation if and only if we have an express assurance from the FAA in the final Environmental Assessment that if the modeling is wrong and noise levels in Cherry Hills Village increase (for any reason) after the route changes the FAA will re-implement the No Action Alternative and conduct a full Environmental Impact Study evaluating the noise effect on all public properties and historic parks in our community. Thank You Russell Stewart Mayor Cherry Hills Village"

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Historical and Cultural Resources
- Level of NEPA Review
- NEPA and FAA Order 1050.1F
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #449 Topics

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise

modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise

exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### **Comment# 450 Submitted by: Stoutenberg, Stacy**

**Comment Received:** I am writing to ask that the FAA please, please, please reroute the airplanes that fly over our neighborhood. We live in The Reserve neighborhood which is located off Cherryvale between Arapahoe and Baseline in Southeast Boulder.

Over the years, the airplane noise overhead has become unbearable. All times during the day, and even laying in bed at night, with our windows closed, I can hear airplanes' engine noise and it is very disturbing. We bought our home in Boulder -in a quiet neighborhood because we love the peace and quiet. Nowadays, I can't even enjoy sitting in our backyard because of the abundance of planes flying overhead and their noise interrupting my thoughts and or conversations with our family. It used to never be this way. Please reroute the planes so that we can eliminate the noise pollution that has been created within recent years and have our ability to enjoy our natural surroundings in solitude again. Thank you in advance for your consideration.

### **Topics Identified in the Comment**

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### **FAA Response for Comment #450 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 451 Submitted by: Stroud, Gayla

**Comment Received:** "My family is deeply disturbed by the increase in air traffic over Nederland. When we are outside our home we are hearing or seeing a jet fly over every 5 to 10 minutes. It is causing distress. This is so obvious that the flight patterns have changed. I fear this is one more impact to the value of our property in the mountains. We moved here over 30 years ago for the peace and quiet. It has turned into city life however we did not buy next to an airport. Please consider the impact on the wildlife in the area as well. Please withhold my personal information. You may use my first name."

### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Projected Changes in Aircraft Noise Exposure
- Property Values
- Purpose and Need of Project
- Withhold Personal Identifying Information

### FAA Response for Comment #451 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850

<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Property Values:** The proposed Denver Metroplex Project involves air traffic control routing changes for airborne aircraft only; and does not involve land acquisition, physical disturbance, or construction activities. The determination of whether a proposed action may have a significant environmental impact under the National Environmental Policy ACT (NEPA) is made by considering the relevant environmental impact categories and comparing impact to the FAA's thresholds of significance as outlined in FAA Order 1050.1F. The assessment of property values is not an environmental impact category as outlined in FAA Order 1050.1F. To the extent applicable, and as there are no significant impacts under noise or compatible land use, the proposed Denver Metroplex Project is compatible with existing and planned land uses, and the applicable regulations and policies of federal, state, and local agencies. A limited number of studies have attempted to measure the impact of aircraft noise on property values. Specific studies of the impact of noise at the Study Airports on real property values have not been conducted and are not required. Studies conducted at other national airports have concluded that airport noise only has a slight impact on property values within the Day Night Average Sound Level 65 decibels or greater noise contour around airports. Additionally, comparison of older studies to more recent studies indicates that the impact was greater in the 1960s, when jet aircraft first entered the fleet. This decrease presumably is the result of stabilization of real estate markets following an initial adjustment to noisier jets, and of noise reduction in more modern Stage 3 or better aircraft.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC

procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Withhold Personal Identifying Information:** Commenters were made aware of the following statement with their comment submission - "Please be aware that your name, address, phone number, email address, or other personal identifying information in your comment may be made publicly available at any time. You may include in your comment a request to withhold your personal identifying information, however we cannot guarantee that we will be able to do so".

## Comments-Responses

### Comment# 452 Submitted by: Sturgeon, Matt

#### Comment Received: To Whom It May Concern:

The City of Centennial appreciates the opportunity to review and comment on the FAA Denver Metroplex Draft Environmental Assessment (the "Draft EA"). The City previously offered comment during the preliminary design phase and attended workshops and other meetings conducted by the FAA between 2017 and now. Below are the City's comments on the Draft EA:

1. The Draft EA fails to consider other reasonably foreseeable future actions that could result in significant cumulative impacts as required under CEQ regulations and FAA Order 1050.1F. CEQ regulations define a cumulative impact as "an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." The regulations also state that cumulative impacts can result from individually minor, but collectively significant actions that take place over a period of time.

Section 5.10.2 of the Draft EA says "the type of projects that would be considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. 'Reasonably foreseeable future actions' refers to projects that would likely be completed before 2024.

The Draft EA failed to include projected increases in air traffic from Denver International Airport (DIA) resulting from the currently underway airport expansion, which includes a new runway. This "reasonably foreseeable future action" is projected to increase DIA air traffic by 70-100 percent by 2035, which is not accounted for in the cumulative impact analysis.

2. The Draft EA ignores the directives contained in the FAA Reauthorization Act of 2018.

The Reauthorization Act mandates the FAA to produce a report on community involvement in FAA NextGen projects located in metroplexes and a study on potential health and economic impacts of overflight noise, more particularly:

- Section 173. Alternative Airplane Noise Metric Evaluation Study.
- Section 176. Community Involvement In FAA NextGen Projects Located In Metroplexes.
- Section 187. Aircraft Noise Exposure.
- Section 188. Study Regarding the Day-Night Average Sound Levels.
- Section 189. Study on Potential Health and Economic Impacts of Overflight Noise.

The Draft EA was released without any consideration of the outcomes of these studies and therefore communities within the study area will fail to benefit from any advancement in the resulting best practices or techniques. The City requests that the FAA consider completing the studies mandated by Congress pursuant to the FAA Reauthorization Act of 2018 before it issues a determination regarding the Draft EA and that the findings of these studies be incorporated in an Environmental Impact Study (EIS).

3. There are significant flaws with the maps contained in the Draft EA so that the document alone does not provide sufficient information to conclude whether there are any impacts on the City of Centennial. Exhibits 3-7 through 3-9 are supposed to show the arrival and departure flows to the Study Airports associated with the No Action, and Exhibits 3-10 through 3-12 are supposed to show arrival departure flows to the Study Airports with the Proposed Action; however, these exhibits provide no means by which the Proposed Action can be directly compared to the No Action. Exhibits 3-10 and 3-11 are of such a scale that there is a near complete obfuscation of what any changes would mean at a local or sub-regional level. It is impossible to tell by looking at the exhibits if there is indeed a change in the flight paths over Centennial, and if so, how much of a change. A change in flight paths could potentially have impacts on Centennial's Airport Influence Area, Restricted Development Area, and DNL contours.

Further, the Draft EA insufficiently maps the grid points for the noise modeling. The Draft EA provides limited mapping for those census block centroids with a change in potential population

exposed to aircraft noise. There is no other mapping to suggest how noise exposure may change across the study area, including how Centennial residents may experience a change in aircraft overflights and noise exposure as a result of any new procedures.

4. There was a delayed release of crucial supplemental material that was needed to determine the extent of impacts on the City of Centennial.

The project boards and materials presented at the public workshops, as well as the Google Earth files containing the Draft EA procedures and grid points for the noise modeling, were not released concurrently with the Draft EA on April 22, 2019. While identified as "supplemental materials", the Google Earth files are critical to any understanding of the proposed action SIDs and STARs, and more specifically, any direct impacts to Centennial as flights are vectored to Centennial Airport. The Google Earth files cannot be readily accessed due to file size. The Metroplex Environmental project website notes that "due to size, the files may take up to five minutes to load into Google Earth." Even then, the files are difficult to manipulate to assess local or sub-regional impacts.

The Centennial City Council met to discuss the Draft EA on May 6, 2019. Due to the delayed release of the project boards, materials, and Google Earth files, Council could not fully consider this material in their initial discussion on the Draft EA. After significant efforts from the City's GIS staff, the City was able to extract the PUFFR, BRNKO and DUNNN routes from the Google Earth files and present those to City Council during its next regularly scheduled meeting on May 20, 2019.

5. The public comment period, did not give sufficient time for the City to thoroughly review the Draft EA and supplemental material to determine the extent of impacts on the City of Centennial.

Section 2-5.3.b of FAA Order 1050.IF says, "If the FM conducts a public meeting or hearing for the purpose of obtaining public comment on a draft EIS or EA, the FAA should ensure that the draft document is available for public review at least 30 days before the event occurs." The first public workshop conducted by the FAA was scheduled only eight days after the Draft EA was released - a clear violation of FAA Order 1050.IF.

Section 2-6 also states, "FAA NEPA documentation should be written in plain language and use appropriate graphics so that decision makers and the public can readily understand them." This rule was also violated based on City comments #3 and 4 above. Section 6-2.2.g states that there is no set time limit on public comment periods for EAs. The City believes that a public comment period of 45 days is not appropriate because of these rule violations.

The delayed release of crucial material and the constrained public comment period has resulted in a disjointed and incomplete review that is predicated on both the City's interpretation of data it extracted from the Google Earth files and responses provided by FAA staff at the public workshops. The City remains concerned that the BRNKO route may introduce aircraft overflights in neighborhoods that have not previously experienced aircraft noise and that there may be unforeseen impacts.

The FAA did not make a more concerted effort to coordinate with the City of Centennial during the development of the Draft EA or during the public comment period.

The City of Centennial is the closest incorporated community to the Centennial Airport and is directly impacted by aircraft overflights. There has been no outreach to the City and no direct effort made by the FAA to coordinate with or communicate to the City of Centennial, even after the release of the Draft EA. The City relied on information made available on the Metroplex Environmental project website and provided through public workshops to conduct its review of the Draft EA, but as a directly affected party, believes that individualized consultation would have been warranted.

In its comment letter during the preliminary design phase, the City commented that it "encourages the FAA to coordinate with local communities on the development of the draft environmental assessment, the standards for determining significant impacts, the manner in which changes to low altitude routes will be addressed in the study, and any specific findings from the draft environmental assessment that may impact the Centennial community." The City is disappointed that we received no response to our June 2017 comment letter, and that there was no coordination with us or other local governments on any part of the Draft EA.

Thank you again for the opportunity to review the Draft EA, and we look forward to a response to our comments.

### Topics Identified in the Comment

- BRNKO STAR
- Comment Period
- Cumulative Impacts
- Draft EA Exhibits
- FAA Reauthorization Act of 2018
- Forecast/Future Operations
- Google Earth Files
- Noise Modelling
- Notification and Agency Coordination
- Public Outreach/Public Involvement
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #452 Topics

**BRNKO STAR:** The workload for managing air traffic on the existing PUFFR (RNAV) STAR flight procedure is intensive for air traffic controllers as it requires them to maintain separation between aircraft arrivals at Centennial Airport and aircraft arrivals and departures at Denver International Airport. The workload intensity has been identified as a potential safety risk, notably during periods of heavy air traffic operations in the Denver area airspace. The FAA is proposing to replace the existing PUFFR (RNAV) STAR with the proposed BRNKO (RNAV) STAR to enhance safety and efficiency for air traffic flow from the north arriving to Centennial Airport. The BRNKO (RNAV) STAR was developed in collaboration with the user groups including National Business Aviation Association and the Colorado Aviation Business Association to meet all safety and efficiency requirements. Additionally, the proposed PINNR (RNAV) STAR was developed to accommodate arrivals from the north.

**Comment Period:** The commenter expressed concerns regarding the length of the public comment period. The FAA is committed to involving the public in the environmental review process as required by the National Environmental Policy Act (NEPA) and FAA regulations, policies and procedures. In determining the length of the comment period, the FAA considered the type of proposed action, the potential for impacts, and community controversy. The FAA engaged in extensive public involvement for the proposed Denver Metroplex Project Draft Environmental Assessment (EA), providing many opportunities for the public to review and comment on the proposed Project. On April 22, 2019, the FAA released a Draft EA for a 45-day public review and comment period. The comment period closed on June 6, 2019. In addition to accepting written comments, the FAA hosted twelve (12) public workshops between April 29 and May 16th in the cities of Boulder, Erie, Broomfield, Aurora, Parker, Centennial, Greenwood Village, Littleton, Longmont, Denver, Brighton, and in Denver again. FAA representatives were available at each public workshop to help interested attendees better understand the Project. After the conclusion of the public review period for the Draft EA, the FAA reviewed all comments from the public as well as feedback from airports, agencies, and elected representatives related to proposed procedure designs. Comments were correlated with the applicable proposed procedures, and analysis was conducted to determine whether community concerns could be addressed through minor design modifications while still meeting the purpose and need of the Project.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative

impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**Draft EA Exhibits:** The commenter has raised a number of issues regarding Exhibits 3-7 through 3-12 in Chapter 3 of the Draft EA. First, the commenter should note that no special knowledge of the Adobe Acrobat program is needed to review Exhibits 3-7 through 3-12. Clear, easy-to-read instructions on how to use the various features made available in the exhibits are presented in an instruction layer in the left hand side of the exhibits. Second, because of the size of the General Study Area and the likelihood that the reader may only be interested in procedures serving one or two airports, the various arrival and departure procedures included in the No Action Alternative (Exhibit 3-7 through 3-9) and the Proposed Action (Exhibit 3-10 through 3-12) are grouped by the Air Traffic Control procedure type (conventional or Area Navigation), operation (arrival or departure), and airport. This allows the reader to easily focus on his or her own area of interest and turn on or off only those flight corridors they are interested in. Similarly, other map features, such as airport icons, federal and state park properties, and highways, can be turned on or off to allow the user to select and view the details he or she is interested in. Finally, the information shown in Exhibits 3-7 through 3-12 has also been made available in the Google Earth format located at:

[http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html)

**FAA Reauthorization Act of 2018:** The FAA Reauthorization Act of 2018 specifies congressionally mandated directives for which the FAA is responsible for completing at varied timelines. In accordance with the congressionally mandated directives, the FAA will comply and adhere to the timelines. While the requested directives are being completed, the U.S. Congress did not place a moratorium on implementation of the proposed Denver Metroplex Project, or any Metroplex project.

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**Google Earth Files:** The FAA released information on the proposed Denver Metroplex Project in Google Earth format. This information is provided to allow the public to better understand the proposed procedures and the results of the noise analysis. These files can be downloaded from the project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

The information provided in Google Earth format includes the following:

- The flight corridors for the No Action Alternative and the Proposed Action depicted in the exhibits in Chapter 3 of the Draft Environmental Assessment (EA)
- The AEDT model flight tracks used to complete the noise analysis prepared for the Final EA and to develop the flight corridors depicted in exhibits in Chapter 3 of the Draft EA
- The procedure route designs including waypoints
- The results of the noise analysis for each grid point modeled under each scenario [i.e., Existing Conditions, No Action Alternative (2019 and 2024), and Proposed Action (2019 and 2024)]. As discussed in Section 5.1.2, three groups of points were modeled: 2010 Census block centroids, grid points at 0.5-nautical mile intervals located on a uniform grid that covers the entire General Study Area, and unique points representing Section 4(f) resources and historic sites listed on the National Register of Historic Places.

Because of the size of the data presented, the files that present the flight corridors, flight tracks, and procedure routes are broken up by area: Centennial Airport (APA) only, Denver International Airport (DEN) only – East, DEN only – Northeast, DEN only – Northwest, DEN only Southeast, DEN only – Southwest, DEN only – West and non-APA Airport Satellites. More information on the noise analysis process, including development of the AEDT model flight tracks can be found in the Denver Metroplex Noise Technical Report, available at

[http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html). The Google Earth application can be downloaded from <https://www.google.com/earth/>. Information on how to use Google Earth, including tutorials, is provided at <https://www.google.com/earth/learn/>. Please note that due to file size and depending the internet connection speed, the files may take some time to download into Google Earth.

**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA's required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Notification and Agency Coordination:** On May 6, 2016, the FAA distributed a letter containing the notice of intent to prepare an Environmental Assessment (EA) for the proposed Denver Metroplex Project to 395 federal, state, regional, and local officials. The FAA sent the early notification letter to:

1. Advise agencies of the initiation of the EA study;
2. Request background information about the study area established for the EA; and
3. Provide an opportunity to advise the FAA of any issues, concerns, policies or regulations that may affect the environmental analysis that the FAA will undertake in the EA. On May 8, 2016, a notice of intent to prepare an EA was published in the Denver Post. Eleven comments were received in response to the notice of intent and were considered in preparation of the Draft EA. These comments are contained in Appendix A: Agency Coordination, Community Involvement, and List of Receiving Parties. On April 8, 2019 the FAA initiated Section 106 consultation with the Colorado SHPO office. There are no federally recognized tribes in the General Study Area, however, the Colorado State Historic Preservation Officer (SHPO) maintains a listing of tribes with a potential historic or cultural interest in the State of Colorado, of which the General Study Area environs are a subset. Because of this potential historic interest, the FAA initiated government to government consultation on April 9, 2019 with 99 parties listed by the Colorado SHPO. Appendix A, Agency Coordination, Community Involvement, and List of Receiving Parties, includes a copy of the notice of intent letter (and attachments), affidavits of newspaper publication, as well as a list of the receiving agencies.

