

**J J-3 Comments on the Draft EA & FAA Responses**

**Public Comments 201 (Harris) through 300  
(Lundquist) with FAA Responses**

## Comments-Responses

### Comment# 201 Submitted by: Harris, Jamie

**Comment Received:** "To Decision Makers of the Denver Metroplex NextGen plan: PLEASE DO NOT GO FORWARD with the Denver Metroplex NextGen plan. The FAA's plan to revise its flight paths will have far reaching effects on the residents and neighborhoods in Cherry Hills Village. We live in the areas we chose because we wanted to insure a peaceful quiet environment. 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 is creating a GPS 'highway' for the landing approach to DIA that will fix the flight path in one line and will tighten the number of flights on this track to every 2 minutes. This 'line of planes' or 'highway' will go directly over our homes in Cherry Hills Village every 2 minutes everyday. The FAA claims it won't be noisy but in other cities where this has happened they call those neighborhoods 'noise ghettos'. 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. I have learned that the FAA measures noise from sea level. Cherry Hills Village is 5 426 feet above sea level bringing us 50% closer to these flight patterns and increasing our noise levels by 50% more than what the FAA considers safe and acceptable. PLEASE DO NOT MOVE FORWARD WITH THIS PLAN! It could not take more than five seconds to download a comprehensive review article from Noise & Health to read that the health effects from aviation noise have been known for decades to be detrimental to human health: Aviation Noise Impacts: State of the Science Mathias Basner MD PhD MSc; Charlotte Clark; Anna Hansell; James I. Hileman; Sabine Janssen; Kevin Shepherd; Victor Sparrow Noise and Health 19(87): 41-50  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5437751/> Among the findings in this article  
 ""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 (see ""Financial support and sponsorship""). In 2011 the World Health Organization published a report ""Burden of disease from environmental noise - Quantification of healthy life years lost in Europe."" Quoting from abstract ""This publication summarizes the evidence on the relationship between environmental noise and health effects including cardiovascular disease cognitive impairment sleep disturbance tinnitus and annoyance."" Many other articles on the health effects of aviation noise and pollution have been published in highly reputable venues; see <https://www.ncbi.nlm.nih.gov/pubmed/27490267>  
<https://news.nationalgeographic.com/news/2010/10/101005-planes-pollution-deaths-science-environment/> This plan will have a detrimental effect to our health and our property values. I respectfully request that you DO NOT implement your proposed Denver Metroplex plan. Please stop this plan in its tracks immediately. Thank you Jamie Harris"

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Altitude/Mean Sea Level
- Children's Environmental Health and Safety
- Forecast/Future Operations
- Frequency of Aircraft Overflights
- NEPA and FAA Order 1050.1F
- Noise Modelling Analysis
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

- Property Values
- Purpose and Need of Project
- Sleep Disturbance/Speech Interference

#### FAA Response for Comment #201 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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)).

**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.

**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).

**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 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.

**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.

**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# 202 Submitted by: Harris, Ron

**Comment Received:** The northwest arrival gates sound footprints are directly over RMNP. The noise from arrivals interferes with listening to calls of Raptors Pikas Citizen Science Projects and general enjoyment of nature. The arrival gates should be relocated to the north or south and the level off altitude should be closer to DIA so the engine noise from level off is less noticeable. These are easy fixes (from a retired Denver UAL pilot).

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #202 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# 203 Submitted by: Harth, Johanna

**Comment Received:** For 30 years we have selected to live in a pristine suburban area in Parker The Pinery. In more recent times we have been impacted by the noise of lower altitude flights over our neighborhood particularly in the mornings and evenings. My hope which I am sure is echoed by the 10 000 residents of The Pinery hundreds of deer turkeys and towering pines is that you are able to route flights over either less populated or empty lands (nobody to hear the planes) or more commercial and busier city areas (nobody will notice the planes due to the already existing noise level) in the approach to DIA. Thank you for your consideration!

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #203 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.

## Comments-Responses

### Comment# 204 Submitted by: Hawkins, Wendy

**Comment Received:** "My recommendation is a two step process: 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. These are SMALL changes that would make a BIG difference to alleviate jet noise over Boulder Louisville and Nederland. Both of these steps must be enacted."

### Topics Identified in the Comment

- COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles
- Existing Aircraft Noise
- ZIMMR SID - Move 1.3 Nautical Miles
- ZIMMR SID

### FAA Response for Comment #204 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.

**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>

**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# 205 Submitted by: Hayutin, Murray**

**Comment Received:** The aircraft noise over our home is excessive.

### Topics Identified in the Comment

- Existing Aircraft Noise

### FAA Response for Comment #205 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# 206 Submitted by: Hea, Rima

**Comment Received:** I DO NOT SUPPORT the Next/Gen Denver Metroplex Plan for the following reasons: **QUESTIONABLE NEED FOR CHANGE:** While increased efficiency and aircraft capacity may save some time money and fuel for the airline carriers those are not good enough reasons to expose the public living below the proposed air traffic corridors to proven and potential decreased health and decreased quality of life. **INCOMPLETE NOISE DATA:** The noise modelling program values presented at the workshop represent an average value for aircraft noise levels over a 24hr period. Average values do not communicate any information about the highest or lowest noise levels or their frequency duration and time of day that they occur. Our community cannot be expected to make a decision with long term impacts based on incomplete information. **UNCLEAR PRESENTATION OF DATA AND MAPS:** The representatives at the event could have put on a town hall meeting including group Q&A so that all could hear. The maps especially could have been presented in a more connected manner that way. The workshop format made that impossible. It was up to each individual to understand each map and video how they relate to each other and come up with all of the questions and get answers on their own. The workshop experience felt overwhelming confusing and less than transparent. **PUBLIC HEALTH IMPACTS OF AIRCRAFT NOISE:** I recently read a white paper review on the effects of aircraft noise. "Aviation Noise Impact: State of The Science" published in Noise Health 2017 Mar-Apr: 19(87):41-50 which stated that there is sufficient evidence that aircraft noise is associated with hypertension in adults and delayed cognitive skills in children among other things. It concluded that more studies need to be done. No changes should be made until that happens. **QUALITY OF LIFE:** My community of Cherry Hills Village has made a commitment to maintain a semi-rural atmosphere to enjoy our natural outdoors. It is disturbing to me that some may think that using sound mitigation in buildings may be a good enough solution to dealing with aircraft noise. In Colorado we pride ourselves on being OUTSIDE as much as possible. Therefore our best option is to not route air traffic over the Denver metro area. I think that was part of the reason for building our international airport far away from the city in the first place.

### Topics Identified in the Comment

- Children's Environmental Health and Safety
- Commercial Airlines Operations Costs
- Noise Modelling Analysis
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #206 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.

**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 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.

**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.

**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# 207 Submitted by: Heckendorf, Kirsten

**Comment Received:** I was stunned at the patently misleading information that the FAA supplied at its meeting last week. I do not object to efforts to re-route flight plans to suit your convenience. Trying to get your plans through by misleading communities is one thing; outright lying to the taxpayers with false claims is unacceptable. Among your claims last week:

1. Noise levels (measured in decibels) will not change
2. Their plan will save fuel and money
3. The new air traffic routes will be safer
4. The new flight patterns will reduce pollution.

It could not take more than five seconds to download a comprehensive review article from Noise & Health to read that the health effects from aviation noise have been known for decades to be detrimental to human health:

Aviation Noise Impacts: State of the Science

Mathias Basner, MD, PhD, MSc; Charlotte Clark; Anna Hansell; James I. Hileman; Sabine Janssen; Kevin Shepherd; Victor Sparrow

Noise and Health 19(87): 41-50, doi: 10.4103/nah.NAH\_104\_16 Available at

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5437751/>

Among the findings in this article, "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 (see the section "Financial support and sponsorship"). National Geographic: Plane Exhaust Kills More People Than Plane Crashes

<https://news.nationalgeographic.com/news/2010/10/101005-planes-pollution-deaths-science-environment/>

In 2011, the World Health Organization published a report, "Burden of disease from environmental noise - Quantification of healthy life years lost in Europe." Quoting from the abstract, "This publication summarizes the evidence on the relationship between environmental noise and health effects, including cardiovascular disease, cognitive impairment, sleep disturbance, tinnitus, and annoyance."

The FAA's plan to revise its flight paths will have deleterious effects on the residents and children in CHV neighborhoods, parks, and schools.

I vigorously oppose the FAA plan. Sincerely Kirsten Heckendorf

### Topics Identified in the Comment

- Children's Environmental Health and Safety
- Commercial Airlines Operations Costs
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project
- Sleep Disturbance/Speech Interference

### FAA Response for Comment #207 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.

**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.

**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.

**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# 208 Submitted by: Heppe, Richard

**Comment Received:** "The Environmental Assessment that the FAA did for Denver Metroplex is flawed. Denver Metroplex should not be implemented unless and until an Environmental Impact Statement is completed and shows there are not health or environmental impacts that would arise under Denver Metroplex."

### Topics Identified in the Comment

- Level of NEPA Review

### FAA Response for Comment #208 Topics

**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.

## Comments-Responses

### Comment# 209 Submitted by: Herman, Barry

**Comment Received:** Do not go forward with the Denver Metroplex Next Gen plan. Please stop the noise and pollution over our houses. Thank You

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Existing Aircraft Noise

### FAA Response for Comment #209 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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)).

**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# 210 Submitted by: Hernandez, John

**Comment Received:** Jet noise in Nederland South Boulder and Louisville CO has been a considerable problem since flight path changes were instituted circa 2013. I urge you to correct this by enacting the following:

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.

These are SMALL changes that would make a BIG difference to alleviate jet noise over Boulder Louisville and Nederland.

### Topics Identified in the Comment

- COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles
- Existing Aircraft Noise
- ZIMMR SID - Move 1.3 Nautical Miles
- ZIMMR SID

### FAA Response for Comment #210 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.

**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 - 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# 211 Submitted by: Higgins, Sandra

**Comment Received:** I am concerned with the increased traffic and the noise that it will bring to the Pinery and the surrounding area. We already experience quite a bit of air traffic and the noise that comes with it especially on the cloudy days when it seems that air traffic increases as does the noise. It is hard to be outside and enjoy being outside with so much noise.

### Topics Identified in the Comment

- Existing Aircraft Noise
  - Projected Changes in Aircraft Noise
- Exposure

### FAA Response for Comment #211 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

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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.

## Comments-Responses

### Comment# 212 Submitted by: Hill, Brian

**Comment Received:** \* Please withhold my personal identifying information\* I do not want flight paths over Superior Colorado. Moving them slightly south could put them over a corridor consisting of Rocky Flats Wildlife Refuge, designated open space, municipal golf courses and undeveloped land. Superior Residents are already facing ever increasing noise from ever increasing flight operations from Rocky Mountain Metropolitan Airport. Communities to the south of RMMA/BJC are not intruded on by this local air traffic the way Superior is. Superior residents do not deserve to be inundated with both low level and higher altitude aviation noise. I also do not support any FAA actions that would allow Commercial Operations into and out of DEN that would drive more General Aviation Operations into surrounding Reliever Airports especially RMMA/BJC. One only needs to visit the Department of Transportation's Bureau of Statistics website and view the CONUS Aviation Noise Map for the Denver MetroPlex to get a grasp of the aviation noise signature that is overwhelming our neighborhoods. The NextGen/Metroplex presentations at the workshops lauded the replacement of "way point" navigation aids with GPS satellite navigation. This technology allows more commercial traffic into DEN through direct to destination routing. What this technology should be doing is directing air traffic AROUND residential communities. Not through them. FAA reps at the workshop I attended noted there was no fuel savings and no carbon reduction. This is contrary to what was published on the Den Metroplex workshop web page. Denver Metroplex appears to be nothing more than a way for DIA and the airline industry to drive profit at the expense of residential communities' quality of life. Statistically, I believe that more operations WILL result in more accidents. This being borne out by the recent 737 Max issue and recent articles indicating that the 737's are not suitable for high altitude airports. I will end by saying that the representative from the FAA were extremely friendly and knowledgeable. However, the issue is complex and not easily resolved in the length of time the workshops took place. I don't feel community members are exceptionally well served by these FAA sponsored workshops. I think there needs to be a panel discussion or debate that includes knowledgeable, respected environmentalists and consumer advocates that will pinpoint the pros and cons of this project for communities. Thank You.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Commercial Airlines Operations Costs
- General Aviation/Visual Flight Rules
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns
- Withhold Personal Identifying Information

### FAA Response for Comment #212 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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**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.

**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.

**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# 213 Submitted by: Hoellen, Earl

**Comment Received:** I am writing to provide comments on the Denver Metroplex Draft Environmental Assessment

(EA). 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. 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.

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 understate noise and ignore health risks, it is inaccurate and ----

### 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 #213 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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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**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 overflowed, 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 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.

**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# 214 Submitted by: Hollingsworth, Kyle

**Comment Received:** Thanks for holding this meeting. My comment is I wonder why the SIMMR line is not more south in the unpopulated area of Rocky Flats. Seems it would effect less houses, and some issues would be diminished. Thanks, Kyle

### Topics Identified in the Comment

- Suggestions to Change Air Traffic Patterns
- ZIMMR SID

### FAA Response for Comment #214 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.

**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# 215 Submitted by: Hollingsworth, Kyle

**Comment Received:** Appreciate you guys offering a meeting here in Boulder to address jet noise. I think that was great ! But I,m still feeling a bit concerned that the new plans for next year may not alleviate much noise over at South Boulder. Sounds like some steps were made and changes to the flight plans 2013 without the proper channels of community out reach. I think we should look at finding a way to push it more further south over Rocky Flats which could possibly affect less people . Also concerned that with the elevation so close to the mountains the predicted sound reduction you said for 2020 maybe not accurate . The bottom line is living here in South Boulder I find significant disturbance with the above jet traffic. at certain times a day we can be every 30 to 45 seconds . Thanks for your consideration kyle

### Topics Identified in the Comment

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

### FAA Response for Comment #215 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.

**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# 216 Submitted by: Hollweg, Karen

**Comment Received:** I am writing to urge you to adopt as the final choice of flight paths for the Denver NEXTGEN portion of the DIA Metroplex project the routes west of DIA that go significantly SOUTH of Boulder. As a resident of south Boulder I feel I have experienced an unusually large and loud impact from the current flight paths. I participated in the open house here in Boulder and urge you to incorporate Complete ZIMMR Noise Solution as the official map of DIA Departure flight paths PLUS to direct all flights even further south in the evenings and throughout the night.

### Topics Identified in the Comment

- Existing Aircraft Noise
- ZIMMR SID

### FAA Response for Comment #216 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# 217 Submitted by: Holtgrewe, Elizabeth and Jeff

**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 Elizabeth and Jeff Holtgrewe"

### 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 #217 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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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 overflowed, 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 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.

## Comments-Responses

### Comment# 218 Submitted by: Hooker, Ann

**Comment Received:** I reside in the SW corner of Boulder, chosen specifically for the quiet of the neighborhood. Increased air traffic in the area is impacting the peacefulness of this area and frankly, irritating. Id appreciate a reconsideration and investigation into alternatives as soon as possible. Now that sumjmer is here the increased traffic is much more noticeable. Thank you for your consideration. Please withhold my PII.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns
- Withold Personal Identifying Information

### FAA Response for Comment #218 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.

**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# 219 Submitted by: Hopkins, Deborah

**Comment Received:** "I have lived in South Boulder for 25 years and in the SW part of the city (Table Mesa area) for the last 7. Boulder in general but the SW part of the city in particular has always been known for its peace and quiet. Many city owned trails/open space are located here. A few years ago I started noticing an increase in noise and frequency of airplanes flying directly over my neighborhood - after asking questions and contacting city council we learned that this coincided with implementation of the RNAV system. The near constant sound of airplanes coupled with the sound bouncing off the rock faces of the Flatirons is unbearable and has completely destroyed our quality of life. South Boulder is a long established highly populated area and the shift and focusing of the FOOTE flight path to right over S. Boulder has affected a huge number of people. Flights start a little after 6 am and continue until ~11 pm. At peak times flights are every 3 minutes. Our unique geography in South Boulder exacerbates the noise which is amplified and prolonged by bouncing off the rock faces of the Flatirons. Flights every 3 minutes plus the geography effect equates to near constant airplane noise. I attended the FAA public workshop a couple years ago where we were told that the FOOTE route (to become ZIMMR) would be moved at least 3 miles south possibly more closer to uninhabited Rocky Flats. At the recent second workshop in April 2019 we were told that the flight path would only be moved ~0.5 miles south. A half mile south would have absolutely no impact on reducing the noise over S. Boulder. I strongly urge the FAA to adopt the "Complete ZIMMMR Noise Solution" proposed by Dr Jerry Meehl: (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. This would shift ZIMMR further south and not only alleviate some of the noise in S. Boulder but also benefit many more residents in Louisville and Nederland that are also impacted by the current flightpath. The current flightpath also goes directly over Boulder Mountain Parks land and Indian Peaks wilderness. The negative affects we are experiencing are surely affecting wildlife as well. We are begging the FAA to move this flightpath south and restore some semblance of quality of life in Boulder."

### Topics Identified in the Comment

- COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles
- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Noise Modelling Analysis
- ZIMMR SID - Move 1.3 Nautical Miles
- ZIMMR SID

### FAA Response for Comment #219 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.

**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>

**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 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.

**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# 220 Submitted by: Hopwood, Coleen**

**Comment Received:** I do not agree with increasing flight plans over South Boulder.

### Topics Identified in the Comment

- Purpose and Need of Project

### FAA Response for Comment #220 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# 221 Submitted by: Hornbrook, Lynn

**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 understate 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 #221 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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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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  
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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 overflowed, 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 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.

**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# 222 Submitted by: Hornbrook, Paul

**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 understate 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 #222 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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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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 overflowed, 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 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.

**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# 223 Submitted by: Hovermale, Ben

**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 Ben Hovermale"

### 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 #223 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 overflowed, 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 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.

## Comments-Responses

### Comment# 224 Submitted by: Hoyle, Sandy

**Comment Received:** As a Pinery homeowner I am concerned about the new flight path proposal. We moved to the pinery for the peace quiet and tranquility that it brings. As we prepare for retirement it was not my intention to have to worry about this being taken from my family. Also property values are a huge concern! Please reconsider the proposal and think about its impact on the lives of people who chose to live in a community where solitude is a focus. If we wanted noise we would have moved to another area.

### Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure
- Property Values

### FAA Response for Comment #224 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.

**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# 225 Submitted by: Hulett, John

**Comment Received:** Received hand-drawn image. Please see original submission contained in the Appendix - "Responses to Comments on the Draft EA"

### Topics Identified in the Comment

- Design Proposal - DEN South Departures

### FAA Response for Comment #225 Topics

**Design Proposal - DEN South Departures:** The commenter submitted a diagram with suggested alternate southbound departure routes to proceed around Parker County. The FAA analyzed the diagram, which depicts two possible departure routes arcing to the east around the city of Parker. The commenter does not indicate how far east these routes are, or how far south the routes extend to then join the en route airway transitions. The diagram does not include flight procedures from each runway end in order join the arcs. Furthermore, there is no standard deviation value for RNAV procedures. RNAV procedures have different ranges of containment (area where aircraft will be while on the RNAV procedure). The containment area depends on several factors, including aircraft navigation equipment and alerting, aircraft flight management systems, and pilot training.