**Public Outreach/Public Involvement:** The views and input of communities are important to the FAA as the Agency takes the next steps to advance the NAS. Since 2016, the FAA has engaged individual communities through holding public workshops in the Denver metropolitan area to explore possible solutions to their concerns while ensuring the safety and efficiency of the National Airspace System. Twelve public workshops across the Denver metropolitan area were held in 2017, and again recently in April and May 2019. The public workshop locations, dates and time were publicized in the Denver Post, posted on the FAA Community Involvement website, and the Denver Metroplex Project website, in addition to being publicized through social media and local press releases. Comments received from the 2017 and 2019 public workshops were considered when designing the proposed flight procedures for the Denver Metroplex Project.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level

(DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 453 Submitted by: Sturgeon, Matt

**Comment Received:** part 1 1. The Draft EA fails to consider other reasonably foreseeable future actions that could result in significant cumulative impacts as required under CEQ regulations and FAA Order 1050.1F. CEQ regulations define a cumulative impact as “an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” The regulations also state that cumulative impacts can result from individually minor, but collectively significant actions that take place over a period of time. Section 5.10.2 of the Draft EA says “the type of projects that would be considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. ‘Reasonably foreseeable future actions’ refers to projects that would likely be completed before 2024. The Draft EA failed to include projected increases in air traffic from Denver International Airport (DIA) resulting from the currently underway airport expansion, which includes a new runway. This “reasonably foreseeable future action” is projected to increase DIA air traffic by 70-100 percent by 2035, which is not accounted for in the cumulative impact analysis.

### Topics Identified in the Comment

- Cumulative Impacts
- Forecast/Future Operations

### FAA Response for Comment #453 Topics

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**Comments-Responses****Comment# 454 Submitted by: Sturgeon, Matt**

**Comment Received:** part 2 2. The Draft EA ignores the directives contained in the FAA Reauthorization Act of 2018. The Reauthorization Act mandates the FAA to produce a report on community involvement in FAA NextGen projects located in metroplexes and a study on potential health and economic impacts of overflight noise, more particularly Sections 173, 176, 187, 188, and 189. The Draft EA was released without any consideration of the outcomes of these studies and therefore communities within the study area will fail to benefit from any advancement in the resulting best practices or techniques. The City requests that the FAA consider completing the studies mandated by Congress pursuant to the FAA Reauthorization Act of 2018 before it issues a determination regarding the Draft EA and that the findings of these studies be incorporated in an Environmental Impact Study (EIS).

**Topics Identified in the Comment**

- FAA Reauthorization Act of 2018

**FAA Response for Comment #454 Topics**

**FAA Reauthorization Act of 2018:** The FAA Reauthorization Act of 2018 specifies congressionally mandated directives for which the FAA is responsible for completing at varied timelines. In accordance with the congressionally mandated directives, the FAA will comply and adhere to the timelines. While the requested directives are being completed, the U.S. Congress did not place a moratorium on implementation of the proposed Denver Metroplex Project, or any Metroplex project.

## Comments-Responses

### Comment# 455 Submitted by: Sturgeon, Matt

**Comment Received:** Part 3 There are significant flaws with the maps contained in the Draft EA so that the document alone does not provide sufficient information to conclude whether there are any impacts on the City of Centennial. Exhibits 3-7 through 3-9 are supposed to show the arrival and departure flows to the Study Airports associated with the No Action, and Exhibits 3-10 through 3-12 are supposed to show arrival departure flows to the Study Airports with the Proposed Action; however, these exhibits provide no means by which the Proposed Action can be directly compared to the No Action. Exhibits 3-10 and 3-11 are of such a scale that there is a near complete obfuscation of what any changes would mean at a local or sub-regional level. It is impossible to tell by looking at the exhibits if there is indeed a change in the flight paths over Centennial, and if so, how much of a change. A change in flight paths could potentially have impacts on Centennial's Airport Influence Area, Restricted Development Area, and DNL contours. Further, the Draft EA insufficiently maps the grid points for the noise modeling. The Draft EA provides limited mapping for those census block centroids with a change in potential population exposed to aircraft noise. There is no other mapping to suggest how noise exposure may change across the study area, including how Centennial residents may experience a change in aircraft overflights and noise exposure as a result of any new procedures.

### Topics Identified in the Comment

- Draft EA Exhibits
- Noise Modelling
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #455 Topics

**Draft EA Exhibits:** The commenter has raised a number of issues regarding Exhibits 3-7 through 3-12 in Chapter 3 of the Draft EA. First, the commenter should note that no special knowledge of the Adobe Acrobat program is needed to review Exhibits 3-7 through 3-12. Clear, easy-to-read instructions on how to use the various features made available in the exhibits are presented in an instruction layer in the left hand side of the exhibits. Second, because of the size of the General Study Area and the likelihood that the reader may only be interested in procedures serving one or two airports, the various arrival and departure procedures included in the No Action Alternative (Exhibit 3-7 through 3-9) and the Proposed Action (Exhibit 3-10 through 3-12) are grouped by the Air Traffic Control procedure type (conventional or Area Navigation), operation (arrival or departure), and airport. This allows the reader to easily focus on his or her own area of interest and turn on or off only those flight corridors they are interested in. Similarly, other map features, such as airport icons, federal and state park properties, and highways, can be turned on or off to allow the user to select and view the details he or she is interested in. Finally, the information shown in Exhibits 3-7 through 3-12 has also been made available in the Google Earth format located at:

[http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html)

**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA's required noise model. The FAA

uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 456 Submitted by: Sturgeon, Matt

**Comment Received:** part 4 There was a delayed release of crucial supplemental material that was needed to determine the extent of impacts on the City of Centennial. The project boards and materials presented at the public workshops, as well as the Google Earth files containing the Draft EA procedures and grid points for the noise modeling, were not released concurrently with the Draft EA on April 22, 2019. While identified as “supplemental materials”, the Google Earth files are critical to any understanding of the proposed action SIDs and STARs, and more specifically, any direct impacts to Centennial as flights are vectored to Centennial Airport. The Google Earth files cannot be readily accessed due to file size. The Metroplex Environmental project website notes that “due to size, the files may take up to five minutes to load into Google Earth.” Even then, the files are difficult to manipulate to assess local or sub-regional impacts. The Centennial City Council met to discuss the Draft EA on May 6, 2019. Due to the delayed release of the project boards, materials, and Google Earth files, Council could not fully consider this material in their initial discussion on the Draft EA. After significant efforts from the City’s GIS staff, the City was able to extract the PUFFR, BRNKO and DUNNN routes from the Google Earth files and present those to City Council during its next regularly scheduled meeting on May 20, 2019.

### Topics Identified in the Comment

- Google Earth Files

### FAA Response for Comment #456 Topics

**Google Earth Files:** The FAA released information on the proposed Denver Metroplex Project in Google Earth format. This information is provided to allow the public to better understand the proposed procedures and the results of the noise analysis. These files can be downloaded from the project website at

[http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

The information provided in Google Earth format includes the following:

- The flight corridors for the No Action Alternative and the Proposed Action depicted in the exhibits in Chapter 3 of the Draft Environmental Assessment (EA)
- The AEDT model flight tracks used to complete the noise analysis prepared for the Final EA and to develop the flight corridors depicted in exhibits in Chapter 3 of the Draft EA
- The procedure route designs including waypoints
- The results of the noise analysis for each grid point modeled under each scenario [i.e., Existing Conditions, No Action Alternative (2019 and 2024), and Proposed Action (2019 and 2024)]. As discussed in Section 5.1.2, three groups of points were modeled: 2010 Census block centroids, grid points at 0.5-nautical mile intervals located on a uniform grid that covers the entire General Study Area, and unique points representing Section 4(f) resources and historic sites listed on the National Register of Historic Places.

Because of the size of the data presented, the files that present the flight corridors, flight tracks, and procedure routes are broken up by area: Centennial Airport (APA) only, Denver International Airport (DEN) only – East, DEN only – Northeast, DEN only – Northwest, DEN only Southeast, DEN only – Southwest, DEN only – West and non-APA Airport Satellites. More information on the noise analysis process, including development of the AEDT model flight tracks can be found in the Denver Metroplex

Noise Technical Report, available at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html). The Google Earth application can be downloaded from <https://www.google.com/earth/>. Information on how to use Google Earth, including tutorials, is provided at <https://www.google.com/earth/learn/>. Please note that due to file size and depending the internet connection speed, the files may take some time to download into Google Earth.

## Comments-Responses

### Comment# 457 Submitted by: Sturgeon, Matt

**Comment Received:** Part 5 The public comment period did not give sufficient time for the City to thoroughly review the Draft EA and supplemental material to determine the extent of impacts on the City of Centennial. Section 2-5.3.b of FAA Order 1050.1F says, “If the FAA conducts a public meeting or hearing for the purpose of obtaining public comment on a draft EIS or EA, the FAA should ensure that the draft document is available for public review at least 30 days before the event occurs.” The first public workshop conducted by the FAA was scheduled only eight days after the Draft EA was released – a clear violation of FAA Order 1050.1F. Section 2-6 also states, “FAA NEPA documentation should be written in plain language and use appropriate graphics so that decision makers and the public can readily understand them.” This rule was also violated based on City comments #3 and 4 above. Section 6-2.2.g states that there is no set time limit on public comment periods for EAs. The City believes that a public comment period of 45 days is not appropriate because of these rule violations. The delayed release of crucial material and the constrained public comment period has resulted in a disjointed and incomplete review that is predicated on both the City’s interpretation of data it extracted from the Google Earth files and responses provided by FAA staff at the public workshops. The City remains concerned that the BRNKO route may introduce aircraft overflights in neighborhoods that have not previously experienced aircraft noise and that there may be unforeseen impacts.

### Topics Identified in the Comment

- BRNKO STAR
- Public Outreach/Public Involvement
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #457 Topics

**BRNKO STAR:** The workload for managing air traffic on the existing PUFFR (RNAV) STAR flight procedure is intensive for air traffic controllers as it requires them to maintain separation between aircraft arrivals at Centennial Airport and aircraft arrivals and departures at Denver International Airport. The workload intensity has been identified as a potential safety risk, notably during periods of heavy air traffic operations in the Denver area airspace. The FAA is proposing to replace the existing PUFFR (RNAV) STAR with the proposed BRNKO (RNAV) STAR to enhance safety and efficiency for air traffic flow from the north arriving to Centennial Airport. The BRNKO (RNAV) STAR was developed in collaboration with the user groups including National Business Aviation Association and the Colorado Aviation Business Association to meet all safety and efficiency requirements. Additionally, the proposed PINNR (RNAV) STAR was developed to accommodate arrivals from the north.

**Public Outreach/Public Involvement:** The views and input of communities are important to the FAA as the Agency takes the next steps to advance the NAS. Since 2016, the FAA has engaged individual communities through holding public workshops in the Denver metropolitan area to explore possible solutions to their concerns while ensuring the safety and efficiency of the National Airspace System. Twelve public workshops across the Denver metropolitan area were held in 2017, and again recently in April and May 2019. The public workshop locations, dates and time were publicized in the Denver Post, posted on the FAA Community Involvement website, and the Denver Metroplex Project website, in addition to being publicized through social media and local press releases. Comments received from

the 2017 and 2019 public workshops were considered when designing the proposed flight procedures for the Denver Metroplex Project.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### **Comment# 458 Submitted by: Sturgeon, Matt**

**Comment Received:** Part 6 The FAA did not make a more concerted effort to coordinate with the City of Centennial during the development of the Draft EA or during the public comment period. The City of Centennial is the closest incorporated community to the Centennial Airport and is directly impacted by aircraft overflights. There has been no outreach to the City and no direct effort made by the FAA to coordinate with or communicate to the City of Centennial, even after the release of the Draft EA. The City relied on information made available on the Metroplex Environmental project website and provided through public workshops to conduct its review of the Draft EA, but as a directly affected party, believes that individualized consultation would have been warranted.

### **Topics Identified in the Comment**

- Public Outreach/Public Involvement

### **FAA Response for Comment #458 Topics**

**Public Outreach/Public Involvement:** The views and input of communities are important to the FAA as the Agency takes the next steps to advance the NAS. Since 2016, the FAA has engaged individual communities through holding public workshops in the Denver metropolitan area to explore possible solutions to their concerns while ensuring the safety and efficiency of the National Airspace System. Twelve public workshops across the Denver metropolitan area were held in 2017, and again recently in April and May 2019. The public workshop locations, dates and time were publicized in the Denver Post, posted on the FAA Community Involvement website, and the Denver Metroplex Project website, in addition to being publicized through social media and local press releases. Comments received from the 2017 and 2019 public workshops were considered when designing the proposed flight procedures for the Denver Metroplex Project.

## Comments-Responses

### Comment# 459 Submitted by: Suhaka, Andrea

**Comment Received:** I will submit more comments but, this is off the top of my head. It's obvious your sole purpose is to put more planes into DIA but, you haven't considered their proposed new runways (much more air traffic density). Has environmental justice even been considered, seems you've only given it lip service. A higher density of planes in a tighter corridor means unbelievably more noise. The poorer housing doesn't have the option of air conditioning or new windows. Why wasn't the formal Federal NEPA process followed. This is what Congress mandates, not just the FAA rules. This process has been rushed! With only a few short days between the end of comments & closing the comment period. Other areas have had more time!!!

### Topics Identified in the Comment

- Cumulative Impacts
- Environmental Justice
- NEPA and FAA Order 1050.1F
- Public Outreach/Public Involvement
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #459 Topics

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**Environmental Justice:** An environmental justice analysis considers the potential for impact on minority and low-income populations of the proposed Denver Metroplex Project as compared to the No Action Alternative. In weighing whether the proposed Denver Metroplex Project raises environmental

justice concerns, the FAA considers whether a proposed action may have disproportionately high and adverse human health or environmental effects on minority and low-income populations. This analysis draws on the findings of the other impact analyses, particularly noise, land use, and air quality. If these factors exist, there is not necessarily a significant impact; rather, the FAA must evaluate these factors in light of context and intensity to determine if there are significant impacts.

Implementation of the proposed Denver Metroplex Project would not adversely affect air quality or land use within the General Study Area. Additionally, the results of the noise modelling analysis alternative indicate that changes in aircraft noise exposure would be below the threshold of significance when comparing the proposed Denver Metroplex Project and the No Action Alternative. As a result, there are no disproportionate impacts on minority, or low-income populations of the proposed Denver Metroplex Project as compared to the No Action Alternative.

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Public Outreach/Public Involvement:** The views and input of communities are important to the FAA as the Agency takes the next steps to advance the NAS. Since 2016, the FAA has engaged individual communities through holding public workshops in the Denver metropolitan area to explore possible solutions to their concerns while ensuring the safety and efficiency of the National Airspace System. Twelve public workshops across the Denver metropolitan area were held in 2017, and again recently in April and May 2019. The public workshop locations, dates and time were publicized in the Denver Post, posted on the FAA Community Involvement website, and the Denver Metroplex Project website, in addition to being publicized through social media and local press releases. Comments received from the 2017 and 2019 public workshops were considered when designing the proposed flight procedures for the Denver Metroplex Project.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the

same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 460 Submitted by: Sweet, Ann

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems.