The FAA has determined that four of the proposed Area Navigation (RNAV) Standard Instrument Departure (SID) procedures that would serve Denver International Airport, (the SMMUR (RNAV) SID, the SLEEK (RNAV)SID, the SUDDZ (RNAV) SID and the SABTH (RNAV) SID) provide greater compatibility with other proposed air traffic routes and airspace sector designs. Moving the four (RNAV) SID procedures further east would create conflict with arrival procedures into Denver International Airport. Denver arrival procedures, conflict with current and proposed airspace design. Due to the lack of specific details, the FAA is unable to make a complete analysis of the suggestion.

## Comments-Responses

### Comment# 226 Submitted by: Hulett, John

**Comment Received:** I have noticed a significant increase in air traffic noise at my home over the past few years. I understand more people are moving to Colorado. I visited the FAA workshop in Parker CO on 05-06-19 to discuss and understand what has changed. All I spoke with assured the flight paths over my home have not changed and beautiful posters were provided showing arrivals and departures. All information provided on the posters was in the X and Y plane. The closest DIA runway to my home is over 19 miles. All the posters and information failed to indicate the climb or Z plane elevation.

With the prevailing winds from the South the aircraft are often taking off powered up over my home in Parker.

I feel the change in noise levels is due to the commercial aircraft taking their time getting to cruising altitude. If the air allows they are saving fuel. The aircraft's closer to the ground are louder.

In summary I would like to see what is happening in the Z plane and criteria for a greater minimum elevation 20 miles from the runway.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #226 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# 227 Submitted by: Humes, William

**Comment Received:** "I am opposed to the proposed flight pattern changes over Greenwood Village Colorado. The negative noise and environmental impact on the established residential neighborhoods and schools is troubling. Stapleton Airport was moved to the current DIA location to create distance and safety between air traffic and communities. NO to the Denver Area NextGen."

### Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #227 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# 228 Submitted by: Hunt, Tom

**Comment Received:** Please consider the Complete ZIMMR Noise Solution for aircraft noise over Boulder CO. It's consistently loud and uncomfortable. Esp. in the summer.

### Topics Identified in the Comment

- Existing Aircraft Noise
- ZIMMR SID

### FAA Response for Comment #228 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)

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<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# 229 Submitted by: Hunter, Margie

**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 Impact all data that will have 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% Airport by (DIA) 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 the children notwithstanding significant current (some conducted by or for the FAA) documenting the serious adverse impact on people' physical and mental health.

The EA excludes the impact of noise at or below, DNL 65 dB on noise sensitive areas, including schools residences, historic areas, parks and schools. In the Denver region the majority of residences and schools in the suburbs preate 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 understae 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.

Many of us are informed citizens and we understand what health issues are related to noise and air pollution. Please be thorough with your environmental assessments. We are the people you serve and we deserve your best efforts ... the same that you would produce for an area where your family resides. Many persons choose an area to spend their life savings for a safe environment. We were told that pathways for airplanes using DIA would be over areas of sparse/open space east and north of the airport. This was a written statement that millions took as truth.

Thank you

### 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
- Frequency of Aircraft Overflights
- General Aviation/Visual Flight Rules
- Historical and Cultural Resources
- Level of NEPA Review
- NEPA and FAA Order 1050.1F
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #229 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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

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.

**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).

**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.

**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 overflowed, 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.

**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# 230 Submitted by: Huston, Tina

**Comment Received:** There is way too much air traffic over Parker CO. I've had it with the noise and I've had it with the chemtrails. You people should be ashamed of what you're doing. If you're going to claim that you're not spraying chemtrails then you should allow groups of private citizens to inspect the planes on an adhoc basis. If it's true that you're not spraying chemtrails which you are then you shouldn't be afraid of letting people inspect the planes. Demystify the issue once and for all. Move the air traffic away from the Parker CO area. I don't want to hear it and I don't want to see anymore chemtrail grids in the sky.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Existing Aircraft Noise

### FAA Response for Comment #230 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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)).

**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>

## Comments-Responses

### Comment# 231 Submitted by: Huttner, Debra

**Comment Received:** Dear FAA- I'm a 13-year resident of South Boulder and have been greatly disturbed by the increase in jet noise above our home and the pristine trails. We moved here to have a connection with nature and the incessant jet noise greatly detracts from that. I 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. I would like you to keep personal information confidential and undisclosed. Thank you for your attention and concern. Debra Huttner

### Topics Identified in the Comment

- Existing Aircraft Noise
- Withhold Personal Identifying Information
- ZIMMR SID

### FAA Response for Comment #231 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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**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".

**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# 232 Submitted by: Ikler, Bill

**Comment Received:** TO: the FAA regarding the EA for the NextGen/Denver Metroplex plan for commercial jet aircraft routing. FROM: The Indian Peaks Group of the Sierra Club We believe that the EA is incomplete, in that: -It doesn't consider the Indian Peaks or James Peak Wilderness (JPWA) areas. The current flight corridor goes directly over the Indian Peaks Wilderness Area (IPWA), and has a negative impact on the visitor's wilderness experience. -It doesn't establish a fair and realistic sound scape for comparison with decibel monitoring before flights were rerouted in 2013. -The EA data doesn't show significant carbon, fuel or time savings. -The factors identified by Rocky Mountain National Park (RMNP) apply to Indian Peaks and James Peak Wilderness Areas. The FAA responded to RMNP with changes and needs to do so for the IPWA, and JPWA. -Flights at altitudes of 12,000 feet have a much more negative noise pollution impact to the Wilderness Areas at an elevation of 10,000 feet than a flight at an altitude of 10,000 feet over the Denver metro area that is 5,200 feet. -It doesn't evaluate the noise impact over the Indian Peaks Wilderness Area with decibel monitoring after the rerouting to current flight path (FOOOT 3) which goes directly over the IPWA. The proposed ZIMMR 1 route does little to solve the chronic noise problems stated above. The ambient noise monitoring data which RMNP sent the FAA in 2016 during the preliminary notice of intent for the EA (Paragraph 3, page A-73) would be a more accurate baseline analog for comparison to undisturbed background noise for the adjacent Indian Peaks Wilderness instead of the EA models which estimate severity of increases from the ZIMMR departure corridor using June 2016 to July 2017 as a baseline comparison AFTER the intensity of the FOOOT 3 departures had already started. This would greatly help refute the conclusions being promoted in Sec. 5 of the EA "Environmental Consequences," which concludes there are NO Impacts (PP. 5-1- 5-3) and Sec 5.1.1 "Summary of Impacts," especially the last three paragraphs of this section on pages 5-5 and 5-6. There is also concern about the impacts of concentrated jet noise on wildlife. According the the National Park Service, "Air transportation can also affect life on the ground. Sound levels during peak periods in a high air traffic corridor in the Yellowstone backcountry, for example, were elevated by up to 5 decibels. The result is as much as a 70% reduction in the size of an area in which predators can hear their prey (Barber et al. 2009). Increasingly, careful consideration of the impacts of human-generated noise on wildlife is a critical component of management for healthy ecosystems in our parks." Some possible remedies: Use the CONNR flight path to completely avoid the JPW and IPW. This corridor is already impacted by heavy vehicle traffic. OR, Disperse the flight path so that one area doesn't get all the noise impacts. OR, have the jet traffic fly at a higher altitude over the Wilderness Areas. OR, Tweak the ZIMMR 1 and COORZ 5 routes further to the south so that ZIMMR 1 Is routed in the narrow corridor between the IPWA and the JPWA. Not an ideal solution by any means, but jets would fly over the Rollins Pass Road, which is already impacted somewhat by vehicle traffic. Again, flying at a higher altitude over the Wilderness Areas would greatly reduce noise impacts. Thanks for considering our comments. Bill Ikler Wilderness Chair Indian Peaks Group, Sierra Club Boulder, CO

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID

### FAA Response for Comment #232 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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**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.

**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# 233 Submitted by: Ikler, Bill

**Comment Received:** Comments regarding the Draft EA for the Denver Metroplex Project I live in Nederland CO, and for the last several years I have been experiencing greatly increased commercial jet traffic going directly overhead. I live at an altitude of 8500' and the jets are low enough and loud enough that I can hear them in my house with the windows closed! I can also see when a Southwest Airlines plane is going overhead because of the distinctive orange coloring. At several times during the day, there is a virtual stream of planes going overhead- the noise from one plane subsides and another is right on its tail, and on and on and on. In reviewing the Draft EA, I'm finding several issues where the EA is lacking: -The EA doesn't establish a realistic baseline for comparison with decibel monitoring before flights were rerouted in 2013. I understand that decibel levels were determined by computer modeling rather than actual on-the-ground monitoring. -There is no mention of either the Indian Peaks Wilderness (IPW) or the James Peak Wilderness Areas. Currently, the IPW is under the FOOOT 3 flightpath. -The proposed ZIMMR 1 Route does little to resolve the noise issue over Nederland and the IPW -Despite the intention of the new routes to save fuel or time, the EA doesn't support that goal. I suggest several alternatives to the ZIMMR 1 route: -Disperse the flight path so that noise would be more fairly distributed. In other words, go back to pre-2013 noise levels, when the flight path was narrowed to accommodate the GPS guidance system. OR- Move the ZIMMR 1 and COORS 5 further south. This would alleviate the noise over Nederland and the IPW, but it would just move the problem. This is the scenario suggested by the CADN group and is referred to as the Complete ZIMMR Noise Solution on their website- <http://jetnoiseboco.org>. As best as I can determine, this scenario puts the flight path over the narrow dividing line between the IPW and the JPW. This is not an ideal solution to the noise in the Wilderness Areas by any means, but it does route traffic over an existing 4WD road. OR- Move the flightpath even further south to the CONNR route. -Getting the aircraft to a higher altitude over Nederland and the Wilderness Areas would also help alleviate the noise problem. The following is a quote from the NextGen Implementation Plan 2016: "These efforts are designed to reduce the environmental impacts of aviation in absolute terms, including those relating to community noise, air quality and global climate change." The current situation and the one proposed by the EA fall far short of this stated goal. I live about 1 hour and 15 minutes from DIA. it is my hope that the FAA can route jet traffic so that it doesn't feel like I live close to the airport. Thanks for considering my comments. (Note: These are my personal comments. I submitted comments on June 5 on behalf of the Indian Peaks Group of the Sierra Club) Bill Ikler Nederland CO submitted on June 6, 2019 at 1:28 pm

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Noise Modelling Analysis
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID

### FAA Response for Comment #233 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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**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 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.

**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:** 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# 234 Submitted by: Imber, Helen

**Comment Received:** After attending the FAA workshop and reading the material the FAA presented, I conclude the EA is inaccurate and a serious problej. A full statement should document all data that will arise from the implementation of Denver Metroplex.

We aare currently experiencing frequent to almost constant air taffic over our home (Covington neighborhood - address below.) We need a complete Environmental Impact Statement (EIS) so the public can review and comment.

Our concerns include: 1. Health issues including negative impact on children, adults, animals resulting in pulmonary and coronary disease, depression and anxiety.

2. Environmental issues resulting from traffic pattern increase.

3. Real estate values lowered - especially in view of the fact that we intentionally bought homes in an area far from DIA and Centennial with the intention of living in a relatively "noise free" neighborhood.

4. Compliance with the National Historic Preservations Act regarding our community's parks, recreational lands and historic sites.

We believe the FAA estimate of flights from DIA and Centennial already is grossly understated and that the FAA misrepresents the impact of Denver Metroplex.

### Topics Identified in the Comment

- Children's Environmental Health and Safety
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Forecast/Future Operations
- Historical and Cultural Resources
- Level of NEPA Review
- Physical and Mental Health
- Property Values

### FAA Response for Comment #234 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.

**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).

**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 overflowed, 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.

**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.

**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# 235 Submitted by: Imber, Richard

**Comment Received:** A full Environmental Impact Statement should be conducted for public review and comment. It should disclose all data. It should accurately disclose 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. I live in such an area: Cherry Hills Village.

I am concerned about all air traffic implications from DIA and Centennial Airports. I have intentionally resided in Cherry Hills Village because of the seclusion and quiet for 41 years. If necessary, I will support my community in litigation to oppose any increase of air traffic.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Cumulative Impacts
- Level of NEPA Review
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #235 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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.

**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.

**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# 236 Submitted by: Ingram, Porter

**Comment Received:** "City of Aurora Planning Staff has reviewed the Denver Metroplex Draft EA and submit the following comments. The City of Aurora appreciates the opportunity to review the Metroplex Environmental Assessment. The document is very technical and not accessible to the layperson. A summary document would be helpful to explain high-level concepts. Staff reviewed the latitude and longitude of geographic points that are expected to experience an increase and decrease of noise from overflights under the Metroplex airspace design. Based on this review the overall level of noise experienced by Aurora residents is not expected to increase. Information about the proposed BRNKO route is incomplete but it is encouraging this route is expected to reduce the number of Centennial Airport arrivals over the City of Aurora. Although staff understands that flights will be vectored in based on weather conditions there is no information provided to describe the route under prevailing wind conditions."

### Topics Identified in the Comment

- BRNKO STAR

### FAA Response for Comment #236 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.

## Comments-Responses

### Comment# 237 Submitted by: Inman, Alicia

**Comment Received:** We live in the South Boulder community and have noticed a significant increase in noise from air travel in recent years. When we first moved to this neighborhood in 2011 this was not really an issue. Currently if I'm outside during the day I hear many planes flying overhead. The noise for each plane lasts for several minutes. We are hearing them at night now also as late as 10/10:30 even though we are in our house and have the windows closed. We are sincerely hoping for the FAA to change the flight paths of planes so that air traffic is not significantly affecting our environment any longer as it has been these past several years. Thanks very much for your time and attention.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Purpose and Need of Project

### FAA Response for Comment #237 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>

**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# 238 Submitted by: Iseman, Joan

**Comment Received:** Comment and Objection: At the very least, we need a full environmental impact statement (EIS) for public review and comment before these significant changes is seriously considered.

I believe the conclusions of the EA are unsupportable on both health and environmental grounds. We should have a study that shows us the actual data that will have short and long term impact on the region - I am especially concerned about the noise impact on areas such as ours without past significant aviation noise. We have lived in our home for 45 years, and now we find that because of a possible FAA decision DIA (about 20 miles away as the crow flies) is going to intrude on our lives, our health, and our peace and quiet. And of course, this

would be just the beginning of our problems because DIA plans to add 40 new gates in the next three years, ensuring that there will be hundreds of new flights every day. And projections call for traffic at the airport to increase 70- 100% 2030/35.

I understand that the EA excludes the impact of noise below DNL 65 dB (indoors with windows shut) as if outdoor noise wouldn't be a problem for residents below and also the impact of particulate matter generated by aviation emissions. I recently read one of many articles, on the impact of overflight of airplanes (Columbia's Mailman School of Public Health) that concludes that the benefits of the reduced flight times are outweighed by the health effects on residents below, that is, heightened risk of cardiovascular disease and other ailments linked to stress. We are already living at 5200 feet; when I asked one of your representatives at a workshop in Aurora, CO about the levels depicted on the graphs showing how high the planes would be flying, he indicated those were sea level heights. Surely that can't be true; it would be incredibly misleading to show the planes flight paths at above sea level, rather than ground level, in posters detailing this proposal at citizen workshops. The FAA lists safety as being an important issue, but I haven't heard of any accidents or even near misses in our area. I believe this is essentially for the airlines' benefit to save them fuel and make their takeoffs and approaches more efficient. I thought the FAA would be working for the citizens of this country, not the airlines.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Altitude/Mean Sea Level
- Forecast/Future Operations
- Commercial Airlines Operations Costs
- Level of NEPA Review
- Noise Modelling Analysis
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

### FAA Response for Comment #238 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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)).

**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.

**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).

**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.

**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 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.

**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.

**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# 239 Submitted by: Iseman, Michael

**Comment Received:** To even suggest such an important and potentially detrimental change in flight patterns over established residential neighborhoods without a full environmental impact statement seems unreasonable. Repeated studies show there are serious health issues in routing so many flights over long standing and quiet areas, issues arising from noise and pollution, robbing citizens of their peace and enjoyment of their homes. Denver International Airport port already plans an additional 39 gates in the next three years, new gates that will serve enough additional flights to expand airport activity from 70-100% over the next ten to fifteen years.

I strongly object to this plan-it looks to me like it really only benefits the airlines while the impact on our neighborhoods, our schools, and our children is ignored. Commercial aviation should be routed over industrial areas, green spaces, and waterways further away from established residential neighborhoods.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Level of NEPA Review
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #239 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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.

**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.

**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# 240 Submitted by: Jensen, Hans

**Comment Received:** please consider widening the west bound corridor over Boulder from +/- 3 nm to +/- 10 nm OR as wide as you can get it. Actively spread out the planes from north to south to lessen the frequency of aircraft passing over any one place - like right on top of Heidelberg Drive. Take all available measures to quiet the aircrafts' sound. Thanks

### Topics Identified in the Comment

- Frequency of Aircraft Overflights
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #240 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.

**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# 241 Submitted by: Jobson, L

**Comment Received:** "Please DO NOT ALLOW name address phone number or email to be publicly available at any time Over the last 10 years the plane frequency has increased in South Boulder which is totally unnecessary. When we first lived here there were no planes now with the added frequency it interrupts our daily lives which is totally unnecessary as there are alternative options that do not affect residents. Lets address this issue now this was never an airline route and has no need to be. Change the path course to prevent pollution over residential areas which were here long before the planes started slowly and have now increased to become a regular flight path"

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Frequency of Aircraft Overflights
- Withold Personal Identifying Information

### FAA Response for Comment #241 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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)).

**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.

**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# 242 Submitted by: Johnson, Shannon

**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 understate 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 #242 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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 overflowed, 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 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.

**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# 243 Submitted by: Jones, Elise**

**Comment Received:** RE: City and County of Boulder, Colorado - Comments concerning Denver Metroplex proposals and request to modify ZIMMR Route

On behalf of the Boulder City Council and Boulder County residents, we are writing to reaffirm our request that the Federal Aviation Administration further consider the impact of commercial aviation over southern Boulder County and the City of Boulder. We remain deeply concerned that aircraft routing in this vicinity will continue to cause serious noise impacts to our residents, and specifically request that the proposed departure route discussed below be shifted southward to mitigate these impacts.

This letter follows two previous letters sent in 2017 by the City of Boulder regarding the proposals by your Denver Metroplex team. These letters expressed our concern that the 2-mile southward shift of the FOOOT departure (to be renamed the ZIMMR route) would provide only a negligible improvement in terms of air traffic noise for the residents of Southern Boulder County and the surrounding area and asked that your team consider consolidating the westbound departure routes from four to three.

Both City and County leadership have heard numerous concerns from our residents regarding the existing noise impacts from air traffic over Southern Boulder County and the City of Boulder. Our communities want to know that their concerns about disruptive noise impacts from aircraft are being given serious consideration and will influence the routing of aircraft farther to the south.