The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #460 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 461 Submitted by: Tash, Ted

**Comment Received:** "I would urge the FAA to move the ZIMMR path further South or eliminate this SID altogether. State and Local officials have outlined several points that I would like the FAA to consider. It appears the FAA has been all but deaf to the concerns of airplane noise in Boulder County. While these plans may appear to be great Engineering on paper the realities of the situation on a human scale are quite different. FAA doesn't understand how the terrain can greatly amplify the noise level of these aircraft. And the frequency of the traffic greatly affects peoples' lives under these flight paths. For your reference: Daily Camera Neguse urged FAA officials to move the path as far south as possible to avoid densely populated communities and sensitive wilderness areas such as the Indian Peaks Wilderness Area. He also urged them to sample noise data rather than relying on computer simulations to understand the effects of the route. Although there has been computer simulation of the noise Neguse wrote a contractor told his staffers there have been no actual samples of noise data in south Boulder Nederland or the Indian Peaks Wilderness Area. "I am aware that the FAA has the tremendous responsibility of balancing public safety and efficiency of the airspace" □ he wrote. "However I request that you consider the effect of noise pollution on communities and in sensitive wilderness areas." Boulder officials also have said they'll weigh in on the matter. City Manager Jane Brautigam told Boulder City Council during its meeting Tuesday that she planned to send a letter to the FAA. We are working with Mayor (Suzanne) Jones to send a letter on behalf of our community urging the FAA to make further changes to support our request that noise be reduced in South Boulder" she said. And consider the previous letter from Mayor Jones of Boulder from 2017 where she makes several salient points. Mayor Jones' letter June 2017 After reviewing the proposals by your Denver Metroplex team we are concerned that the 2-mile shift of the FOOOT departure will provide only a negligible improvement to the residents of Boulder and the surrounding area. We understand that the route was not moved farther south back to the original location of the ROCKIES TWO departure due to lack of required space between the four westbound departure routes. Although it would require more analysis we ask that your team consider consolidating the westbound departure routes from four to three. This reduction would provide the FAA with more flexibility in placing the remaining three routes addressing concerns by Boulder and other communities on the west side of Denver while still ensuring adequate spacing and capacity. The unique topography of the Flatirons amplifies the noise produced by aircraft on the FOOOT departure which has greatly impacted the residents of Boulder. Moving the proposed ZIMMR route farther south would produce a noticeable improvement not only due to the added distance between the route and Boulder neighborhoods but also because the foothills south of Boulder have a flatter profile and increased vegetation that do not amplify the noise to the same degree as the Flatirons. In addition to the 100 000 residents of Boulder the FOOOT departure has also affected the users of Boulder Open Space and Mountain Parks which includes more than 45 000 acres of natural habitat and is enjoyed by more than 5.3 million visitors a year. Just as the FAA has made improvements that reduce the impact of aviation noise over national parks we ask that the Denver Metroplex team consider the topography and natural habitat now being impacted. We hope that your team will consider a more comprehensive improvement during this once-in-a-decade opportunity"

### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID

## FAA Response for Comment #461 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures.

Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60

dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

**Comments-Responses**

**Comment# 462 Submitted by: Terjak, Steven**

**Comment Received:** I believe in quiet skies, up over population neighborhoods, like S. Boulder.

**Topics Identified in the Comment**

- No Concerns Identified

**FAA Response for Comment #462 Topics**

**No Concerns Identified:** Thank you for your comment.

## Comments-Responses

### **Comment# 463 Submitted by: Thatcher, Christopher**

**Comment Received:** Basing acceptable sound levels for air traffic over South Boulder neighborhoods on computer modeling rather than on-the-ground sound measurement is inherently flawed. Moving dedicated flight paths south over Rocky Flats would not only lessen sound pollution it would also alleviate the visual pollution of constantly SEEING air traffic over our beautiful foothill mountains. It's criminal that the FAA chose to direct existing flight traffic from DIA over one of the most populated and picturesque suburban foothill neighborhoods of Boulder Colorado. Please move the flight path as far south and away from South Boulder as possible.

### **Topics Identified in the Comment**

- Existing Aircraft Noise
- Noise Modelling
- Suggestions to Change Air Traffic Patterns

### **FAA Response for Comment #463 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA's required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

### Comments-Responses

#### **Comment# 464 Submitted by: Thompson, Sheri**

**Comment Received:** I support the proposed shift traffic to coal creek canyon

#### **Topics Identified in the Comment**

- Suggestions to Change Air Traffic Patterns

#### **FAA Response for Comment #464 Topics**

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 465 Submitted by: Thornton, Susan

**Comment Received:** Please do NOT re-route airline flights over the south Denver metro area. Our quality of life is already seriously impacted by flights to/from Centennial Airport military jets and helicopters etc. Noise pollution is a very real public health issue and any changes should reduce not increase it.

### Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #465 Topics

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### **Comment# 466 Submitted by: Tourian, Karen**

**Comment Received:** I am requesting that the FAA reverse the policy of the Denver Metroplex Project that changed flight path corridors from DIA (DEN) to the west coast into very narrow bands. At the present time flights go over South Boulder and cross the first range of the foothills to fly directly over my house. Since we are 2000 ft. higher than Boulder the planes are consequently much closer to the ground than they had been moments before. The airplane noise is constant 24 hours a day and in addition to bothering us it also has impacts on the wildlife that live among us. Mule deer which use their keen sense of hearing to detect predators constantly have their "radar" jammed by the intrusions from above.

I understand that there is going to be traffic from Denver that has to cross the mountains somehow. But returning to the previous more dispersed pattern of air traffic will help mitigate the noise impact created by these planes.

I invite anyone from the FAA to come to my house and sit out on the deck for an hour to see for themselves what it is like to live here in 2019.

### **Topics Identified in the Comment**

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### **FAA Response for Comment #466 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 467 Submitted by: Tremblay, David

**Comment Received:** I'm writing to document my concerns about the flights paths over the southern portion of Boulder CO. We all benefit from air travel and expect some level of noise from an occasional plane overhead. However the sheer number of planes flying over South Boulder every day is unbelievable and quite a noise nuisance. There is obviously some sort of new flight corridor that has been established there. I'm also writing to request that you consider moving that flight path further south over the permanently unoccupied Rocky Flats area. Thank you for your time.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #467 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 468 Submitted by: Tsui, Leslie

**Comment Received:** "Hi As a South Boulder homeowner and outdoor enthusiast I am writing to ask your help to urge the FAA to incorporate the ""complete"" ZIMMR Noise Solution as a whole package (as opposed to the currently proposed ""nudged"" ZIMMR paths) into the flight path segments of the Nextgen Denver final document. As I'm sure you're aware the adoption of this change would remove the ascending jet noise echoing off the rock faces and mountains and redirect the flight paths slightly further south as they were historically to a less populated area that lacks rock wall barriers to reflect the noise. Please help preserve the natural beauty of Boulder! Thank you very much for your consideration!"

### Topics Identified in the Comment

- ZIMMR SID

### FAA Response for Comment #468 Topics

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 469 Submitted by: Tsui, Walter

**Comment Received:** As a Boulder homeowner and outdoor enthusiast I am writing to strongly urge the FAA to incorporate the "complete" ZIMMR Noise Solution as a whole package (as opposed to the currently proposed "nudged" ZIMMR paths) into the flight path segments of the Nextgen Denver final document. The adoption of this change would remove the ascending jet noise echoing off the rock faces and mountains and redirect the flight paths slightly further south as they were historically to a less populated area that lacks rock wall barriers to reflect the noise.

### Topics Identified in the Comment

- ZIMMR SID

### FAA Response for Comment #469 Topics

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 470 Submitted by: Turco, Kate

**Comment Received:** I have lived in S Boulder for over ten years. In the last several years - since the creation of the ZIMMR flight path, there has been a significant increase of noise pollution in our once quiet neighborhood. Prior to this, our area had no prior air traffic lanes. This disturbance has not only caused a decrease in quality of life for our residents, it also has caused an increase in health and environmental concerns for local citizens. Citizens began proposing alternatives back in 2017. Using inaccurate noise simulations and flight altitude estimates, the FAA justifies retaining a slightly altered ZIMMR flight path as its final solution. This is not acceptable. We want the FAA to incorporate Complete ZIMMR Noise Solution as the official map for DIA Departure flight paths adopt and as the final choice of flight paths for the Denver NEXTGEN portion of the DIA Metroplex project. As a long-time local resident, I urge you to take into consideration the predicted escalation of the noise pollution in the area that will have a deleterious effect on residents for decades to come. Please consider the proposed alternative, which is a clearly more effective solution for everyone. Kind regards, K Turco

### Topics Identified in the Comment

- Existing Aircraft Noise
- Projected Changes in Aircraft Noise
- Exposure
- ZIMMR SID

### FAA Response for Comment #470 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 471 Submitted by: Turelli, Paul

**Comment Received:** THE NOISE is unbearable ! Both day and night and it's more difficult to sleep. Why are these planes so low? DIA is 20 miles away?! The frequency of overhead flights is far more noticeable and measurable. Please pull the planes back up to a reasonable altitude!

### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #471 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 472 Submitted by: Uhlir, David

**Comment Received:** The noise from westbound jets from Denver International Airport using high throttle settings to rapidly gain altitude over south Boulder has greatly increased in the past several years. There are more frequent flights and the noise from them is louder because they are flying over my neighborhood, rather than the undeveloped open space to the south of Eldorado Springs. This unrelenting noise, which is getting worse as time goes on, is damaging the quality of life for me and my neighbors. The jet noise drowns out conversations outside and inside houses when windows are open. And the noise starts early in the day and continues into the late evening, making sleep difficult unless I wear earplugs. The noise is as bad or worse along the Boulder Mountain Parks trails, degrading a rare public resource established and paid for by the people of Boulder. As the Boulder City Council is well aware, the FAA arbitrarily and secretly created a jet freeway over Louisville and South Boulder in an area that had NO prior air traffic lanes. I have learned that, using inaccurate noise simulations and flight altitude estimates, the FAA justifies retaining a slightly “nudged” ZIMMR flight path as its final solution. This path is still only a half mile south of my home in Boulder. I am tired of the increased air traffic and terrible noise at all times of day. I join many other Boulder residents in wanting the FAA to move the flight path further to the south, over the uninhabited land on Rocky Flats. The FAA needs to restore some degree of peace and quiet to citizens like myself and protect us from future increases in air traffic. The FAA needs to incorporate the Complete ZIMMR Noise Solution into the NEXTGEN portion of the DIA Metroplex project. The City Council needs to support its citizens and help with this effort.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Noise Modelling
- ZIMMR SID

### FAA Response for Comment #472 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA's required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 473 Submitted by: Underhill, Kathy

**Comment Received:** I oppose any flight pattern changes at Centennial airport. As a homeowner I do not want additional planes or noise overhead. Thank you for your consideration.

### Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #473 Topics

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 474 Submitted by: Unrau, Bill

**Comment Received:** "It makes more sense to move the flight pattern back to where it was before (south of Boulder and north of Golden) where the population of people being affected by the noise would be reduced. I would be interested in why you have chosen to move the flight path here when so many more people are involved. Please withhold my personal identifying information."

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns
- Withhold Personal Identifying Information

### FAA Response for Comment #474 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

**Withhold Personal Identifying Information:** Commenters were made aware of the following statement with their comment submission - "Please be aware that your name, address, phone number, email address, or other personal identifying information in your comment may be made publicly available at any time. You may include in your comment a request to withhold your personal identifying information, however we cannot guarantee that we will be able to do so".

## Comments-Responses

### **Comment# 475 Submitted by: Unrau, Pam**

**Comment Received:** I remember when DIA was being proposed we were told the flight path would not be moved so people's lives wouldn't be changed by the noise. Each year it seems the path has been moved closer and now it's directly over our home. The noise pollution is very disturbing and actually wakes us up even when the windows are closed. I think you should look up the publicity information you gave us at the onset and follow through with not changing our environment adversely with the noise from moving of the flight path. Please withhold my personal identifying information. Thank you.

### **Topics Identified in the Comment**

- Existing Aircraft Noise
- Projected Changes in Aircraft Noise Exposure
- Withhold Personal Identifying Information

### **FAA Response for Comment #475 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Withhold Personal Identifying Information:** Commenters were made aware of the following statement with their comment submission - "Please be aware that your name, address, phone number, email address, or other personal identifying information in your comment may be made publicly available at any time. You may include in your comment a request to withhold your personal identifying information, however we cannot guarantee that we will be able to do so".

## Comments-Responses

### Comment# 476 Submitted by: Updyke, Caitlin

**Comment Received:** "1. We don't understand WHY the FAA moved the flight path from uninhabited Rocky Flats to directly over 3 heavily populated towns. Flight paths from 2012 show the main westbound flight path from DIA was directly over Rocky Flats (from 1995-2013 the "Rockies Two" flight path with "Meeker Transition") with a wide dispersion of flight paths between Golden and Eldorado Springs. Before the NextGen navigation paths in 2013 all of Rocky Flats was under considerable jet noise and we had none in southwest Boulder. The FAA cannot reasonably claim the 2013 path is the new normal. 2. In response to our complaints in 2016 you moved the path south BEFORE the public comment period ended and have made no other changes in despite letters asking for noise relief from mayors the former governor and other elected officials. Describing this change you said ZIMMR was 3 miles south of FOOOT when in reality it is ONLY half a mile south of the southern city limit. This is NOT far enough to mitigate jet noise because the flatirons Bear Peak and South Boulder Peak (our parabolic dish which amplifies sound) does not disappear until south of Eldorado Canyon. 3. Your noise consultant admitted that your noise modelling software does NOT take geography into consideration. Given that Boulder's southwest wall of rock towers 3000-3500' above our homes any projections for a reduction in noise using this model are scientifically invalid. I urge you to be skeptical of data from this software as justification for keeping the current ZIMMR path. In all likelihood the model also does not adjust for sound propagation differentials at sea level versus 5600' above sea level. 4. We believe you can move ZIMMR south far enough to mitigate the noise by making a couple of very small changes (while maintaining the Adams county flight path separation requirement). These SMALL changes will significantly alleviate jet noise over the heavily impacted towns of Boulder Louisville and Nederland. Shift the RALFI waypoint (east of Boulder on the ZIMMR flight path) about 0.7 nautical miles south; and shift the IPALE waypoint (on the COORZ flight path south of RALFI) about 0.7 nautical miles south. This is made possible by reducing the departure angle between COORZ and CONNR from 17 degrees to 15 degrees. Shift ZIMMR another 1.3 miles south (for a total southward shift of 2 miles for ZIMMR). This would then involve shifting the COORZ CONNR and BAYLR flightpaths 1.3 miles south. 5. FAA guidelines seek to minimize jet noise over national parks and wilderness areas. Boulder County owns/manages 165 000 + acres of mountain parks and open space. While not strictly "national parks or wilderness" □ these acres function identical to wilderness--- structures roads cars motors and camping are prohibited. By comparison Rocky Flats is 5237 acres and has no residents (prairie dogs that glow in the dark?). It is essential that you consider the REAL history of westbound DIA flight paths not only those since the illegal path change in 2013. Please please restore the peace and serenity we have treasured for 40+ years."

### Topics Identified in the Comment

- COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Noise Modelling
- Public Outreach/Public Involvement
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID - Move 1.3 Nautical Miles
- ZIMMR SID

### FAA Response for Comment #476 Topics

**COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles:** The commenter requests that the FAA consider modifying the proposed COORZ (RNAV) SID by moving the location of the IPALE waypoint 0.7 nautical miles south from the original location. The FAA reviewed the proposal while also considering the effects of weather and winds in the area. Rapidly changing atmospheric conditions and convective activity over the Front Range requires air traffic control to build in a greater margin of safety than the minimum separation standards for aircraft. The FAA determined the proposal would reduce the built-in margin of safety, thus limiting the procedures for air traffic control to efficiently manage air traffic on the proposed COORZ (RNAV) SID and CONNR (RNAV) SID.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and

Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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<http://www.gxy.net/>

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<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA’s required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Public Outreach/Public Involvement:** The views and input of communities are important to the FAA as the Agency takes the next steps to advance the NAS. Since 2016, the FAA has engaged individual communities through holding public workshops in the Denver metropolitan area to explore possible solutions to their concerns while ensuring the safety and efficiency of the National Airspace System. Twelve public workshops across the Denver metropolitan area were held in 2017, and again recently in April and May 2019. The public workshop locations, dates and time were publicized in the Denver Post, posted on the FAA Community Involvement website, and the Denver Metroplex Project website, in addition to being publicized through social media and local press releases. Comments received from

the 2017 and 2019 public workshops were considered when designing the proposed flight procedures for the Denver Metroplex Project.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

**ZIMMR SID - Move 1.3 Nautical Miles:** The commenter requests that the FAA consider modifying the proposed ZIMMR Area Navigation (RNAV) Standard Instrument Departure (SID) by moving the flight path 1.3 nautical miles southward from the location that was depicted at the workshops for the Draft Environmental Assessment. The proposal would affect the proposed COORZ (RNAV) SID, CONNR (RNAV) SID, and the BAYLR (RNAV) SID; requiring the same 1.3 nautical miles movement southward in order to maintain aircraft separation standards. The FAA reviewed this proposal while also considering the effects of weather and winds in the area. Rapidly changing atmospheric conditions and convective activity over the Front Range requires air traffic control to build in a greater margin of safety than the minimum separation standards for aircraft. The FAA determined that the proposed COORZ (RNAV) SID, CONNR (RNAV) SID and the BAYLR (RNAV) SID procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs. Additionally, moving the proposed BAYLR (RNAV) SID any further south would reduce the margin of safety with the proposed SSKII (RNAV) Standard Terminal Arrival (STAR) procedure and the existing, conventional POWDR STAR procedure. Moreover, the FAA designed the proposed BAYLR (RNAV) SID to avoid overflying the noise sensitive areas in downtown Denver, including the City Park and the Denver Zoo.