While we understand the FAA's draft Environmental Assessment indicates there would be no significant noise impacts for the proposed ZIMMR route, we strongly disagree with this conclusion. We do not believe the assessment adequately evaluated the amplification of air traffic noise caused by the Flatirons. The Flatirons are unique, steep rock formations that are situated along the east slope of Green Mountain and directly border southwestern Boulder. As such, many homes in Southern Boulder County are located in close proximity to the Flatirons and will suffer from noise amplification if the flight path is not modified. We again urge the FAA to move the proposed ZIMMR route farther south to fly over unpopulated areas, which would produce a noticeable improvement not only due to the added distance between the route and Boulder County 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.

We urge the Denver Metroplex team to consider this change to protect the health and quality of life of City of Boulder and Boulder County residents while still enabling efficient westbound departures from Denver International Airport. We respectfully request that the FAA respond to this letter with their recommendations.

Thank you for your consideration.

**Topics Identified in the Comment**

- Existing Aircraft Noise
- Noise Modelling
- Noise Modelling Analysis
- Physical and Mental Health
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID

**FAA Response for Comment #243 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>

**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 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.

**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.

**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# 244 Submitted by: Jones, Matt

**Comment Received:** RE: City and County of Boulder, Colorado - Comments concerning Denver Metroplex proposals and request to modify ZIMMR Route

On behalf of the Boulder City Council and Boulder County residents, we are writing to reaffirm our request that the Federal Aviation Administration further consider the impact of commercial aviation over southern Boulder County and the City of Boulder. We remain deeply concerned that aircraft routing in this vicinity will continue to cause serious noise impacts to our residents, and specifically request that the proposed departure route discussed below be shifted southward to mitigate these impacts.

This letter follows two previous letters sent in 2017 by the City of Boulder regarding the proposals by your Denver Metroplex team. These letters expressed our concern that the 2-mile southward shift of the FOOOT departure (to be renamed the ZIMMR route) would provide only a negligible improvement in terms of air traffic noise for the residents of Southern Boulder County and the surrounding area and asked that your team consider consolidating the westbound departure routes from four to three.

Both City and County leadership have heard numerous concerns from our residents regarding the existing noise impacts from air traffic over Southern Boulder County and the City of Boulder. Our communities want to know that their concerns about disruptive noise impacts from aircraft are being given serious consideration and will influence the routing of aircraft farther to the south.

While we understand the FAA's draft Environmental Assessment indicates there would be no significant noise impacts for the proposed ZIMMR route, we strongly disagree with this conclusion. We do not believe the assessment adequately evaluated the amplification of air traffic noise caused by the Flatirons. The Flatirons are unique, steep rock formations that are situated along the east slope of Green Mountain and directly border southwestern Boulder. As such, many homes in Southern Boulder County are located in close proximity to the Flatirons and will suffer from noise amplification if the flight path is not modified. We again urge the FAA to move the proposed ZIMMR route farther south to fly over unpopulated areas, which would produce a noticeable improvement not only due to the added distance between the route and Boulder County 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.

We urge the Denver Metroplex team to consider this change to protect the health and quality of life of City of Boulder and Boulder County residents while still enabling efficient westbound departures from Denver International Airport. We respectfully request that the FAA respond to this letter with their recommendations.

Thank you for your consideration.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Noise Modelling
- Noise Modelling Analysis
- Physical and Mental Health
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID

### FAA Response for Comment #244 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**

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<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 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.

**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.

**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# 245 Submitted by: Jones, Suzanne

**Comment Received:** RE: City and County of Boulder, Colorado - Comments concerning Denver Metroplex proposals and request to modify ZIMMR Route

On behalf of the Boulder City Council and Boulder County residents, we are writing to reaffirm our request that the Federal Aviation Administration further consider the impact of commercial aviation over southern Boulder County and the City of Boulder. We remain deeply concerned that aircraft routing in this vicinity will continue to cause serious noise impacts to our residents, and specifically request that the proposed departure route discussed below be shifted southward to mitigate these impacts.

This letter follows two previous letters sent in 2017 by the City of Boulder regarding the proposals by your Denver Metroplex team. These letters expressed our concern that the 2-mile southward shift of the FOOOT departure (to be renamed the ZIMMR route) would provide only a negligible improvement in terms of air traffic noise for the residents of Southern Boulder County and the surrounding area and asked that your team consider consolidating the westbound departure routes from four to three.

Both City and County leadership have heard numerous concerns from our residents regarding the existing noise impacts from air traffic over Southern Boulder County and the City of Boulder. Our communities want to know that their concerns about disruptive noise impacts from aircraft are being given serious consideration and will influence the routing of aircraft farther to the south.

While we understand the FAA's draft Environmental Assessment indicates there would be no significant noise impacts for the proposed ZIMMR route, we strongly disagree with this conclusion. We do not believe the assessment adequately evaluated the amplification of air traffic noise caused by the Flatirons. The Flatirons are unique, steep rock formations that are situated along the east slope of Green Mountain and directly border southwestern Boulder. As such, many homes in Southern Boulder County are located in close proximity to the Flatirons and will suffer from noise amplification if the flight path is not modified. We again urge the FAA to move the proposed ZIMMR route farther south to fly over unpopulated areas, which would produce a noticeable improvement not only due to the added distance between the route and Boulder County 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.

We urge the Denver Metroplex team to consider this change to protect the health and quality of life of City of Boulder

and Boulder County residents while still enabling efficient westbound departures from Denver International Airport. We respectfully request that the FAA respond to this letter with their recommendations.

Thank you for your consideration.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Noise Modelling
- Noise Modelling Analysis
- Physical and Mental Health
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID

### FAA Response for Comment #245 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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303-271-4850

<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 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.

**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.

**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# 246 Submitted by: Jones, Synneve

**Comment Received:** Please please do something about the horrendous noise of jets flying over our home early morning until late at night. Our outdoor meals are ruined (now nonexistent) by the roar of constant jets. It is so frustrating! We have lived in our home across from Chautauqua Park in Boulder for 37 years and the noise has lost for us the outdoor beauty of Boulder. The roar bounces off the Flatirons (directly across the street from our house) and adds to our misery. I beg you to fly where you used to before this flight pattern started happening. Years ago it was not a problem it has become worse and worse over time and now it is all day long. How about an area that is less populated? Please listen to those of us who are most negatively and directly affected. Thank you.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #246 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# 247 Submitted by: Jordan, Aprille

**Comment Received:** "The extra flight noise over South Boulder has become annoying. I respectfully request that the flight paths be moved elsewhere. Kind Regards Aprille"

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #247 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# 248 Submitted by: Judish, Dan

**Comment Received:** This change has an will significantly impact our neighborhoods. We already have the descending commercial flights out of the southwest but even those seem to be at a lower altitude than before and now added downwind leg landing for Centennial. additionally air traffic straight into Centennial for landing. Of course what am I telling you for you have already decided to do what it is that you want to do. In a word it sucks. Yea I know from your point of view don't worry about it you will eventually get use to it. As a GA pilot I understand the need for controlled airspace I just don't like what you are doing to my airspace!

### Topics Identified in the Comment

- Purpose and Need of Project

### FAA Response for Comment #248 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# 249 Submitted by: Kafadar, Karen

**Comment Received:** I was stunned by the patently misleading information that FAA supplied at its meeting last week. I do not object to efforts to re-route flight plans to suit FAA convenience. Trying to get plans through is one thing; stating falsehoods to taxpayers is unacceptable.

Among the FAA claims:

1. Noise levels (measured in decibels) will not change
2. The plan will save fuel and money
3. The new air traffic routes will be safer
4. The new flight patterns will reduce pollution.

It could not take more than five seconds to download a comprehensive review article from Noise & Health to read that the health effects from aviation noise have been known for decades to be detrimental to human health:

Aviation Noise Impacts: State of the Science

Mathias Basner MD PhD MSc; Charlotte Clark; Anna Hansell; James I. Hileman; Sabine Janssen; Kevin Shepherd; Victor Sparrow

Noise and Health 19(87): 41-50 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5437751/>

Among the findings in this article "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 (see "Financial support and sponsorship").

In 2011 the World Health Organization published a report "Burden of disease from environmental noise - Quantification of healthy life years lost in Europe." Quoting from abstract

"This publication summarizes the evidence on the relationship between environmental noise and health effects including cardiovascular disease cognitive impairment sleep disturbance tinnitus and annoyance."

Many other articles on the health effects of aviation noise and pollution have been published in highly reputable venues; see

<https://www.ncbi.nlm.nih.gov/pubmed/27490267>

<https://news.nationalgeographic.com/news/2010/10/101005-planes-pollution-deaths-science-environment/>

The FAA's plan to revise its flight paths will have deleterious effects on the residents and children in CHV neighborhoods parks and schools.

Please abandon these plans. Thank you.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- DOT Section 4(f) Resources
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Sleep Disturbance/Speech Interference

### FAA Response for Comment #249 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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.

**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.

**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# 250 Submitted by: Kafadar, Karen

**Comment Received:** "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 understate 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 Karen Kafadar"

### 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 #250 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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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<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 overflowed, 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 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.

**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# 251 Submitted by: Kandt, Alicen

**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 #251 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

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<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# 252 Submitted by: Karr, Barb**

**Comment Received:** We reside in South Boulder - zipcode 80305. There has been significant increases in air traffic over our neighborhood in the past 2 years. Please re-route it.

**Topics Identified in the Comment**

- Suggestions to Change Air Traffic Patterns

**FAA Response for Comment #252 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# 253 Submitted by: Kelly, Darren

**Comment Received:** We moved into the Devil's Thumb neighborhood in South Boulder on April 1 2019. Immediately we noticed the intense noise coming from aircraft overhead. It is so loud it wakes us up at night. Planes go by every 2-5 minutes most evenings. We only moved a few blocks up from the Table Mesa neighborhood where we never noticed the noise. I believe it must be some sort of "echo effect" that makes the engine sounds reverberate off the mountain side and really impact the neighborhoods directly bordering the open space. PLEASE PLEASE PLEASE re-route the air traffic to less populated areas! Thanks!

### Topics Identified in the Comment

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

### FAA Response for Comment #253 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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303-271-4850  
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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# 254 Submitted by: Kemmet, Lori

**Comment Received:** Please return the flight paths over Boulder County to where they once were. Citizens were never given a chance to respond to how the FAA changed the flight paths in 2013 to be positioned over Louisville Boulder and Nederland. WE have a jet freeway now over our homes. We are asking for the Complete ZIMMR Noise Solution - please move the ZIMMR 2 miles south from the proposed position. You can see our proposal at [www.jetnoiseboco.org](http://www.jetnoiseboco.org). WE are citizens who purchased homes for the peace and quiet and now that is gone. You never asked you just invaded. These paths should be moved further south to the less densely populated regions of Rocky Flats. Thank you.

### Topics Identified in the Comment

- Existing Aircraft Noise
- ZIMMR SID

### FAA Response for Comment #254 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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303-271-4850

<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# 255 Submitted by: Kim, Kelly

**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 understate 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 Kelly Kim"

### 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 #255 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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 overflowed, 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 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.

**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# 256 Submitted by: Kim, Michael

**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 Michael S. Kim"

### 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 #256 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 overflowed, 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 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.

## Comments-Responses

### Comment# 257 Submitted by: Kirby, Eric

**Comment Received:** The FAA created the ZIMMR jet flight path over South Boulder in an area that had no prior air traffic lanes. Citizens began heavy protests noise complaints and proposing alternatives in 2017. Using inaccurate noise simulations and flight altitude estimates the FAA justifies retaining a slightly 'nudge' ZIMMR flight path as its final solution. 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
- Noise Modelling Analysis
- ZIMMR SID

### FAA Response for Comment #257 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 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.

**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# 258 Submitted by: Kirk, Chris

**Comment Received:** Thank you for the opportunity to comment on the Denver Metroplex Draft Environmental Assessment. First and foremost, I believe the modernization of air traffic patterns is an important step for the future of air traffic and for Colorado. Unfortunately, current air traffic patterns bring planes that are arriving to DIA directly over the small town of Berthoud, Colorado. As the Town Administrator for the Town, and as a resident, I am acutely aware of the noise this air traffic creates. This noise detracts from the quaint atmosphere in one of the few historic small towns on the north Front Range. It can be heard in outdoor activity areas in almost every situation and depending upon atmospheric conditions, the noise associated with the overflights can be heard loudly within enclosed buildings. This is especially true in the evenings and at night when ambient noise levels are low. While I understand that this may be an existing condition, I also believe that the Denver Metroplex Project creates an opportunity for modified routes that could largely avoid the primary population areas of Town and the historic downtown in particular. When considering modified traffic routes, I would like to suggest that overflights of the historic downtown area of Berthoud be avoided to every extent possible. Our historic downtown is one of the biggest attractions for visitors to our town and keeping its charm is important to the short- and long-term success of our community. Current air traffic is not adding to that charm but is detracting from it. Future traffic patterns could improve the current situation. More specifically, I believe that moving air routes as little as five miles east of downtown Berthoud, toward the I-25 corridor, or five miles south toward Longmont, would significantly improve our quality of life.

### Topics Identified in the Comment

- Arrivals Over Berthoud
- Existing Aircraft Noise
- Projected Changes in Aircraft Noise Exposure
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #258 Topics

**Arrivals Over Berthoud:** The commenter requested that the FAA change the two existing arrival patterns flying over Old Town Berthoud, Berthoud, Colorado. The existing west to east arrival flight path routing would not change with the implementation of the proposed Denver Metroplex Project. The proposed LONGZ Area Navigation (RNAV) Standard Terminal Arrival (STAR) would closely follow the arrival flight path and similar altitudes as the existing KAILE (RNAV) STAR arrival flight procedure. The proposed LONGZ (RNAV) STAR, which would replace the existing KAILE (RNAV) STAR, would be applicable only when Denver International Airport is landing in south configuration.

The northwest to southeast arrival routing would change with the implementation of the proposed Denver Metroplex Project. The proposed FLATI (RNAV) STAR arrival flight procedure would replace the existing MOLTN (RNAV) STAR flight procedure. The proposed FALTI (RNAV) STAR arrival flight path would be approximately 1.6 nautical miles east of the existing MOLTN (RNAV) STAR. Accordingly, the proposed arrival flight path would be approximately 1.6 nautical miles further east of Berthoud, Colorado. This routing would be applicable only when Denver International Airport is landing in a north flow configuration. There is no standard deviation value for RNAV procedures. RNAV procedures have different ranges of containment (area where aircraft will be while on the

RNAV procedure). The containment area depends on several factors, including aircraft navigation equipment and alerting, aircraft flight management systems, and pilot training.

**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.

**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# 259 Submitted by: Kissinger, Ashley

**Comment Received:** My understanding is that the FAA created the ZIMMR jet flight path over South Boulder in an area that had no prior air traffic lanes. Citizens then began protesting the resulting noise filing noise complaints and proposing alternatives in 2017. Using inaccurate noise simulations and flight altitude estimates the FAA is now trying to justify retaining a slightly 'nudged' ZIMMR flight path as its final solution. I and others living here want the FAA to adopt Complete ZIMMR Noise Solution 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
- Noise Modelling
- ZIMMR SID

### FAA Response for Comment #259 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# 260 Submitted by: Kitchen, Roslyn

**Comment Received:** Flight path ZZIMR goes close to our house and we experience significant and frequent air traffic noise. It disturbs our conversations it disrupts our gatherings and is generally a nuisance. There is a huge open space of unused land near and over Rocky Flats to the South. This would pose no disturbance or nuisance to the residents of Boulder or otherwise.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #260 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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**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# 261 Submitted by: Knowlton, SR**

**Comment Received:** Please route flights over the open space corridor between Boulder and Golden or farther north to avoid the heavy concentration of homes. Thank you.

**Topics Identified in the Comment**

- Suggestions to Change Air Traffic Patterns

**FAA Response for Comment #261 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# 262 Submitted by: Knudsen, Curt & Tonya

**Comment Received:** We live in Timbers at the Pinery just south of Parker CO and are strongly opposed to any plans to increase air traffic and noise above our home. We bought in this neighborhood precisely because it was AWAY from the city and could give us the peace and quiet we need. Timbers at the Pinery is a unique community of relatively expensive homes nestled in forest of large pines trees on rolling hills away from the hustle and bustle of the city. Our homes were marketed on the basis of and homeowners custom built or bought their homes for precisely that reason paying a handsome price for the privilege of being able to live among wildlife in a natural environment. Increased air traffic is not in harmony with and will totally destroy the character of our community. PLEASE PLEASE respect our rights! Please direct air traffic over urban areas where noise already exists or over open fields where noise will not disturb people. Thank you for your consideration.

### Topics Identified in the Comment

- Property Values
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #262 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.

**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# 263 Submitted by: Koeppe, Roberta

**Comment Received:** I chose to live in this previously quiet corner of south Boulder for the quality of life and peace. Now I hear the loud rumbling of jets directly overhead where the noise reverberates off the Flatirons. Using inaccurate noise simulations and flight altitude estimates the FAA justifies retaining a slightly "nudged" ZIMMR flight path as its final solution. 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
- Noise Modelling
- ZIMMR SID

### FAA Response for Comment #263 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# 264 Submitted by: Koeppe, Roberta

**Comment Received:** I am very opposed to the increase noise pollution generated by the current & proposed route over our S. Boulder neighborhood. I chose to live here for the peace & quality of life. The jet noise reverberates off the Flatirons. Please reroute over a less populated area further south. Thank you.

### Topics Identified in the Comment

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

### FAA Response for Comment #264 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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<http://www.centennialairport.com/index.php/noise/noise-management>

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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# 265 Submitted by: Kornreich, Jeannette**

**Comment Received:** Our home of 15 years is in the flight pattern across Table Mesa which we are happy to report seems to have improved in the past two years. We ask that that continue as there are less invasive options to the south of us that are better considering the population and geographics of our area. Thank you.

**Topics Identified in the Comment**

- Suggestions to Change Air Traffic Patterns

**FAA Response for Comment #265 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# 266 Submitted by: Koser, Karen

**Comment Received:** I am totally against the flight change at Centennial Airport in Colorado. I will fight this however I can.

### Topics Identified in the Comment

- BRNKO STAR

### FAA Response for Comment #266 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.

## Comments-Responses

### Comment# 267 Submitted by: Kraus, Mary

**Comment Received:** "I have lived in the southwest part of Boulder for 40 years. I have found the westbound jets coming from DIA to be increasing and to be ever more noisy over the past several years. Not only does the earsplitting noise ruin the daytime but my evening is regularly disturbed by loud noise between 7PM and 8PM and I am regularly awakened at times after 10PM. I have been forced to wear ear plugs much of the early evening so as not to be disturbed. Furthermore I hike the Boulder Mountain Park system and Indian Peaks Wilderness trails and my hikes have become increasingly disturbed by jet traffic. 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 am among the citizens who began heavy protests and complaints in 2017. And now 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 join many other Boulder residents in wanting the FAA to stop its mistaken approach. 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."