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 477 Submitted by: Urban, Donna

**Comment Received:** I attended the meetings and was told NextGen would be a minimal impact on my area of town. However I read a different story in the local news. I am against any sort of increase in aircraft noise above anyone's home. I currently experience noise from Centennial Airport which wakes me up in the middle of the night and causes stress and anxiety during the day when I'm home. So anything that may increase the noise is not acceptable even if it increases it for someone else. Aviation must adapt to the changing environment and improve on the noise and air pollution. I think it's admirable to want to save fuel but not if some people are going to suffer. It's also unacceptable to fly over parks and recreational areas or where wildlife migrates or lives. The effects of an increasingly noisy environment (aviation noise being one of the worst) is damaging to humans and wildlife. The other thing I'd like to mention is that it's appalling that some flights are not controlled by air traffic control and therefore can basically do what they want and fly over my home as low as they want at any time of day or night. These people should have to follow rules and there should much more than a minimum height requirement of 1 000 feet above someone's home. This is just cruel to fly over where people are living. Do we have certain cars on the road that don't have to follow the rules? No every car is supposed to follow the rules of the road. So should these pilots taking a "fun" flight or the flight school pilots.

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- General Aviation/Visual Flight Rules
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #477 Topics

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight

procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850

<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 478 Submitted by: Valent, Elizabeth

**Comment Received:** 1. Shift the RALFI waypoint (east of Boulder on the ZIMMR flight path) about 0.7 nautical miles south; and shift the IPALE waypoint (on the COORZ flight path south of RALFI) about 0.7 nautical miles south. This is made possible by reducing the departure angle between COORZ and CONNR from 17 degrees to 15 degrees.  
 2. Shift ZIMMR another 1.3 miles south (for a total southward shift of 2 miles for ZIMMR). This would then involve shifting the COORZ CONNR and BAYLR flightpaths 1.3 miles south.

### Topics Identified in the Comment

- COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles
- ZIMMR SID
- ZIMMR SID - Move 1.3 Nautical Miles

### FAA Response for Comment #478 Topics

**COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles:** The commenter requests that the FAA consider modifying the proposed COORZ (RNAV) SID by moving the location of the IPALE waypoint 0.7 nautical miles south from the original location. The FAA reviewed the proposal while also considering the effects of weather and winds in the area. Rapidly changing atmospheric conditions and convective activity over the Front Range requires air traffic control to build in a greater margin of safety to than the minimum separation standards for aircraft. The FAA determined the proposal would reduce the built-in margin of safety, thus limiting the procedures for air traffic control to efficiency manage air traffic on the proposed COORZ (RNAV) SID and CONNR (RNAV) SID.

**ZIMMR SID - Move 1.3 Nautical Miles:** The commenter requests that the FAA consider modifying the proposed ZIMMR Area Navigation (RNAV) Standard Instrument Departure (SID) by moving the flight path 1.3 nautical miles southward from the location that was depicted at the workshops for the Draft Environmental Assessment. The proposal would affect the proposed COORZ (RNAV) SID, CONNR (RNAV) SID, and the BAYLR (RNAV) SID; requiring the same 1.3 nautical miles movement southward in order to maintain aircraft separation standards. The FAA reviewed this proposal while also considering the effects of weather and winds in the area. Rapidly changing atmospheric conditions and convective activity over the Front Range requires air traffic control to build in a greater margin of safety to than the minimum separation standards for aircraft. The FAA determined that the proposed COORZ (RNAV) SID, CONNR (RNAV) SID and the BAYLR (RNAV) SID procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs. Additionally, moving the proposed BAYLR (RNAV) SID any further south would reduce the margin of safety with the proposed SSKII (RNAV) Standard Terminal Arrival (STAR) procedure and the existing, conventional POWDR STAR procedure. Moreover, the FAA designed the proposed BAYLR (RNAV) SID to avoid overflying the noise sensitive areas in downtown Denver, including the City Park and the Denver Zoo.

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of

the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

**Comments-Responses****Comment# 479 Submitted by: Van Akkeren, Mark**

**Comment Received:** "Please do me a huge favor and ignore any comments coming from Boulder citizens or the city council/government here that incessantly complain about the noise of planes on egress from DIA. We live in a city a city is inherently noisy. To have the audacity and narcissism to think that they are so important as to move flights away from them without any regard for those that they will be moved over is mind boggling. That's a level of navel gazing that I can't let intrude on the public process for flights. Someone in that group must have known Hick because I can't think of any other reason he would have intervened on such a silly issue. So do us all a favor and ignore these tone deaf ignoramuses and keep the egress alley directly over south boulder (i live here too). Plus... when it strikes me... plane spotting is fun :) And you can publish this at the top of the ""keep em right where they are"" column."

**Topics Identified in the Comment**

- No Concerns Identified

**FAA Response for Comment #479 Topics**

**No Concerns Identified:** Thank you for your comment.

## Comments-Responses

### Comment# 480 Submitted by: Venteniglia, Dave

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems.

The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #480 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 481 Submitted by: Villanueva, Hernan

**Comment Received:** Hi there!

I'm a resident of South Boulder and I'm writing to talk about the impact the ZZIMR flight path has on my home. When I'm outside in my backyard I can hear planes flying above me approximately once every 5 minutes. This has a substantial impact on my quality of life and the ability to enjoy being outside. My family loves being outside! We have multiple garden beds our first son just turned 8 months and is starting to crawl on our grass and we work on our yard as hobby. The flight path definitely takes a heavy toll on our ability to enjoy our home. I sincerely hope you can move the flight path further south if possible outside of Boulder altogether.

Thank your for your time!

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #481 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport

970-962-2850

<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport

303-271-4850

<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 482 Submitted by: Vogel, Kit

**Comment Received:** Twenty eight years ago my family moved to Cherry Hills Village in Colorado because we loved the peaceful quiet neighborhoods. In CHV we don't even have commercial property so our taxes are high - worth paying to achieve this rural country side quality of living. There was no reason to believe this would change especially given the location of DIA miles east of the city. Two years ago the airline traffic pattern began to fly overhead at a rate we've never heard before making it difficult to enjoy our yards and gardens. The noise is even apparent inside with windows closed. For months we were told this increase in overhead flights was because of a runway that was under construction however once the construction ended the overhead flight pattern continued it seems the FAA did not tell us exactly what was changing now did we have an opportunity to express input on these changes. Now we're being told that NextGen will create even more flights at even lower flight levels. On behalf of my family and our community I request that you do NOT implement your proposed Denver Metroplex plan. The Environmental Assessment Draft is a manipulation of data created by our agenda. It is horribly wrong immoral and totally unacceptable that you spin the facts and the truth to our communities. Our physical health mental well being and our financial security will be jeopardized if this plan goes through. We will be inundated by constant noise as much as every minute of every day and night. Would you want to live under these conditions? Even the current noise level is unacceptable it's unconscionable for you to impact our quality of life even more. There are laws to control noise levels and disturbance of the peace in our communities and cities. Flights overhead bombarding our every moment should be no exception. It should not take thousands of objections to this irresponsible plan. PLEASE do not go forward with the NextGen Metroplex plan. Our quality of life depends on this plan being defeated. I love our home and community and the City of Denver I'm certain given the location of DIA miles East of our communities that there's a better plan. Thank you for your time Kit Vogel"

### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- NEPA and FAA Order 1050.1F
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #482 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information

on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas,

flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred

Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 483 Submitted by: Vogel, Steve

**Comment Received:** On behalf of myself my family and people in my neighborhood I respectfully request that you do not implement your proposed Denver Metroplex plan. The Environmental Assessment Draft is seriously flawed with the manipulation of data created to calm public outcry. It is patently wrong immoral and totally unacceptable for you to spin the facts and the truth to people at your workshops in order to go ahead with your agenda. The EA does not take into account the noise generated by the expansion of Denver International Airport (DIA) and by the general aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35. The proposed concentration of those planes into a path assuring constant noise and air pollution over our homes will impact our health both physical and mental. You are not considering the very real terrible consequences to our neighborhood on the proposed change in flight patterns. Would you personally accept the 24/7 thunderous noise pollution over your home? Citizens have long been aware of the deleterious effects of excess noise on the ground so there are laws to maintain peace and quiet. It is illegal to make too much noise in our homes property and on the road. If we violate those laws we are ticketed and fined. Nonstop airplane noise overhead will be much worse than the occasional loud music or malfunctioning car muffles on the ground. It is blatantly unethical for you to impose this nightmare upon the people living in the flight paths you are proposing. The lives of citizens need to be the priority over corporate profits. It should not take thousands of objections to stop this unconscionable plan. It should take only common decency and understanding of the true facts and impacts associated with the NextGen Metroplex plan. Please do not go forward. STOP!! Sincerely Steve Vogel 5643 Southmoor Circle Englewood CO. 80111"

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Cumulative Impacts
- Forecast/Future Operations
- NEPA and FAA Order 1050.1F
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #483 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There

are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL)

metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL 1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas

exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Comments-Responses****Comment# 484 Submitted by: Vos, Scott**

<b>Comment Received:</b> The flight path over south Boulder is disruptive due to the noise level.
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**Topics Identified in the Comment**

- Existing Aircraft Noise

**FAA Response for Comment #484 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

## Comments-Responses

### Comment# 485 Submitted by: Waldorf, Elizabeth

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FM's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FM) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems.

The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #485 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### **Comment# 486 Submitted by: Ward, Diane**

**Comment Received:** "Please change the airline routes to avoid flying over south Boulder. The planes are flying so low and the noise is so loud that we are frequently awoken at night. Our home is .6 miles from the open space and the noise is unacceptable. Thank you for considering our request. frequently at night."

### **Topics Identified in the Comment**

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### **FAA Response for Comment #486 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centenniairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### **Comment# 487 Submitted by: Ward, Diane**

**Comment Received:** "Please change the airline routes to avoid south Boulder. We have airplanes waking us up at 10:30 pm frequently. frequently"

### **Topics Identified in the Comment**

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Suggestions to Change Air Traffic Patterns

### **FAA Response for Comment #487 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
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[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 488 Submitted by: Watson, Gail

**Comment Received:** I am writing to express my concern about the proposed shift in flight plans from Denver International Airport. While I understand the goal of the Denver Metroplex Project is to decrease flight delays and increase fuel efficiency, I believe it is paramount that the communities below the flight path have a forum to present our concerns and that these concerns be taken to heart.

I was dismayed to read a letter to the FAA from our Congressman Joe Neguse asking that the flight path be moved south of Boulder County and the Indian Peaks Wilderness Area. While I sympathize with the residents of south Boulder County, this move would bring the flight path right over Gilpin County and the James Peak Wilderness Area. Their concerns apply equally to our community and I have spoken with our Congressman's staff and suggested that the only equitable move forward is to vary the flight paths. We all have the same concerns about our quality of life, the ability to recreate and relax in the high country and the protection of our valued wildlife and wilderness areas.

I can't think of one county or community that would welcome a flight path overhead yet we all realize the importance of air travel. Although it may not align with your goals for efficiency, please consider dispersed routes so no one community is inundated.

Thank you for your consideration.

### Topics Identified in the Comment

- Public Outreach/Public Involvement
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #488 Topics

**Public Outreach/Public Involvement:** The views and input of communities are important to the FAA as the Agency takes the next steps to advance the NAS. Since 2016, the FAA has engaged individual communities through holding public workshops in the Denver metropolitan area to explore possible solutions to their concerns while ensuring the safety and efficiency of the National Airspace System. Twelve public workshops across the Denver metropolitan area were held in 2017, and again recently in April and May 2019. The public workshop locations, dates and time were publicized in the Denver Post, posted on the FAA Community Involvement website, and the Denver Metroplex Project website, in addition to being publicized through social media and local press releases. Comments received from the 2017 and 2019 public workshops were considered when designing the proposed flight procedures for the Denver Metroplex Project.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP

Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 489 Submitted by: Waxter, Dixon

**Comment Received:** "Comment and Objection: The conclusions of the Environmental Assessment are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct indirect and cumulative impact on the Denver Region arising from Denver Metroplex with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past. The EA does not take into account noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35. Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct indirect and cumulative impact of noise generated by Metroplex. The EA does not take into account the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health. The EA does not take into account the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas including residences historic areas parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems. The EA contains assumptions that underestimate noise and ignore health risks it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate and shed light on the huge negative environmental impact of Denver Metroplex on the Denver Region. Sincerely Dixon Waxter"

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #489 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 490 Submitted by: Waxter, Fairleigh

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The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

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As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

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**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
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**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 491 Submitted by: Waxter, Gibbs

**Comment Received:** "Comment and Objection: The conclusions of the Environmental Assessment are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct indirect and cumulative impact on the Denver Region arising from Denver Metroplex with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past. The EA does not take into account noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35. Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct indirect and cumulative impact of noise generated by Metroplex. The EA does not take into account the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health. The EA does not take into account the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas including residences historic areas parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems. The EA contains assumptions that underestimate noise and ignore health risks it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate and shed light on the huge negative environmental impact of Denver Metroplex on the Denver Region. Sincerely Gibbs Waxter"

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #491 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

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The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

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**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 492 Submitted by: Waxter, Winslow

**Comment Received:** "To Whom it May Concern - Comment and Objection: The conclusions of the Environmental Assessment are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct indirect and cumulative impact on the Denver Region arising from Denver Metroplex with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past. The EA does not take into account noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35. Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct indirect and cumulative impact of noise generated by Metroplex. The EA does not take into account the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health. The EA does not take into account the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas including residences historic areas parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems. The EA contains assumptions that underestimate noise and ignore health risks it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate and shed light on the huge negative environmental impact of Denver Metroplex on the Denver Region. Winslow Waxter"

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #492 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the

National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA’s de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91-53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height “would have little if any effect on

emissions and ground concentrations.” (72 Fed. Reg. 6641 (February 12, 2007). Accordingly, there would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA’s primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centenniairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed

the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis

evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact

(FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 493 Submitted by: Webel, Suzanne

**Comment Received:** We have lived on a rural farm four miles west of Longmont's Vance Brand Airport for 25 years. We have been dismayed by the increase in air traffic at this small recreational ("general") airport including the intolerable Mile-High Skydiving outfit and now private jets in addition to a variety of other flying contraptions. In your Denver Metroplex evaluation of present and future issues regarding DIA Front Range and Boulder airports please do not even consider moving more aviation activity to Vance Brand! We already have more than enough here. Thank you.

### Topics Identified in the Comment

- General Aviation/Visual Flight Rules
- Purpose and Need of Project

### FAA Response for Comment #493 Topics

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best

use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 494 Submitted by: Weide, Dorothy

**Comment Received:** "Comment and Objection: The conclusions of the Environmental Assessment are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct indirect and cumulative impact on the Denver Region arising from Denver Metroplex with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past. The EA does not address noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35. Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct indirect and cumulative impact of noise generated by Metroplex. The EA does not address the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health. The EA does not address the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas including residences historic areas parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems. The EA contains assumptions that underestimate noise and ignore health risks it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region. Sincerely Dorothy Weide"

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #494 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 495 Submitted by: Weide, Lawrence

**Comment Received:** "The conclusions of your Environmental Assessment report (EA) are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct indirect and cumulative impact on the Denver Region arising from Denver Metroplex with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past. The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35. Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights from DIA grossly underestimates the direct indirect and cumulative impact of noise generated by Metroplex and completely fails to take into account air traffic from Centennial Airport. The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health. The EA excludes the impact of noise at or below DNL 65 dB on noise sensitive areas including residences historic areas parks and schools. In the Denver region the majority of residences and schools in the suburbs predate DIA and currently experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with increasing cognitive and behavioral problems. The EA contains assumptions that underestimate noise and ignore health risks. It is an inaccurate and misleading report. Metroplex is highly controversial in the communities it has been implemented in generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental and health impact of Denver Metroplex on the Denver Region. Sincerely Lawrence Weide"

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #495 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the

National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA’s de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91-53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height “would have little if any effect on

emissions and ground concentrations.” (72 Fed. Reg. 6641 (February 12, 2007). Accordingly, there would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA’s primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centenniairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed

the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis

evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact

(FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 496 Submitted by: Weide, Lawrence & Dorothy

**Comment Received:** "To: FAA Denver Metroplex Cc: Richard Heppe Jennifer Niederhauser - CHN HOA President We are residents of Cherry Hills Village where we have been home owners for the past 36 years and we are extremely concerned about the proposed Centennial and DIA flight path changes which would affect us and our neighborhood in terms of negative health affects substantial noise increase and loss of property values. To quote an article in the Denver Post published on January 23 2019 ""A study of NextGen flight patterns near La Guardia Airport in New York by Columbia's University Mailman School of Public Health which was released last year concluded that exposure ""to a loud and continuous noise"" can have ill health effects - including cardiovascular diseases and anxiety on those living under a flight path." An article in Science Journal 9/10/2013 states ""the risk of myocardial infarction or a stroke is increased when people are exposed to aircraft noise. Noise is a stress factor and increases levels of cortisol which increases blood pressure." Additionally there are many other published articles enumerating the deleterious affects of living under a flight path. Importantly are real financial costs in terms of the negative effect on our property value. By law a seller has to disclose to a buyer that his home is under a flight path with obvious consequences on the bargaining tool this information would provide to the buyer. It is imperative that the NextGen Denver is not implemented. On a personal level my husband Lawrence is currently battling cancer and heart issues. Most of our time is spent in the quiet of our home as he undergoes medical treatment and as his body works hard to maintain equilibrium. Changes to our living environment in terms of increased noise and pollution would undoubtedly have a deleterious affect on his fragile health status. All residents of Cherry Hills Village would be negatively affected by this flight plan as stated above. We are asking that you seek other alternatives for the flight paths and work on our behalf to protect our physical and mental health our risks from noise pollution and the risk of depreciation of the value of our homes. Thank you for your attention to this matter Dorothy and Lawrence Weide 5270 Nassau Cir. E. Cherry Hills Village CO 80113 Reference: Science Daily August 15 2018. ""Organizing Airport Flight Patterns Takes a Toll on Human Health."""

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Property Values
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #496 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for

protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level

(DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Property Values:** The proposed Denver Metroplex Project involves air traffic control routing changes for airborne aircraft only; and does not involve land acquisition, physical disturbance, or construction activities. The determination of whether a proposed action may have a significant environmental impact under the National Environmental Policy ACT (NEPA) is made by considering the relevant environmental impact categories and comparing impact to the FAA's thresholds of significance as outlined in FAA Order 1050.1F. The assessment of property values is not an environmental impact category as outlined in FAA Order 1050.1F. To the extent applicable, and as there are no significant impacts under noise or compatible land use, the proposed Denver Metroplex Project is compatible with existing and planned land uses, and the applicable regulations and policies of federal, state, and local agencies. A limited number of studies have attempted to measure the impact of aircraft noise on property values. Specific studies of the impact of noise at the Study Airports on real property values have not been conducted and are not required. Studies conducted at other national airports have concluded that airport noise only has a slight impact on property values within the Day Night Average Sound Level 65 decibels or greater noise contour around airports. Additionally, comparison of older studies to more recent studies indicates that the impact was greater in the 1960s, when jet aircraft first entered the fleet. This decrease presumably is the result of stabilization of real estate markets following an initial adjustment to noisier jets, and of noise reduction in more modern Stage 3 or better aircraft.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 497 Submitted by: WEISBART, GRAIG

**Comment Received:** "To the FAA: Cherry Hills Village has worked hard for more than 70 years to preserve a safe low-density quiet residential oasis. The Village boasts many historic properties and many natural public parks whose quiet and tranquility is shared and cherished by all Denver residents. The FAA's noise modeling promises that adoption of the Preferred Alternative will decrease aircraft noise levels throughout Cherry Hills Village. We therefore welcome the Preferred Alternative implementation so long as the FAA in the final EA represents and expressly commits that if the modeling is wrong and noise levels in Cherry Hills Village increase after the route changes the FAA will re-implement the No Action Alternative and conduct a full Environmental Impact Study evaluating the noise effect on all public properties and historic parks in our community. In the event it is determined that the FAA Environmental Assessment conclusions re: Denver Metroplex are flawed or misleading it is imperative that the FAA complete an updated detailed accurate and realistic Environmental Impact Study relevant to our community followed by open public review and discussion before any implementation of Denver Metroplex NextGen. Thank you for your consideration. Sincerely Graig Weisbart"

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Historical and Cultural Resources
- Level of NEPA Review
- NEPA and FAA Order 1050.1F
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #497 Topics

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight

procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centenniairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850

<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the

introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative

would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 498 Submitted by: Weiss, Eileen

**Comment Received:** "I am Horrified to hear that at one of the workshops an FAA representative confirmed that 10 000 foot flight elevation is measured from sea level; i.e. the FAA considers a flight flying over Denver at 4 720 feet to be flying at 10 000 feet. How can any of your studies be relevant if starting at that premise? Obviously the noise is much more magnified at that distance. Please do not go forward with the Denver Metroplex NextGen plan. Eileen Weiss"

### Topics Identified in the Comment

- Altitude/Mean Sea Level
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #498 Topics

**Altitude/Mean Sea Level:** Airspace classes are defined by regulations in 14 CFR part 71. Class A airspace covers the highest altitudes of above 18,000 feet Mean Sea Level. Unless specially authorized, all aircraft in Class A airspace must operate under Instrument Flight Rules. Class B airspace generally includes airspace from the surface to 10,000 feet Mean Sea Level around the busiest airports and is individually tailored to contain all published instrument flight procedures for that airport. Class B airspace typically consists of a surface area around the airport and two or more layers that increase in size. Airspace altitudes are expressed in Mean Sea Level because it is a consistent measurement for aircraft flight operations, while Above Ground Level varies with the local terrain.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas

exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 499 Submitted by: Weiss, Peter

**Comment Received:** "I respectfully request that you do NOT implement your proposed Denver Metroplex NextGen Plan. The FAA projects flights out of DIA will increase 70-100% by 2035. Senior staff at Centennial Airport have confirmed that the implementation of NextGen will cause diversion of even more Centennial flights over our communities. Air traffic noise from Centennial flights can be much worse than DIA flights. The FAA did not consider the impact from general aviation such as that from Centennial Airport when compiling the draft Environmental Assessment. Centennial Airport is currently the 2nd busiest aviation airport in the USA. These flights will continue to increase over the coming years. DO NOT GO FORWARD with the Denver Metroplex NextGen Plan Peter Weiss"

### Topics Identified in the Comment

- General Aviation/Visual Flight Rules
- Potential Increase In Fuel Burn and Emissions
- Purpose and Need of Project

### FAA Response for Comment #499 Topics

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Potential Increase In Fuel Burn and Emissions:** The commenter also asked how the proposed Denver Metroplex Project could be presumed to conform to the SIP if it would result in an increase in fuel burn or emissions. As described in Section 5.2.3 of the Final Environmental Assessment under the proposed Denver Metroplex Project there would be a slight increase in fuel burn (1.83 percent in 2019 and 1.85 percent in 2024) when compared to the No Action Alternative. While increased fuel burn corresponds with an increase in emissions, operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or above and would not result in an increase in ground concentrations. Any operational changes that could result in an increase in fuel burn would occur at or above 3,000 feet AGL. As discussed above, procedures above 3,000 feet AGL are considered a de minimis action, would have little if any effect on emissions and ground concentrations of criteria pollutants, and are presumed to conform to all applicable SIPs. (72 Fed. Reg. 6641 (February 12, 2007).

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 500 Submitted by: West, Bonnie

**Comment Received:** I support the increased efficiency of the proposal, for saving fuel. The flights of low flying planes has increased over our house recently - in the last year. Or noisy planes - may not have changed in volume. So I hope this does not increase noise over our neighborhood. I think that's what most people are afraid of.

### Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #500 Topics

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 501 Submitted by: Whelchel, Christopher

**Comment Received:** The FAA caused considerable harm and stress when your project kicked off inn Charlotte NC and now... you are seriously doing it here in Denver?!!? When I was living in Charlotte my beautiful peaceful home was destroyed by horrendous and repeated jet noise that caused nightly loss of sleep and changed my life forever. I had lived peacefully for years before the FAA RUINED what I had worked so hard to achieve. I purposefully bought a home OUT of the flight path and then you came in and changed it?! How dare you cause so many problems for the residents of a city without significant compensation for those effected!

Now you are approaching dangerous territory in my new home in which the public should have CLEAR say in EXACTLY whom you effect and how. If you cause financial and emotional stress on families there should be stiff penalties applied to the FAA for changing the course of someone's well being.

I literally sold my home in Charlotte because of the FAA and I will NEVER forget how you hurt my well being. I seriously hope that more elected officials senators and law makers get involved in what you are so viciously doing and put a stop to your reckless actions! Instead of asking for forgiveness you should be asking for PERMISSION to destroy the peaceful environments people live in.

Shame on every one of you working for the FAA!!!

### Topics Identified in the Comment

- Purpose and Need of Project

### FAA Response for Comment #501 Topics

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and

general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### Comment# 502 Submitted by: Wildrick, Sue

**Comment Received:** "We have heard that there are problems with your environmental assessment and believe these concerns must be addressed. A complete Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct indirect and cumulative impact on the Denver Region arising from Denver Metroplex with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past. The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35. Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights from DIA grossly underestimates the direct indirect and cumulative impact of noise generated by Metroplex and completely fails to take into account air traffic from Centennial Airport. The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies (some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health. In the interest of serving the needs of the community and avoiding future litigation these issues must be addressed before any new plan is implemented."

### Topics Identified in the Comment

- Children's Environmental Health and Safety
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Level of NEPA Review
- NEPA and FAA Order 1050.1F
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health

### FAA Response for Comment #502 Topics

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there would be no increase in environmental health and safety risks that could disproportionately affect children.

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft

operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise

analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

## Comments-Responses

### **Comment# 503 Submitted by: Willey, Charlene**

**Comment Received:** I have lived in my home for 25 years. When we moved in the airport was host to general aviation traffic and we were able to live amicably with it in our neighborhood. We were told that much of the land surrounding the airport would never be developed because of the dangers of having high populations near this kind of facility. Of course none of that has turned out to be true. All the land is being completely developed with homes and businesses and even a water treatment plant in the future.

I have been able to live with most of the increasing noise from commercial and general aviation traffic over the years until recently. The traffic is non-stop. I clocked no fewer than 20 flights overhead in the space of 10 minutes!! Much of this is from increasing traffic but a lot can be attributed to a flight school that opened in the recent past. It is ruining my hearing. the planes fly low and slowly and the sounds penetrate closed windows and doors inside my home. I am forced to have a distracting noise inside my home at all times to maintain my sanity. Worse the flights continue to all hours of the night and into the early morning. I have been awakened by the noise (with closed windows in the middle of winter) of airplanes as late as midnight. And it begins well before dawn each morning.

In the past we lived in a flight path that allowed only landings. Now the number of flight paths over our house seems to have grown nearly tenfold in addition to planes from the flight school.

I believe that much of the problem stems from the flight school. They are student pilots flying mostly prop planes slowly at low altitudes and making pass after pass. The result is almost constant noise day and night. I can no longer work in my yard without hearing protection. Gone are days when I could sit on my porch and enjoy a meal or cup of tea. It has simply become miserable to live here.

The airport claims to have a voluntary fly quiet□ program. It is obviously completely ineffective. In the meantime the website brags that Rocky Mountain Airport is the fourth busiest in the state. This in the middle of a heavily populated residential area! We were here before this burst of airport development. What kind of city planning allowed this to happen?

I know that there have been many citizen efforts to stave off the noise. Superior residents came closest but they have been largely unsuccessful in achieving noticeable improvements in their neighborhoods. There is a consulting firm that has been engaged to help with the problem but it is not clear what they can do. Why did the city of Westminster not join with them in protecting their citizens from this awful problem??

Do you have suggestions about what we can do? Filling out the noise complaints seems to bear no fruit.

### **Topics Identified in the Comment**

- Existing Aircraft Noise
- General Aviation/Visual Flight Rules

### **FAA Response for Comment #503 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot’s discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

## Comments-Responses

### Comment# 504 Submitted by: Williams, Weston

**Comment Received:** The amount of air traffic noise over Superior due to RMMA is already intolerable. Combined now with the additional noise related to the altered flight paths originating at DIA it has become too much. I am 100% certain that whatever the point of this "NextGen" project is we can look forward to even more and louder life-disrupting air traffic noise in our neighborhood. It is an hourly occurrence to have to pause phone and in-person conversations in our neighborhood for a minute or two while a small jet from RMMA or a large jet from DIA climbs to altitude to make it over the mountains. I think the fact that they have to climb so high so fast makes it especially loud in our neighborhood. I wish they'd take off the other direction and slowly gain altitude so as to not disrupt everyone around them. Then turn west and continue on their way. Seems like a simple solution but not even considered by the officials at RMMA. They say "talk to the FAA" and continue on their merry way. Please withhold my personal identifying information to provide some semblance of safety for my family from the airport mafia we have in our neighborhood.

### Topics Identified in the Comment

- Existing Aircraft Noise
- General Aviation/Visual Flight Rules
- Projected Changes in Aircraft Noise Exposure
- Suggestions to Change Air Traffic Patterns
- Withhold Personal Identifying Information

### FAA Response for Comment #504 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport

970-336-3000  
<http://www.gxy.net/>

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<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
 303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

**Withhold Personal Identifying Information:** Commenters were made aware of the following statement with their comment submission - "Please be aware that your name, address, phone number, email address, or other personal identifying information in your comment may be made publicly available at any time. You may include in your comment a request to withhold your personal identifying information, however we cannot guarantee that we will be able to do so".

## Comments-Responses

### Comment# 505 Submitted by: Williams, Weston

**Comment Received:** The Superior area already gets very extensive aircraft noise related to RMMA. So much so that it really interferes with quality of life. It seems that there is a movement in Boulder asking the FAA to push DIA traffic that is currently going over Boulder further south which would put it over Superior. Please don't allow this to happen! Spread the aircraft noise around and don't condense it solely over Superior, we suffer enough already w/RMMA! We're constantly told by RMAA officials that they will do nothing to abate the noise related to RMMA.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #505 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport

303-271-4850

<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### **Comment# 506 Submitted by: Willmarth, David**

**Comment Received:** I am writing to give my opinion on the increased jet activity over our home. I was born in Boulder and live next to Boulder Open Space land to be close to wildlife and nature and away from City noise. Unfortunately the new flight plans are directing flights directly over our house and the Boulder Open Space land. It is so loud when the planes fly over that you can no longer hear the birds or a fellow hiker speak. It truly sounds like we are near DIA due to the sound of the planes hitting the large stone rock the flatirons and echoing back extremely loudly! I imagine it is also effecting the birds and wildlife negatively. I would ask that you please reroute the planes so that they fly over a less populated area. Thank you David Willmarth

### **Topics Identified in the Comment**

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### **FAA Response for Comment #506 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centenniairport.com/index.php/noise/noise-management>

Denver International Airport  
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[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
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**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 507 Submitted by: Windh, Rolf

**Comment Received:** "The concentration of the noise burden of air traffic in the revised flight plans on those of us with the misfortune to have sky highways constructed over our heads has been a major decrease in quality of life. We live in the mountains 50 miles from DEN. Yet we have hours-long stretches of time where the plane noise (jets and props) is relentless-- the next plane starts before the previous has cleared. It's not uncommon that there are 2-4 planes overhead at the same time. The noise may be below whatever threshold the FAA deems acceptable but due to a) a very low noise baseline b) our higher altitude (the altitude difference is greater than the trajectory of planes) and c) the concentration of noise in the canyons the redirection of air traffic has significant negative impact. With windows closed and heat running we still have to turn up music to cover the noise. In warmer months with windows open the noise is overbearing for hours at a time including early morning and late night barrages. The noise is incessant. We live where we do specifically because it was a peaceful location. Those of us who have had this concentrated noise burden put on us do not benefit from the changes in air traffic. The FAA needs to increase the prioritization of outsized effects on rural populations relative to the benefits to airports and private businesses. Spread the burden-- if air traffic is part of the national infrastructure don't concentrate its negatives over a relatively small number of unfortunates. Widen the corridors and get the planes up higher earlier. No doubt this is less efficient but efficiency should not come at a disproportionate cost to rural communities."

### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Public Outreach/Public Involvement
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #507 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

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**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred

Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Public Outreach/Public Involvement:** The views and input of communities are important to the FAA as the Agency takes the next steps to advance the NAS. Since 2016, the FAA has engaged individual communities through holding public workshops in the Denver metropolitan area to explore possible solutions to their concerns while ensuring the safety and efficiency of the National Airspace System. Twelve public workshops across the Denver metropolitan area were held in 2017, and again recently in April and May 2019. The public workshop locations, dates and time were publicized in the Denver Post, posted on the FAA Community Involvement website, and the Denver Metroplex Project website, in addition to being publicized through social media and local press releases. Comments received from the 2017 and 2019 public workshops were considered when designing the proposed flight procedures for the Denver Metroplex Project.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 508 Submitted by: Windrum, Bart

**Comment Received:** I'm not flight technical but I live on the very southern edge of Boulder overlooking the open space (Table Mesa west neighborhood). Yes please adjust flight patterns southward and upward. BUT do so enough to make an audible difference to human ears and lives on the ground. To my mind that means shifting overflights at least as far south as Rocky Flatsâ€in other words over non-to-sparingly populated area. You know that the Flatirons are giant echo chambers. Steer clear of them.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Projected Changes in Aircraft Noise
- Exposure
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #508 Topics

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 509 Submitted by: Wolfe, Fred

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds.

A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70- 100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies ( some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB ( indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems.

The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #509 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the

National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA’s de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91-53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height “would have little if any effect on

emissions and ground concentrations.” (72 Fed. Reg. 6641 (February 12, 2007). Accordingly, there would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA’s primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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Rocky Mountain Metropolitan Airport  
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**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed

the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis

evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact

(FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 510 Submitted by: Wolfe, Nancy

**Comment Received:** Comment and Objection: The conclusions of the EA are seriously flawed. The implementation of Denver Metroplex is highly controversial on both health and environmental grounds. A full Environmental Impact Statement (EIS) should be conducted for public review and comment. It should accurately disclose all data that will have a direct, indirect and cumulative impact on the Denver Region arising from Denver Metroplex, with emphasis on noise sensitive areas that have not experienced significant aviation noise and pollution in the past.

The EA excludes noise generated by expansion of Denver International Airport (DIA) and by aviation at Centennial Airport. Aviation activity at DIA is projected to grow by 70-100% by 2030/35.

Centennial Airport is the second largest general aviation airport in the United States with its own growth projections. The FAA's estimate of flights (whether commercial or general) grossly underestimates the direct, indirect and cumulative impact of noise generated by Metroplex.

The EA excludes the impact of particulate matter generated by aviation emissions on the health and welfare of adults and children notwithstanding significant current studies ( some conducted by or for the FAA) documenting the serious adverse impact on people's physical and mental health.

The EA excludes the impact of noise at or below DNL 65 dB (indoors with windows shut) on noise sensitive areas, including residences, historic areas, parks and schools. In the Denver region a majority of residences and schools in the suburbs predate DIA and experience low levels of noise. Studies by health organizations and universities have documented that increases in aviation noise cause and contribute to cardiac disease, depression and anxiety in both adults and children. Additionally it has been shown to cause lower test scores in children along with both cognitive and behavioral problems. The EA contains assumptions that underestimate noise and ignore health risks, it is inaccurate and misleading. Metroplex is highly controversial generating litigation across the country. An EIS would accurately provide the detail necessary to evaluate the environmental impact of Denver Metroplex on the Denver Region.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Cumulative Impacts
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #510 Topics

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as "criteria

pollutants"). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA's de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Children's Environmental Health and Safety:** The commenter expressed concerns over the long-term negative health impacts associated with inhalation of various pollutants, including fine particulate matter and its impact on children's health and cognitive skills such as reading, memory and standardized test scores. Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, federal agencies are directed, as appropriate and consistent with the agency's mission, to identify and assess environmental health and safety risks that may disproportionately affect children. Environmental health risks and safety risks are attributable to products or substances that a child is likely to come in contact with or ingest or other products they might use or be exposed to.

As discussed in Section 5.2.1, changes associated with the proposed Denver Metroplex Project would occur at or above 3,000 feet Above Ground Level (AGL). Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations." (72 Fed. Reg. 6641 (February 12, 2007)). Accordingly, there

would be no increase in environmental health and safety risks that could disproportionately affect children.

**Cumulative Impacts:** Consideration of cumulative impacts applies to the impacts resulting from the implementation of the proposed Denver Metroplex Project combined with other actions. A cumulative impact is defined as an impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative effects is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed before 2024 and do not include those actions that are highly speculative or indefinite. The type of projects considered under the cumulative impact analysis were primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways. These type of projects may effect aircraft flight operations. A comprehensive search of the FAA Airport Capital Improvement Programs for the identified Study Airports yielded no substantive runway endpoint or elevation changes within the timeline horizons of the Final Environmental Assessment. The Preferred Alternative, when considered with other past, present, and reasonably foreseeable projects would not exceed the thresholds of significance for the resource categories analyzed in the Final Environmental Assessment. Therefore, no cumulative impacts would be anticipated. The No Action Alternative does not involve a proposed project that could contribute to the effects of past, present, or reasonably foreseeable projects. Therefore, no cumulative impacts would be anticipated under the No Action Alternative.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the

Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to "Appendix E: Basic of Noise" (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as

Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**General Aviation/Visual Flight Rules:** The commenter raises concerns that the impacts to general aviation and aircraft operating under Visual Flight Rules (VFR) were not considered in the Final Environmental Assessment. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with ATC. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, there is no known source for comprehensive route, altitude, aircraft type, and frequency information for VFR operations in the General Study Area. However, even if complete information were available for VFR operations, the proposed Denver Metroplex Project would not require any changes to routing or altitudes to accommodate these operations. If they could be modeled, they would use the same flight routes and altitudes under the No Action Alternative and the Preferred Action for the Denver Metroplex Project. Their operations would not be affected by the forecast conditions in 2019 (the proposed first year of implementation) and 2024 (five years after implementation) for either the No Action Alternative or the Preferred Action for the Denver Metroplex Project. Therefore, VFR aircraft were not included in the analysis.

**Historical and Cultural Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including historic and cultural properties. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric; the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the

Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to historical and cultural resources. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.6 of the Final EA, the noise modelling analysis for the proposed Denver Metroplex Project indicated two areas of reportable noise grid points, which were investigated for the presence of historic and cultural properties. The FAA focused its efforts on identifying historic properties in the two areas of potential effect that could receive noise increases and considered the potential for overflight to introduce visual effects that could cause an alteration in the character of the historic property that qualify it for the National Register of Historic Places (National Register). As depicted in Exhibit 5-2, the two areas are associated with the proposed aircraft flight procedures for Denver International Airport: the COORZ Area Navigation (RNAV) Standard Instrument Departure (SID) for westbound departures, the SLEEK (RNAV) SID for southbound departures.

Under Section 106 of the National Historic Preservation Act, the FAA completed consultation with State and Local governments having jurisdiction or special expertise over historic and cultural resources. Additionally, the FAA entered into government-to-government consultation with forty-eight Native American Tribes having a legacy of occupation in the State of Colorado. Consultation with all of these parties did not identify any historic properties within the areas of potential effect for which a quiet setting is a characteristic that qualifies it for the National Register, and that therefore could be affected at the lower level of reportable noise exposure. The FAA also considered the potential for the introduction of visual elements that could diminish the integrity of the property's historic features. We compared the proposed procedures with current flight tracks within the areas of potential effect, and determined that there would be no new areas overflown, and therefore no potential to introduce new visual elements. The proposed procedures would not introduce flight tracks over sensitive areas changing any existing impacts on those historic properties and cultural resources. Consultation did not identify any traditional and cultural properties within the APE for which aircraft noise and/or aircraft overflights would have an effect on a historic property's characteristics qualifying that property for the National Register. Therefore, the proposed Denver Metroplex Project would not have an adverse effect on historic properties.

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver

Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or

above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 511 Submitted by: Wurman, Joshua

**Comment Received:** "Departures over South Boulder cause too much noise. These departures disrupt the naturally quiet environment in Southwest Boulder in particular. The proposed minor shift to the south will result in only minor to indistinguishable relief. A much more significant several mile shift to the south over Coal Creek Canyon over much less populated areas following an already-noisy State Highway should be made. Impact on Table Mesa neighborhood: Thousands of people live in the Southwest Boulder / Table Mesa neighborhoods. These neighborhoods comprise quiet areas far away from major roads borders and include naturally quiet open space and natural areas and border the natural areas of Roosevelt Forest NCAR/NSF open space and NOAA open space. Frequent departures immediately overhead or with the minor shift to the south still nearly overhead are particularly disruptive due to the naturally quiet background conditions and unusual terrain. FAA Computerized Noise Model inadequately models unusual Flatirons cliff reflections: One of the exacerbating factors of the departure path over South Boulder is strong reflection of noise from unusually steep and flat Flatirons cliffs west of South Boulder. I do not believe that the model adequately (or at all) accounts for the unusual increase in noise levels from departing aircraft caused by nearly-specular reflections of noise adding to direct-path noise. FAA Computerized Noise Model inadequately models nocturnal ducting over Boulder: In combination with noise energy reflection over the Flatirons cliffs noise can be ducted/focused in the stable nocturnal boundary layer over the lower terrain areas of Boulder. (Ducting is a well known phenomenon and needs to be modeled correctly to produce adequate predictions over Boulder : See measurements elsewhere by Wilson et al. 2003 in J. Atmos. Sci. [https://doi.org/10.1175/1520-0469\(2003\)060-3C2473:SPITNB-3E2.0.CO;2](https://doi.org/10.1175/1520-0469(2003)060-3C2473:SPITNB-3E2.0.CO;2). and general review in Percey and Embelton 1977 in J. Acoust. Soc. Amer. <https://doi.org/10.1121/1.381455>). While I do not have quantitative measurements or particular expertise aircraft passages over South Boulder are particularly noisy including "ripping" □ noises during calm stable nights when ducting is most likely. Impact on heavily publicly used higher terrain in/near South Boulder: The Flatirons trails the Mesa Trail the trails up and around Green Bear and Boulder Mountains are among the most heavily used trails in the Boulder area. These trails particularly the lower ones are used all year by many thousands of people. Due to the higher altitude of these trails they are much closer to the departure paths. Roughly speaking and there is variability the aircraft are at FL120 when crossing South Boulder. That is less than 4 000 feet from the mountain peaks. With noise levels increasing with the square of inverse distance ( $1/(R^2)$ ) this results in much higher noise levels on these higher altitude natural areas. These effects are exacerbated further in the natural canyons where the noise is focused and reverberates. (The FAA noise model does not adequately simulate the focusing effect of these canyons.) I have personally noticed how birds stop calling and change behavior a (e.g. Bear Creek Canyon Skunk Canyon) and the cessation of coyote calling. Not every aircraft passes over South Boulder at the same altitude. Actual variations in flight levels cause significant differences in noise levels. A 1000 foot difference results in a major fractional difference in separation between the terrain and aircraft and a major increase in noise. Aircraft passages over these heavily-used trails and natural areas are particularly disruptive to the quality of life that many in this area hope for. Minor Proposed shift to the south inadequate: The FAA noise model suggests that the proposed shift will result in an only 0-2 dB reduction in noise over the Table Mesa area of South Boulder. The northern portion of this area may benefit slightly from a 2 dB or less reduction but the southern area will suffer from nearly identical noise levels and continued disruption. This is too-small of a bandage on too-large of a wound. Recommendations: a.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Noise Modelling

- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure
- Suggestions to Change Air Traffic Patterns

#### **FAA Response for Comment #511 Topics**

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA’s required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or

population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard

may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

## Comments-Responses

### Comment# 512 Submitted by: Yang, Trent

**Comment Received:** "It is not clear that the FAA has fully considered all the environmental and other impacts of Metroplex. I would encourage a full a FULL Environmental Impact study before moving forward (like most other public-related projects across the US) A few key items for consideration: - actual increase in aviation pattern and usage over the next 5-20 years - impact on environmental noise and housing value to both private residences as well as public/private schools and public areas - Pollution impact of increased particulate matters and other emissions from airplanes"

### Topics Identified in the Comment

- Forecast/Future Operations
- Level of NEPA Review
- NEPA and FAA Order 1050.1F
- Particulate Matter
- Projected Changes in Aircraft Noise Exposure
- Property Values

### FAA Response for Comment #512 Topics

**NEPA and FAA Order 1050.1F:** The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Particulate Matter:** The proposed Denver Metroplex Project would not result in accumulation of particulate matter or any other pollutant at ground level. The proposed Denver Metroplex Project is a

type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore, is presumed to conform as emissions from this type of action is below the applicable de minimis levels.

As discussed in Section 5.2.1 of the Final Environmental Assessment changes associated with proposed Denver Metroplex Project would occur at or above 3,000 feet above ground level (AGL). Any operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or above and would not result in an increase in emissions and ground concentrations. The 3,000 feet AGL mixing height, identified in both the Environmental Protection Agency's (EPA) General Conformity Regulations and in the FAA's published list of presumed to conform actions, represents an annual national average. Aircraft emissions above the mixing height do not have an effect on pollution concentrations at ground level. In addition, changes in air traffic procedures above 1,500 feet AGL and below the mixing height "would have little if any effect on emissions and ground concentrations" (72 Fed. Reg. 6641 (February 12, 2007)).

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**Property Values:** The proposed Denver Metroplex Project involves air traffic control routing changes for airborne aircraft only; and does not involve land acquisition, physical disturbance, or construction activities. The determination of whether a proposed action may have a significant environmental impact under the National Environmental Policy ACT (NEPA) is made by considering the relevant environmental impact categories and comparing impact to the FAA's thresholds of significance as outlined in FAA Order 1050.1F. The assessment of property values is not an environmental impact category as outlined in FAA Order 1050.1F. To the extent applicable, and as there are no significant impacts under noise or compatible land use, the proposed Denver Metroplex Project is compatible with existing and planned land uses, and the applicable regulations and policies of federal, state, and local agencies. A limited number of studies have attempted to measure the impact of aircraft noise on

property values. Specific studies of the impact of noise at the Study Airports on real property values have not been conducted and are not required. Studies conducted at other national airports have concluded that airport noise only has a slight impact on property values within the Day Night Average Sound Level 65 decibels or greater noise contour around airports. Additionally, comparison of older studies to more recent studies indicates that the impact was greater in the 1960s, when jet aircraft first entered the fleet. This decrease presumably is the result of stabilization of real estate markets following an initial adjustment to noisier jets, and of noise reduction in more modern Stage 3 or better aircraft.

## Comments-Responses

### Comment# 513 Submitted by: Young, Roy

**Comment Received:** Comments submitted for the Denver Metroplex Draft EA

FAA is not living up to the public pledge on the FAA website that "these efforts are designed to reduce the environmental impacts of aviation in absolute terms, including those related to community noise ..." for the Denver Metroplex EA.

The ZIMMR 1 preferred alternative is identical to the current FOOOT departure which began, in 2013, without an EA and has increased low flying aircraft traffic over the Indian Peaks Wilderness including campgrounds and trailheads, none of which is addressed in this EA. Please see USFS map of the area directly impacted by both the current FOOOT departure and the preferred alternative ZIMMR 1. This shows the very popular recreation places including the 4th of July trailhead, Arapaho Pass, the Arapaho glacier trails, and Buckingham Campground.

Not including a noise impact analysis for these resources violates the Department of Transportation Act of 1966, Section 4(f), the National Environmental Policy Act of 1969, the Wilderness Act of 1964; and FAA:Order.1-050.1F. Environmental Impacts: Policies and Procedures, June 2015. The ONLY analysis for impacts on the natural soundscape for wilderness is for arrivals which cross the Lost Creek Wilderness trails near Pine and Bailey , Colorado.

The AEDT model shows only "existing noise exposure from July1, 2016 through June 30, 2017' ignoring, ambient sound levels from before the FOOOT departure began, AEDT does not have ANY ambient sound measurements during quiet periods in either the Indian Peaks Wilderness or the James Peak Wilderness (IPW and JPW), and ignores the continuous ramping up of departures since FOOOT 1 using averages in place of real time departure concentration and intensity. In Nederland, we call this concentration of low flying aircraft "The Sky That Roars." No model in the Metroplex EA even uses measurementsfor the altitude AGL as these airplanes cross directly over Nederland (8250 feet) or the IPW (10,000 to 13,400 feet).