### Topics Identified in the Comment

- Existing Aircraft Noise
- Noise Modelling
- ZIMMR SID

### FAA Response for Comment #267 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**

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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# 268 Submitted by: Kurach, Sharon

**Comment Received:** "I moved to The Pinery 10 years ago. One of the main reasons was to live in a country-like QUIET area. At that time there were no planes flying over our house. If you change the flight patterns for the Denver metro area and planes will be flying over our house our quiet living will be destroyed and so will our property values. I am retired and living on social security and will need every penny my house is worth to be able to afford to move when that time arrives. I beg you to please reconsider and DO NOT change flight patterns so they fly over The Pinery. Heart broken in The Pinery Sharon Kurach"

### Topics Identified in the Comment

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

### FAA Response for Comment #268 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.

**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# 269 Submitted by: Ladd, Ann Marie

**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 miles shift to the south over Coal Creek Canyon over much less populated areas following an already-noisy State Highway should be made. Two Recommendations: 1. Shift departure route to pass over Rocky Flats then Coal Creek Canyon. This route has lower population density and has State Highway 72 already raising the background noise level. Any departure route will pass over somewhere and impact someone. But a shift to Coal Creek Canyon significantly reduces societal impact compared to the current or proposed routes with only a moderate additional southward deviation in route. 2. Require a steeper climb-out so that aircraft are at FL160 before crossing the longitude of State Highway 93. This approximately doubles the minimum separation with the ground in the western suburbs. Thank you for consideration of these comments and recommendations."

### Topics Identified in the Comment

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

### FAA Response for Comment #269 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  
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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.

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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# 270 Submitted by: Laferrieri, Heather

**Comment Received:** We value the quiet of our neighborhood. We consider noise from air traffic a huge problem & very concerning.

### Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #270 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.

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## Comments-Responses

### Comment# 271 Submitted by: Landry, Christine

**Comment Received:** "The FAA has no control over the number of flights that will fly over homes in and surrounding our neighborhoods as months and years go on. DIA is adding nearly 40 more gates which means that air traffic will hugely increase. The pattern proposed by the FAA concentrates those planes into a path over our homes assuring constant noise and air pollution . Our health...physical mental and financial will be jeopardized. We will be inundated by constant noise...as much as every minute of every day all day and night interrupting conversations and sleep. It is illegal for us to make excessive noise in our homes or on the road. We get ticketed and fined for that. Nonstop airplane noise overhead will be much worse. It is blatantly immoral for the FAA to impose this nightmare upon the people living in the proposed flight paths. The FAA offers false reassurances and promises it cannot keep. FAA: DO NOT GO FORWARD with the Denver Metroplex NextGen plan. It should not have to take thousands of objections to stop this unconscionable plan. It should only take an application of the Golden Rule NOT to foist this onto people. You're going to ruin the value of our homes."

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Property Values

### FAA Response for Comment #271 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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.

## Comments-Responses

### Comment# 272 Submitted by: Langley, James

**Comment Received:** Hello, I just wanted to voice my concern about the airplanes flying overhead constantly. I live in Orchard Gate. We moved into this neighborhood a year ago and the amount of planes has increased significantly and it's been extremely loud and more often. I would like to propose a different route to and from Centennial airport. These planes never used to fly past 8 pm. Now we hear them as late as midnight. It's disruptive to sleep (especially for our 3 year old), normal conversations on the street and decreasing property value in this area. I'm also very concerned about the air quality. Some of these planes fly very low. It can cause respiratory issues.

Thank you for taking time to consider our concerns. I truly hope you take this seriously and look into other options. I would also like to request that you withhold my personal identifying information. Thank you.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Existing Aircraft Noise
- General Aviation/Visual Flight Rules
- Property Values
- Sleep Disturbance/Speech Interference
- Suggestions to Change Air Traffic Patterns
- Withhold Personal Identifying Information

### FAA Response for Comment #272 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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.

**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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**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.

**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.

**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.

**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# 273 Submitted by: Langley, Rachel

#### Comment Received: Hello

I just wanted to voice my concern about the airplanes flying overhead constantly. I live in Orchard Gate. We moved into this neighborhood a year ago and the amount of planes has increased significantly and it's been extremely loud and more often. I would like to propose a different route to and from Centennial airport. These planes never used to fly past 8 pm. Now we hear them as late as midnight. It's disruptive to sleep (especially for our 3 year old) normal conversations on the street and decreasing property value in this area.

Thank you for taking time to consider our concerns. I truly hope you take this seriously and look into other options.

I would also like to request that you withhold my personal identifying information. Thank you.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Existing Aircraft Noise
- General Aviation/Visual Flight Rules
- Property Values
- Sleep Disturbance/Speech Interference
- Suggestions to Change Air Traffic Patterns
- Withhold Personal Identifying Information

### FAA Response for Comment #273 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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.

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## Comments-Responses

### Comment# 274 Submitted by: Langley, Rachel

**Comment Received:** Hello, I just wanted to voice my concern about the airplanes flying overhead constantly. I live in Orchard Gate. We moved into this neighborhood a year ago and the amount of planes has increased significantly and it's been extremely loud and more often. I would like to propose a different route to and from Centennial airport. These planes never used to fly past 8 pm. Now we hear them as late as midnight. It's disruptive to sleep (especially for our 3 year old), normal conversations on the street and decreasing property value in this area. I'm also very concerned about the air quality. Some of these planes fly very low. It can cause respiratory issues.

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Thank you.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Existing Aircraft Noise
- General Aviation/Visual Flight Rules
- Property Values
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### FAA Response for Comment #274 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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.

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<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.

**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.

**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.

**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# 275 Submitted by: Larson, Breck

**Comment Received:** Breck Larson 5683 E Southmoor Cir Cherry Hills Village, CO 80111 May 8, 2019 I write today in opposition of the CONCENTRATED proposed flight paths over the established communities in the Denver Metro Area, particularly my area in Cherry Hills Village near Hampden and I-25. This past winter and spring I have been disturbed of certain days when that path is used for up to 5 hours of continuous "growling" in the sky of jets traveling directly over I-25 from Hampden through Orchard. Flightaware.com live view confirms this is the most bothersome pathway. The sound is more than an annoyance. I work from home often or enjoy reading in my yard. It sometimes becomes difficult to focus with the low rumble literally shaking the house. Turning on the stereo or using earplugs does not drown out to low frequency of rumble. This affects the productivity of my work and enjoyment of my leisure time and is the same similar effect in my opinion as waiting for someone to drag their fingernails down a chalkboard. I actually left the house on several occasions because it was difficult to focus on a detailed task. There are more than enough studies available online that support the adverse affects of burned jet fuel emissions fallout over the planet, but I realize the airline industry is here to stay at any cost. Look toward the problems in Southern California where Metroplex was instituted last year where significant complaints of noise were recorded as "unbearable" noise pollution. Planes have also been recorded as flying below the designated Metroplex minimum. The FAA just says they can't control "errant" flights. The FAA continues to make statements of "no significant impact" in every jurisdiction where Metroplex has been instituted; disregarding the lawsuits around the country objecting to the impact of noise and pollution to communities. We, the residents of South-East Denver do not want the new Metroplex plan imposed. This is yet another example of greed of growth at the sacrifice of health and lifestyle that was established decades before Nextgen and Metroplex. It is imperative, for the our wellbeing and health, the environment (pollution and noise) and our property values, that NextGen Denver is never implemented. Look further to Washington: While the Federal Aviation Administration may have denounced the House Appropriations Committee-ordered audit of its NextGen program, it is time that Congress denounced NextGen. It's a failed program with bad design. The airlines don't like it, and it isn't saving them money. More important, NextGen is torturing hundreds of thousands of taxpaying citizens all over the country with noise pollution never heard before. The concentrated flight paths over heavily populated areas at low altitudes are causing health problems and lowering property values. - Barbara Deckert, Elkrige, The Washington Post Even the inspector general says: This latest report says the FAA lacks "a clearly established framework for managing the overall oversight of NextGen." Washington Post, March 8, 2018 Recent research conducted in New Zealand suggests that significant noise around people's dwellings lead to a reduction in the health-related quality of life (HRQOL).[5,7,8] These studies showed that for residents the level of annoyance from either road traffic or air traffic correlated with HRQOL as measured by the World Health Organization's Quality of Life instrument (WHOQOL).[9] These findings are consistent with other reports that environmental noise, especially noise from transport, may be detrimental to health. Noise sensitivity is a personality trait that predicts noise annoyance.[10,11,12] The key characteristics of noise-sensitive individuals are that they are more likely to attend to sound and evaluate it negatively (e.g., find it threatening or annoying), and they have stronger emotional reactions to noise, and, as a consequence, have greater difficulty habituating to noise.[13] Noise sensitivity has a large impact on noise annoyance ratings, lowering annoyance thresholds by up to 10 dB.[10] A criticism of using noise sensitivity as a measure is that it may really reflect a greater tendency to poor health or vulnerability.[14] Under this hypothesis, people experiencing higher levels of noise sensitivity would be expected to experience worse health, irrespective of their degree of noise exposure. - US NATIONAL LIBRARY OF MEDICINE, NATIONAL INSTITUTE OF HEALTH SEPT-OCT 2018 Additionally, during winter months (colder weather) low frequency sound waves travel further and are directed toward the ground Low frequency waves travel further than high frequency waves because there is less energy transferred to the medium.