Without altitude for AGL and ambient noise measuremetns in the impacted high altitude IPW, this analysis of 11noise compatible land use" is meaningless. Table 4-5 does not, as claimed "establish a baseline for existing aircraft noise exposure."

The Metroplex EA and the AEDT Model use averages and completely fail to address the concentration and intensity of noise. In just ONE direct observation which I made for example: July 11, 2018, directly overhead, you could see markings on the airplanes, ONE every five minutes between 11:40 and 13:24. Heavy passenger aircraft on the FOOOT departure guiding over the 4th of July IPW trailhead and Arapaho Peak at 11 :40; 11 :44; 11 :47; 11: 55; 12:02; 12:04; 12:09; 12: 11; 12: 13; 12:17;12:23;12:30; 12:46; 12: 56; 13:02; 13:05; 13:08; 13: 16; 13:20; and 13:24.

One EVERY FIVE MINUTES July 11th, 2018 mid-day time of peak summer recreational use. Census data which the AEDT model relies upon is mis-leading and biased since it does not count campers, hikers, tourists or other part - time visitors.

See Page 5-2 of the Draft EA, DOT sec 4(f) : "resources that are protected by Sec 4(f) are publicly owned land from a ...recreation area of national, state or local significance. Substantial impairment occurs when the activities, features or attributes of the resource that contribute to its significance or enjoyment are substantially diminished. This is demonstrably the case yet Table 5-1 concludes NO IMPACT for 2019 and 2024!

In addtion FAA Order 1050.1F "stipulates that changes in exposure of DNL 5dB or grater in areas exposed to aircraft noise between DNL 45dB and 60dB should be considered for airspace actions, such as changes to air traffic routes." I agree. Calling the preferred alternative change from FOOOT 3 to ZIMMR I leaves the departure centerline directly over Nederland and the IPW in direct violation of FAA Order 1050.1.F

The critical guidance not followed or addressed by this EA is in Sec 11.3.1 Significance Determination Page 11-10 read, in part, "Special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas .. on visitors .. where other noise is very low and a quiet

setting is a generally recognized purpose and attribute." The EA again ignores its own required guidance in Table 5-1 , giving accuracy to incomplete and inaccurate models which are based on July 2016 to June 2016 numbers, three years after the FOOOT 3 departure was established and using no real noise monitor data at impacted high altitude locations near Nederland or the IPW.

Instead, Table 5-1 claims NO IMPACT for 2019 and 2024 for noise where the preferred alternative ZIMMR 1 changes nothing as it crossed the IPW (see Exhibit 3-10 , Proposed Action North Flow, with overlays for ZIMMR 1 SID and the no action FOOOT3 SID where BOTH cross identical flight path vectors over the IPW.)

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Noise Modelling
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure
- ZIMMR SID

### FAA Response for Comment #513 Topics

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment

include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centennialairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

Section 1.2. in the Final Environmental Assessment (EA) describes the difference between RNAV and conventional routes. With PBN, the overall number of aircraft flying in close proximity to a defined path is greatly improved for both approach and departure tracks. This will mean aircraft noise exposure levels are concentrated on a smaller area, thereby exposing fewer people to aircraft noise than occurs with equivalent conventional procedures that may have more dispersed flight tracks. In some areas, flight concentration already exists because many RNAV procedures have already been published and have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

To help maintain safety in the NAS, FAA Air Traffic Control (ATC) will continue to employ air traffic management methods and coordination techniques as described in Section 1.2.2 of the Final EA, Air Traffic Control within the NAS. Therefore, the FAA expects that some dispersion of flight tracks will continue even for some aircraft operating on RNAV procedures. To account for this, the noise model includes flight tracks that follow a proposed RNAV flight path but are turned off the flight path at designated areas where the FAA has forecasted the likelihood of vectoring or rerouting. The noise modelling analysis accounts for both concentration and expected continuation of some dispersion. As described in Chapter 5 of the Final EA, changes in noise exposure levels may occur as a result of flight path concentration. However, the results of the noise modelling analysis indicate that the Preferred Alternative for the Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure when compared to the No Action Alternative.

**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA's required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was

forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 514 Submitted by: Young, Roy

**Comment Received:** FAA is not living up to the public pledge on the FAA website the "these efforts are designed to reduce the environmental impacts of aviation in absolute terms, including those related to community noise..." for the Denver Metroplex EA. The ZIMMR 1 preferred alternative is identical to the current FOOOT departure which began, in 2013 without an EA and has increased low flying aircraft traffic over the Indian Peaks Wilderness including campgrounds and trail heads, none of which is addressed in the EA. Please see USFS map of the area directly impacted by both the current FOOOT departure and the preferred alternative ZIMMR 1. This shows the very popular recreation places including the 4th of July trailhead, Arapaho Pass, the Arapaho glacier trails and Buckingham campground. Not including a noise impact analysis for these resources violates the Department of Transportation Act of 1966, Section 4(f), the National Environmental Policy Act of 1969, the Wilderness Act of 1964, and FAA order 1050.1F Environmental Impacts: Policies and Procedures, June 2015. The ONLY analysis for impacts on the natural soundscape for wilderness is for arrivals which cross the Lost Creek Wilderness trails near Pine and Bailey, Colorado. The AEDT model shows only "existing noise exposure from July 1, 2016 through June 30, 2017" ignoring ambient sound levels from before the FOOOT departure began, AEDT does not have any ambient sound measurements during quiet periods in either the Indian Peaks Wilderness or the James Peak Wilderness (IPW and JPW), and ignores the continuous ramping up of departures since FOOOT1 using averages in place of real time departure concentration and intensity. In Nederland, we call this concentration of low flying aircraft "The Sky That Roars." No model in the Metroplex EA even uses measurements for the altitude AGL as these airplanes cross directly over Nederland (8,250 feet) or the IPW (10,000 to 13,400 feet). Without altitude for AGL and ambient noise measurements in the impacted high altitude IPW, this analysis of "noise compatible land use" is meaningless. Table 4-5 does not, as claimed "establish a baseline for existing aircraft noise exposure." The Metroplex EA and the AEDT Model use averages and completely fail to address the concentration and intensity of noise. In just one direct observation which I made for example: July 11, 2018, directly overhead, you could see markings on the airplanes, ONE every five minutes between 11:40 and 13:24. Heavy passenger aircraft on the FOOT departure guiding over the 4th of July IPW trailhead and Arapaho Peak at 11:40; 11:44; 11:47; 11:55; 12:02; 12:04; 12:09; 12:11; 12:13; 12:17; 12:23; 12:30; 12:46; 12:56; 13:02; 13:05; 13:08; 13:16; 13:20; 13:24. One EVERY FIVE MINUTES July 11, 2018, mid-day time of peak summer recreational use. Census data which the AEDT model relies upon is misleading and biased since it does not count campers, hikers, tourists or other part-time visitors. See page 5-2 of the Draft EA, DOT sec 4(f): "resources that are protected by Sec 4(f) are publicly owned land from a ...recreation area of national, state or local significance. substantial impairment occurs when the activities, features or attributes of the resource that contribute to its significance or enjoyment are substantially diminished. This is demonstrably the case yet Table 5-1 concludes NO IMPACT for 2019 or 2024! In addition FAA Order 1050.1F "stipulates that changes in exposure of DNL 5dB or greater in areas exposed to aircraft noise between DNL 45dB and 60dB should be considered for airspace actions, such as changes to air traffic routes." I agree. Calling the preferred alternative change from FOOT3 to ZIMMER1 leaves the departure centerline directly over Nederland in direct violation of FAA Order 1050.1F. The critical guidance not followed or addressed by this EA is in Sec 11.3.1. Significance Determination Page 11-10 read, in part, "Special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas...on visitors...where other noise is very low and a quiet setting is generally recognized purpose and attribute." The EA again ignores its own required guidance in Tables 5-1, giving accuracy to incomplete and inaccurate models which are based on July 2016 to June 2016 numbers, three years after the FOOOT 3 departure was established and using no real noise monitor data at impacted high altitude locations near Nederland or the IPW. Instead, Table 5-1 claims NO IMPACT for 2019 and 2024 for noise where the preferred alternative changes nothing as it crossed the IPW (see Exhibit 3-10, Proposed Action North Flow, with overlays for ZIMMR 1 SID and the no action

FOOOT3 SID where BOTH cross identical flight path vectors of the IPW.) Submitted at 16:00 MDT  
June 5th, 2019

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Noise Modelling
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure
- ZIMMR SID

### FAA Response for Comment #514 Topics

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act

for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Existing Aircraft Noise:** The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA. Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

Centennial Airport  
303-790-4709  
<http://www.centenniairport.com/index.php/noise/noise-management>

Denver International Airport  
303-342-2380  
[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

Greeley-Weld County Airport  
970-336-3000  
<http://www.gxy.net/>

Northern Colorado Regional Airport  
970-962-2850  
<https://www.flynoco.com/>

Rocky Mountain Metropolitan Airport  
303-271-4850  
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

**Frequency of Aircraft Overflights:** In its effort to modernize the National Airspace System (NAS), the FAA is developing instrument flight procedures that use advanced PBN technologies. A primary component of PBN is Area Navigation or RNAV. RNAV uses the Global Positioning System satellite-based navigation to allow an RNAV-equipped aircraft to fly a more predictable and efficient route; utilizing limited airspace as efficiently as possible for a congested metroplex airspace area. More than 90 percent of U.S. scheduled air carriers are equipped to use some level of RNAV.

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have been used for several years. There are also many conventional procedures with defined routes between two points, which also create a concentration of flight tracks. Table 3-1 in Chapter 3, Alternatives, contains a listing of already-published RNAV and conventional flight procedures. Accordingly, aircraft concentration along many routes already occurs within the General Study Area for the proposed Denver Metroplex Project.

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**Noise Modelling:** The commenter raised concerns with the noise modelling methodology. The noise analysis completed for the Final Environmental Assessment (EA) was prepared using the Aviation Environmental Design Tool (AEDT) version 2d, which is the FAA's required noise model. The FAA uses AEDT to model noise for flight track changes over large areas and at altitudes over 3,000 feet AGL to analyze noise associated with the No Action Alternative and the Denver Metroplex Project proposed action. The AEDT 2d model utilizes an extensive aircraft performance and sound level database that includes information on variations in sound attributed to different types of aircraft and aircraft engines, aircraft speed, climb and descent thrust, and the altitude along a route. Detailed terrain data was inputted into the AEDT 2d model, which accounts for the elevation of each grid point or population centroid when calculating the distance between the grid point and the aircraft. The aircraft noise analysis prepared for the proposed Denver Metroplex Project Final EA was conducted in compliance with FAA Order 1050.1F.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative

would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR

(RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 515 Submitted by: Young, Roy

**Comment Received:** The Metroplex EA fails to include the following information in the analysis of noise impacts for westbound departures:

Current daily number of heavy passenger aircraft using the FOOOT 3 departure, times of day and spacing, or required altitude over Nederland residential areas or over the IPW.

There are no noise monitors to establish an ambient baseline or to establish sound levels at different locations and altitudes in either of these areas despite the claims of Sec 4.3. 7 .2 and Table 4-5

The same data listed above is also missing for the other three alternative west departures BAYLR 3, CONNR 4, and COORZ 3 for both current levels of use and those for changes proposed in the Metroplex EA Preferred Alternative.

from the FAA Open House for NextGen Metroplex held in Boulder, CO:

I spoke in detail with Marina Landis (Table B-1 in the EA) who was the " environmental policy guidance and documentation reviewer" for the FAA Western Service Center, Operations Support Group based in Seattle

(think Boeing?) Title of Environmental Protection Specialist" although her degree is in wetlands science.

When I mentioned the concentration of low, noisy flight patterns directly overhead of Ridge Road , Nederland, and North Boulder Creek heading directly for Arapaho Peak on the Fooot 3 departure trajectory. she claimed that the 11new preferred alternative " in the EA would be the ZIMMR 1 which would be 3 miles south and over Rocky Flats. Marina also apparently had little or no knowledge of the local communities impacted by the FOOOT 3 departure. When asked if she knew where Nederland was she answered "near Centennial?" And, when told that this was incorrect, she asked if it was "outside of Longmont." (In fact Nederland, and the Indian Peaks Wilderness are never mentioned in the Metroplex EA.)

This lack knowledge of local geography and of the impacts from someone who is the sole "environmental policy guidance reviewer" for the Metroplex EA is disturbing. It shows gross indifference to really evaluating the noise impacts from low flying aircraft in the FOOOT departure and which will continue with the preferred alternative ZIMMR departure.

This NOT the case. ZIMMER 1 departures will follow the almost identical route of the FOOOT 3 departure on the median line from Marshall Res. to Gross Res. to Barker Res. to Tabernash. The ZIMMR 1 vector will continue directly over the Town Of Nederland and the 4th of July / Buckingham park and all trailheads for access to the southern end of the Indian Peaks Wilderness.

The other three departures in the preferred alternative are (see layers in 3.2.2) are BAYLR4, CONNR 5, and COORZ 4. COORZ 5 WOULD in fact be the route for these low flying planes over Rocky Flats. If the DIA west departures which are concentrated in the 10:30AM to 1:30 PM and 4:30 PM to 8:00 PM were evenly distributed among the four tangents listed above, much less noise arid irritation for everyone. I asked about minimum height restrictions and if there was a minimum ABG level over Wilderness areas and got no response.

No response either when I asked why ALL the noise monitors are clustered around the DIA perimeter and nothing, not one, under the FOOOT 3 at altitude. We have three excellent secure sites for noise monitoring and for measuring baseline ambient noise levels:

Ridge Road BVSD school bus garage,, CU Rainbow Lakes Mountain research Station, Lake Eldora Ski Area. Instead of actual measurements the EA is using HUD data as a standard. There are just NO environmental advocates and no environmental expertise involved in this process and review of this EA.

The FAA Draft EA reviewers are listed with education in mechanical and aerospace engineering; statistics, mathematics, computer science; aviation management and administration. The RTCA Joint Analysis Team " Report of the NextGen Advisory Committee with 51 members are listed as

representatives of Airlines for America, American Airlines Delta Airlines, FAA FedEx, Jet Blue PASSURAerospace Southwest Airlines, MITRE Corporation, United Airlines, and UPS. This is how you get an EA which has pro-industry bias and little or no consideration of environmental impacts or finding ways to minimize them.

Marina was not anywhere up to speed. She had never heard of Nederland of the Indian Peaks or James Peak Wilderness. She first thought that Nederland was "south by Centennial or perhaps out by Longmont. open house. Mostly FAA people and their "contractors." They are claiming that the "new" Zimmr one departure moves routes three miles south but from the EA it looks just the same as FOOOT 3. Draw a line from Marshall lake/Gross/Barker/Tabernash and you will see the ZIMMR 1 route, directly over Nederland. See the graphic with new departures in Sec 3.2.2 of the EA.

I asked them for an open house in Nederland to address IPW issues and concentration of flights ("increased sequencing time.") But, good luck with that, I think.

### Topics Identified in the Comment

- COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles
- DOT Section 4(f) Resources
- Noise Modelling Analysis
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID - Move 1.3 Nautical Miles
- ZIMMR SID

### FAA Response for Comment #515 Topics

**COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles:** The commenter requests that the FAA consider modifying the proposed COORZ (RNAV) SID by moving the location of the IPALE waypoint 0.7 nautical miles south from the original location. The FAA reviewed the proposal while also considering the effects of weather and winds in the area. Rapidly changing atmospheric conditions and convective activity over the Front Range requires air traffic control to build in a greater margin of safety than the minimum separation standards for aircraft. The FAA determined the proposal would reduce the built-in margin of safety, thus limiting the procedures for air traffic control to efficiently manage air traffic on the proposed COORZ (RNAV) SID and CONNR (RNAV) SID.

**DOT Section 4(f) Resources:** The commenter mentioned the Environmental Assessment (EA) excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools. To comply with NEPA requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. This is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise modelling analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR) for the No Action Alternative and the Preferred Alternative for the forecasted years 2019 and 2024. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024.

However, the FAA recognizes that this standard may not be relevant to certain publically owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. As shown in

Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. In Section 5.5 of the Final EA, the noise modelling analysis for the Preferred Alternative indicated one reportable noise grid point associated with the proposed SSKII Area Navigation (RNAV) Standard Terminal Arrival (STAR) flight procedure. The reportable noise grid point is within the Lost Creek Wilderness Area as depicted in Exhibit 5-2. This location is along the flight path of the primary southwest airspace arrival gate for the Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

The FAA initiated Section 4(f) consultation in April 2017 with the National Park Service (Intermountain Region) to determine if features or attributes associated with the one location within the Lost Creek Wilderness would be substantially impaired by this increase. In consultation with the National Park Service, it was brought to the FAA's attention that resources identified for assessment include a resource managed by the U.S. Forest Service, Rocky Mountain Region. Under Section 4(f), noise would need to be at levels high enough to have negative consequences of a substantial nature that amount to a taking of a park or portion of a park for transportation purposes. Aircraft flying the proposed SSKII (RNAV) STAR arrival flight procedure would continue using this primary southwest airspace arrival gate closely following the historic flight tracks. Consultation did not identify any constructive use of any resources protected under Section 4(f) of the Department of Transportation Act for which aircraft noise and/or aircraft overflights would have an effect on the resource. Therefore, the Preferred Alternative would not result in a constructive use of the Lost Creek Wilderness Area. Consequently, the FAA has determined that the Preferred Alternative would not result in potential impacts to Section 4(f) properties.

**Noise Modelling Analysis:** To comply with the National Environmental Policy Act (NEPA) requirements, the FAA has issued guidance on assessing aircraft noise in FAA Order 1050.1F. This guidance requires that aircraft noise analysis use the yearly Day-Night Average Sound Level (DNL) metric. DNL is the FAA's primary metric used to establish a yearly day/night average of cumulative noise energy exposure of individuals to noise resulting from aviation activities. The noise analysis evaluated noise exposure to noise sensitive areas within the General Study Area from aircraft forecasted to be operating under Instrument Flight Rules (IFR). IFR-filed aircraft activity was forecasted for the years 2019 and 2024 and used to model conditions under both the No Action Alternative and the Preferred Alternative.

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

The compatibility of noise sensitive land use is evaluated through comparison with the compatibility guidelines provided in 14 CFR Part 150, Appendix A, table 1. The guidelines focus on areas exposed to noise levels of DNL 65 dB and greater. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas. As shown in Table 5-2, a 3 dB increase in areas exposed to DNL 60 to 65 dB and a 5 dB increase in areas exposed to DNL 45 to 60 dB are considered reportable noise increases. The FAA prepared the noise modelling analysis of the proposed flight procedures to account the reportable noise criteria. Experience has indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern.

The FAA identified three areas with lower levels of aircraft noise exposure, specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Although this would result in a reportable aircraft noise exposure DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB, the project does not introduce noise that would affect the features, or attributes associated with the three areas that would adversely affect it.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

**Suggestions to Change Air Traffic Patterns:** FAA determined that the proposed procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs.

**ZIMMR SID - Move 1.3 Nautical Miles:** The commenter requests that the FAA consider modifying the proposed ZIMMR Area Navigation (RNAV) Standard Instrument Departure (SID) by moving the flight path 1.3 nautical miles southward from the location that was depicted at the workshops for the Draft Environmental Assessment. The proposal would affect the proposed COORZ (RNAV) SID, CONNR (RNAV) SID, and the BAYLR (RNAV) SID; requiring the same 1.3 nautical miles movement southward in order to maintain aircraft separation standards. The FAA reviewed this proposal while also considering the effects of weather and winds in the area. Rapidly changing atmospheric conditions and convective activity over the Front Range requires air traffic control to build in a greater margin of safety than the minimum separation standards for aircraft. The FAA determined that the proposed COORZ (RNAV) SID, CONNR (RNAV) SID and the BAYLR (RNAV) SID procedures as designed provide greater compatibility with other proposed air traffic routes and airspace sector designs. Additionally, moving the proposed BAYLR (RNAV) SID any further south

would reduce the margin of safety with the proposed SSKII (RNAV) Standard Terminal Arrival (STAR) procedure and the existing, conventional POWDR STAR procedure. Moreover, the FAA designed the proposed BAYLR (RNAV) SID to avoid overflying the noise sensitive areas in downtown Denver, including the City Park and the Denver Zoo.

**ZIMMR SID:** The commenter requests that the FAA consider moving the flight path of the proposed ZIMMR (RNAV) SID southward from the location that was depicted at the workshops for the Draft Environmental Assessment. Based on the comments, the FAA completed a comprehensive analysis of the proposal to amend the flight procedure design of the proposed ZIMMR (RNAV) SID. The FAA modified the proposed ZIMMR (RNAV) SID by moving the location of the RALFI waypoint an additional 0.7 nautical miles to the south and east from the original location on the proposed ZIMMR (RNAV) SID. The new location of the RALFI waypoint creates a lateral shift of approximately 2.0 nautical miles south of the location of the existing flight path of the published FOOOT (RNAV) SID procedure.

## Comments-Responses

### Comment# 516 Submitted by: Zeppelin, Goward

**Comment Received:** "I feel the Metroplex plan for Denver area airports will negatively effect the lifestyle and environment of all the communities in the proposed flight paths. The noise pollution will disrupt the the daily lives of the humans and the wildlife we cherish in Colorado. We moved to Cherry Hills over 40 years ago for the semi-rural peaceful environment it provided for my family. The FAA proposed changes will drastically change that and eventually depress the value of homes in this community and others in the Denver area. I implore to reconsider and take into account the views submitted by residents."

### Topics Identified in the Comment

- Property Values
- Purpose and Need of Project

### FAA Response for Comment #516 Topics

**Property Values:** The proposed Denver Metroplex Project involves air traffic control routing changes for airborne aircraft only; and does not involve land acquisition, physical disturbance, or construction activities. The determination of whether a proposed action may have a significant environmental impact under the National Environmental Policy ACT (NEPA) is made by considering the relevant environmental impact categories and comparing impact to the FAA's thresholds of significance as outlined in FAA Order 1050.1F. The assessment of property values is not an environmental impact category as outlined in FAA Order 1050.1F. To the extent applicable, and as there are no significant impacts under noise or compatible land use, the proposed Denver Metroplex Project is compatible with existing and planned land uses, and the applicable regulations and policies of federal, state, and local agencies. A limited number of studies have attempted to measure the impact of aircraft noise on property values. Specific studies of the impact of noise at the Study Airports on real property values have not been conducted and are not required. Studies conducted at other national airports have concluded that airport noise only has a slight impact on property values within the Day Night Average Sound Level 65 decibels or greater noise contour around airports. Additionally, comparison of older studies to more recent studies indicates that the impact was greater in the 1960s, when jet aircraft first entered the fleet. This decrease presumably is the result of stabilization of real estate markets following an initial adjustment to noisier jets, and of noise reduction in more modern Stage 3 or better aircraft.

**Purpose and Need of Project:** The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

The proposed Denver Metroplex Project addresses the problem of inefficiency of the existing aircraft flight ATC procedures in the Denver Metroplex airspace. This problem is due to the use of older RNAV ATC procedure techniques and strategies applied in the 2012 project, FAA RNAV and RNP Procedures at Denver International Airport, Centennial Airport and Rocky Mountain Metropolitan

Airport (2012 RNAV). The 2012 RNAV procedures were implemented to improve the safety and efficiency of the Denver airspace and respond to the growing need for efficiency as the airport operations in the Denver airspace increased. Following implementation and operation of ATC procedures designed under this effort, the FAA found that a number of features were hindering the best use and application of RNAV RNP procedures in the Denver airspace such as unnecessary procedure complexity, the establishment of more procedures than needed, and that the DEN and surrounding satellite airport ATC procedures were not segregated, resulting in a diverse mixture of air carrier and general aviation air traffic. These issues formed the underlying basis for the application of evolving and newer air traffic management strategies and methods.

Refined procedures, strategies, and techniques associated with air traffic management have adjusted and improved to better take advantage of RNAV capabilities and to reduce complexity. The proposed Denver Metroplex Project would optimize procedures serving the Study Airports by taking advantage of the benefits of performance based navigation (PBN). This would be achieved through implementation of RNAV procedures that will help improve the efficiency of the airspace in the Denver Metroplex, while maintaining or enhancing safety, in accordance with FAA's mandate under federal law.

## Comments-Responses

### **Comment# 517 Submitted by: Zhao, jules**

**Comment Received:** "I would highly urge the FAA to do a detailed environmental impact study that fully covers all the relevant issues including: - increased noise affects - increased environmental impacts including pollution - proper assumption of increased flight patterns due to the significant increase in expect flight traffic both to DIA and to Centennial airport"

### **Topics Identified in the Comment**

- Air Quality/Air Pollution
- Forecast/Future Operations
- Level of NEPA Review
- Projected Changes in Aircraft Noise Exposure

### **FAA Response for Comment #517 Topics**

**Air Quality/Air Pollution:** In the United States, air quality is generally monitored and managed at the county or regional level. As discussed in Section 4.3.1 of the Final Environmental Assessment (EA), the Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), regulates emissions of pollutants into the atmosphere from both mobile (e.g., automobiles) and stationary (e.g., factories) sources. To help accomplish this task, the CAA requires the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS) common air pollutants (referred to as “criteria pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter (PM)(up to both 2.5 micrometers [PM2.5] and 10 micrometers [PM10]), and Sulfur Dioxide (SO<sub>2</sub>). The NAAQS establishes two standards: primary standards for protection of human health and secondary standards for protection of property and the environment. The CAA also requires the states to submit to the EPA a list of geographical areas that do or do not conform to the NAAQS. Table 4-2 in Section 4.3.1 of the Final EA identifies those counties and regions within the General Study Area that are in nonattainment or maintenance of the NAAQS. There are areas within the General Study Area that are in nonattainment for Ozone (O<sub>3</sub>) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

The proposed Denver Metroplex Project is presumed to conform with the SIP. The EPA regulations identify certain actions that would not exceed these thresholds, including air traffic control (ATC) activities and adoption of approach, departure, and en route ATC procedures for aircraft operations above the mixing height specified in the applicable SIP (or 3,000 feet above ground level (AGL) in places without an established mixing height). FAA Order 1050.1F provides that further analysis for NEPA purposes is normally not required where emissions do not exceed the EPA’s de minimis thresholds.

The proposed Denver Metroplex Project is a type of action that promotes the safe, orderly, and expeditious flow of aircraft traffic including airport, approach, departure and en route air traffic control, and therefore is presumed to conform as emissions from this type of action is below the applicable de minimis levels (40 CFR 93.153(c)(2) (xxii)). In addition, the results of FAA research on mixing heights indicate that changes in air traffic procedures above 1,500 ft. AGL and below the mixing height would have little if any effect on emissions and ground concentrations (FAA-AEE-00-01, September 2000, p. 5). Such actions in the vicinity of the airport are tightly constrained by runway alignment, safety, aircraft performance, weather conditions, terrain, and vertical obstructions (FAA Advisory Circulars No. 25-13 and No. 91- 53A). Accordingly, air traffic actions below the mixing height are also presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions. (72 Fed. Reg. 6641 (February 12, 2007)).

**Forecast/Future Operations:** The purpose of the proposed Denver Metroplex Project, as described in Chapter 2 of the Final Environmental Assessment (EA), is to improve the efficiency of aircraft arrival and departure procedures and airspace utilization in the Denver Metroplex airspace. The FAA designed the metroplex initiative to optimize air traffic control (ATC) procedures and airspace on a regional scale. Optimized ATC procedures takes advantage of technological advances in navigation, such as Area Navigation (RNAV), while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. This approach addresses airspace congestion and other factors that reduce airspace efficiency in busy metroplex areas. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

Aircraft flight schedules for the forecasted change in the number of aircraft operations at the Study Airports were prepared to support the aircraft noise analysis for the proposed Denver Metroplex Project Final EA. Three flight schedules were developed to represent the average annual day (AAD) flight activity at the Study Airports, corresponding to the years assessed for aircraft noise conditions and used to model future aircraft noise exposure. The AAD does not reflect a particular day, but is meant to represent a typical day over a period of a year. The forecast was based on the FAA's 2018 Terminal Area Forecast (TAF), modified for 2019 and 2024 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. The TAF is the official forecast of aviation activity at FAA facilities and is updated annually. The AAD flight schedules only include operations conducted by aircraft operating under Instrument Flight Rules (IFR) because the proposed Denver Metroplex Project involves the design of standard instrument arrival and departure procedures, which are only used by aircraft operating under IFR.

Based on the data in the TAF, there is an anticipated increase in average annual day air carrier traffic to Denver International Airport between the years 2019 and 2024. The proposed Denver Metroplex Project used the forecast data to model noise for 2019 and 2024 conditions. The noise modeling analysis indicated that the proposed Denver Metroplex project would not result in changes to noise exposure that exceed the significant noise threshold for the forecasted years of 2019 and 2024. More detail related to the development of the forecasts is provided in Appendix H: Denver Metroplex Flight Schedules Technical Report available on the Project website at [http://www.metroplexenvironmental.com/denver\\_metroplex/denver\\_docs.html](http://www.metroplexenvironmental.com/denver_metroplex/denver_docs.html).

**Level of NEPA Review:** The FAA's primary mission is to provide the safest, most efficient aerospace system in the world. National Environmental Policy Act (NEPA) compliance and other environmental responsibilities are integral components of that mission. The FAA is responsible for complying with the procedures and policies of NEPA and other environmental laws, regulations, and orders applicable to FAA actions. Under NEPA, the Federal Agencies are required to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts that could

arise from proposed Federal actions. The FAA decision-making process must consider and disclose the potential impacts of a proposed action and its alternatives on the quality of the human environment.

In meeting its NEPA obligations, the FAA should seek to achieve the policy objectives of 40 CFR § 1500.2 to the fullest extent possible. Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. Specifically, the Final EA for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories.

The FAA evaluated the Preferred Alternative and the No Action Alternative, as required under NEPA. The results of the analysis indicate that the Preferred Alternative would not exceed the thresholds of significance for any of the resource impact categories analyzed. The Final EA presents sufficient evidence and analysis in determining that preparation of a FONSI is appropriate and that no EIS is required in accordance with NEPA.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.

## Comments-Responses

### Comment# 518 Submitted by: Zucker, Rachel

**Comment Received:** Mental health is a major issue in our community. Studies have shown that disruptive noise such as aircraft noise can reduce people's ability to deal with stress. Therefore increasing the number of aircraft allowed to fly over my home and subsequently increasing the noise pollution in my neighborhood is not an acceptable option. FAA do you want to be held responsible for the possible ramifications of this decision?

### Topics Identified in the Comment

- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #518 Topics

**Physical and Mental Health:** The FAA implements NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1). The Final Environmental Assessment (EA) for the proposed Denver Metroplex Project considered the potential effects on the environmental resource categories identified in FAA Order 1050.1F. The FAA uses the corresponding thresholds that serve as specific indicators of significant impact for some environmental impact categories. . The FAA has not established a significance threshold for general physical and mental health concerns. However, regulations pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks require the FAA to assess environmental health risks and safety risks that may disproportionately affect children. As discussed in Chapter 5, the proposed Denver Metroplex Project would not exceed the thresholds of significance for the resource categories analyzed in the Final EA. Accordingly, there would be no increase in environmental health and safety risks that would disproportionately affect children.

**Projected Changes in Aircraft Noise Exposure:** The commenter raises concerns pertaining to projected changes in aircraft noise exposure. Aircraft noise is often the most noticeable environmental effect associated with any aviation project. The commenter raised concerns about the effects of the Preferred Alternative on noise related to aircraft operations. The commenter mentioned the noise modelling analysis excludes the impact of noise at or below the Day Night Average Sound Level (DNL) of 65 decibels (dB) on noise sensitive areas, including residences, historic areas, parks and schools.

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the same methodology and criteria. The noise modelling analysis results indicate that the Preferred Alternative , when compared to the No Action Alternative, would not result in changes to aircraft noise exposure that exceed the significant noise threshold of DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher for 2019 and 2024. However, the FAA recognizes that this standard may not be relevant to certain noise sensitive areas (i.e., historic sites, parks). The FAA refers to noise changes meeting the criteria of an increase of DNL +3 dB or more within areas exposed to the DNL 60 - 65 dB, or an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB as

reportable. The results of the noise modelling analysis indicate that no population would be exposed to reportable noise increase of DNL +3dB or more within areas between DNL 60 dB and 65 dB. However, the FAA identified areas with lower levels of aircraft noise exposure which would experience a noticeable increase in noise – specifically, an increase of DNL +5 dB or more within areas exposed to the DNL 45 - 60 dB. Areas with noise changes meeting this criteria were further investigated for the presence of historic and cultural properties and/or properties protected under Section 4(f) of the Department of Transportation Act.