The distance that sound wave can travel and be heard is also a property of the air's temperature gradient. When the air near the ground is warmer than the air at higher elevations, then sound refracts (or bends) upward. Similarly, when the air is cooler near the ground (or water surface) than at higher elevations, the sound refracts (or bends) downward. -Kettering University, Physicslab.com

**HEADLINE:** The unheard-of noise pollution from the FAA's wasteful NextGen program: Regarding the March 9 news article "FAA botched \$36 billion effort to modernize air traffic system, report says": While the Federal Aviation Administration may have denounced the House Appropriations Committee-ordered audit of its NextGen program, it is time that Congress denounced NextGen. It's a failed program with bad design. The airlines don't like it, and it isn't saving them money. More important, NextGen is torturing hundreds of thousands of taxpaying citizens all over the country with noise pollution never heard before. The concentrated flight paths over heavily populated areas at low altitudes are causing health problems and lowering property values. In our area, Georgetown University has sued the FAA, and a lawsuit from Maryland is imminent. Efforts across the country to negotiate fixes with the FAA have been futile. After a year of meetings between the DC Metroplex BWI Community Roundtable and FAA reps, the FAA has offered merely insignificant "notional" tweaks to flight paths, without addressing altitudes and dispersion. Last month, the FAA suddenly required that the roundtable submit Freedom of Information Act requests, to be vetted by the FAA's legal team, for any information about redesign of our airspace. Someone needs to remind FAA officials that they work for us taxpayers, not for NextGen contractors and not for the airlines. Congress should stop throwing our good money after bad. Barbara Deckert, Elkridge, The Washington Post

#### Topics Identified in the Comment

- Air Quality/Air Pollution
- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Particulate Matter
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Property Values

#### FAA Response for Comment #275 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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)).

**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.

**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.

**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# 276 Submitted by: Larson, Diana

**Comment Received:** Wow you people are really turning it on now!! So many low flying commercial airliners in a row. Really screwing up a nice tranquil neighborhood. So sad. Come on stop it! Reroute these planes!! So many obviously more than EVER! Seriously wouldn't take much to allow this neighborhood to be back to where it was. I work at home and HEAR your noise all the time now. Daily daily so many planes going over!! Please stop the insanity! Please stop the noise!!

### Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Projected Changes in Aircraft Noise Exposure

### FAA Response for Comment #276 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.

## Comments-Responses

### Comment# 277 Submitted by: Larson, Diana

**Comment Received:** Unacceptable constant low flying commercial aircraft constantly flying over my house! Please make it stop.

I have lived in this area since 1983 and on and off had to address this subject and it is unacceptable that we have to constantly be dealing with this problem.

When people complain it stops for awhile then it starts up again. We did not sign up for this when we bought our homes here. Change the flight plans and make it stop for good! Make it stop.

### Topics Identified in the Comment

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

### FAA Response for Comment #277 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# 278 Submitted by: LaVigna, Thea

**Comment Received:** As homeowners and citizen of Littleton we oppose the frequent use of Littleton airspace for the new proposed air routes. Let's keep Littleton rural as much as possible which is it's unique quality in the metropolitan area. Thank you!

### Topics Identified in the Comment

- Purpose and Need of Project

### FAA Response for Comment #278 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# 279 Submitted by: LeCompte, Margaret

**Comment Received:** I live in SE Boulder. Changes by FAA to airplane routes in and out of Denver International Airport have significantly impaired the quality of my life. Planes pass over my house at increasingly frequent intervals many per hour. I can no longer hear birdsongs in my yard and I'm a birdwatcher and listener who once could identify birds by hearing them! Now airplanes drone overhead constantly as I work in my yard and garden. Conversations on the patio are interrupted. Open windows no longer are an option while napping or sleeping. Don't just computer model the noise; LISTEN in real live time to what our neighborhoods sound like now compared to past years! Please move the routes southward to less-populated areas!

### Topics Identified in the Comment

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

### FAA Response for Comment #279 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:** 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# 280 Submitted by: Lee, Katherine

**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
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Property Values

### FAA Response for Comment #280 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 [PM<sub>2.5</sub>] 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)).

**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.

## Comments-Responses

### Comment# 281 Submitted by: Lee, Robb

**Comment Received:** The FAA created the ZIMMR jet flight path over South Boulder in an area that had no prior air traffic lanes. Citizens began heavy protests noise complaints and proposing alternatives in 2017. Using inaccurate noise simulations and flight altitude estimates the FAA justifies retaining a slightly 'nudged' ZIMMR flight path as its final solution. 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
- Noise Modelling
- ZIMMR SID

### FAA Response for Comment #281 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.

**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# 282 Submitted by: Lee, Thomas

**Comment Received:** "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
- Sleep Disturbance/Speech Interference

### FAA Response for Comment #282 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.

**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# 283 Submitted by: LeFevre, Abbie

**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
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Property Values

### FAA Response for Comment #283 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 [PM<sub>2.5</sub>] 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)).

**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.

## Comments-Responses

### Comment# 284 Submitted by: Leger, Alex

**Comment Received:** Hello I read a post on the Nextdoor website concerning this issue of the reroute groom of planes to make flight paths and air traffic more convenient. I live in the Reunion subdivision and we are constantly bombarded with air traffic. Of course buying a home next to the airport we would expect to have some air traffic noise however we here experience constant air pattern changes and the latest flight pattern right over my home at 10pm and well into the late night hours is a nuisance. We are a working class people and need to get sleep to function the next morning to earn a living to pay our very high taxes mortgages and take care of our families. As I stated yes we can tolerate reasonable air traffic during the day even heavy air traffic during the day. Come late night the air traffic should be diverted over open space until the planes reach a higher altitude as not to disturb the neighborhoods down below and our right to the quiet enjoyment of our homes. I absolutely believe that we all need to be considerate of our surrounding neighbors. We need to respect the airport but the airport also needs to respect us. These subdivisions are also a part of this area and while we are happy to have DIA as a neighbor we just would like to sleep at night. Also please talk to whomever is in charge of the fuel releases over our homes and ask them to stop doing that over our homes. It is not healthy for the residents to have that in our airspace. Please keep my personal identifying information withheld. Thank you

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns
- Withold Personal Identifying Information

### FAA Response for Comment #284 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.

**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# 285 Submitted by: leifer, anne

**Comment Received:** Dear Project Leaders, The airplane noise, overhead of our home in Devil's Thumb, is constant, irritating and unsettling. If you would consider rerouting these flight patterns so they no longer negatively and unpleasantly impact the humans and their pets in our neighborhood, it would be greatly appreciated. Thank You. Anne Leifer P.S. I prefer not to have my personal contact info publicized.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns
- Withhold Personal Identifying Information

### FAA Response for Comment #285 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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**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# 286 Submitted by: Leigh, Jerry**

**Comment Received:** Subject: You asked: you said "The FAA wants to know what the public thinks ..."

Many years ago, my young wife and I sought and found a serene, beautiful, 2 acre plot on a mountain called Sugarloaf that is 7 straight-line miles west of Boulder, Colorado. It is an extremely beautiful place with a continental divide view that as a realtor puts it "has a divide view that people would kill for". We bought the property and resolved to build our home of homes for our lifetime there. There was no electric power and no utilities. Pure sweet mountain water flowed from a pipe stuck into a spring. The soft sounds of mountain birds and breezes filled our days as we worked to create a home out of the cabin.

There was no money available for construction loans on mountain property so we set out to create our home with our own labor, and our meager cash resources.

To that end by our own labor we hand dug the following things:

- 1.) A water line that is 5 feet deep and 150 feet long, from the cabin to the spring
- 2.) A cistern and hand mixed and poured concrete that now forms our water supply.
- 3.) Piling excavations that make up the concrete supports for a 1 1/2 story house that is fitted throughout with solid oak or quarry tile floors. Lighting is provided by solid brass, hand crafted early American fixtures made by one of America's finest fixture manufacturers.
- 4.) A small basement excavated by us after the structure was in place.

As one might imagine, all this took thousands of hours of our spare time. We believed we would be able to enjoy the serene beauty of Sugarloaf and front range snowcapped peaks the rest of our lives. And, after years of labor, we succeeded. Yet in spite of our best efforts, we have failed after all because of routing decisions made by the FAA that has placed aircraft corridors from DIA over and around our home.

DIA has for more than 20 years operated "corridors" directly over or very close to our home. This brings us a potpourri of obscene aircraft noise that varies in the winter from a few airplanes a day to in July a bumper to bumper obscenity of non stop screaming thundering roaring howling sickening noise. As I type airplanes from DIA are flying overhead.

But, as naive Americans we have joined with others to protest and with other residents and have written the usual letters and even have called that useless representation of typical government bureaucratic disregard for citizens' interests, the so-called "DIA hotline". However, it should have been self-evident from the beginning that our efforts would fail; that is they would be disregarded entirely, and indeed this has been the case.

Because of this unwanted intrusion into our lives, we chose from the beginning to stop using any air services such as air mail or package delivery. I would not fly now if you gave me the stupid tickets! Equivalently, this unwanted presence of noise over or near our hard won mountain home has changed our voting habits. We, now as a routine practice vote "NO" on all initiatives and vote against incumbent politicians. We think the passengers and private pilots overhead are enjoying the great beauty of our home. It is a shame that we cannot enjoy it also.

The flying public, airline companies, and private pilots contribute to the economy and these people vote. We similarly contribute to the economy and pay taxes. We do not want our tax dollars used to fund a federal agency that showers us with abuse.

One option for us is to move. That is, can we if the FAA approves, sell our property and relocate? That would be true for all of us who object to FAA actions would it not? To do this we would give up this hand crafted home in a truly beautiful place that took us 20 years to finish. We would also likely end up in debt, and we do not borrow money for any of our needs.

Perhaps congress should re think the role of this disgusting flawed agency called the FAA that infects the lives of millions of Americans with toxic noise ( and air pollution) . Perhaps it is true that we cannot all live "upstream", away from this unwanted urban evil. Paraphrasing President Ronald

Reagan : "Government is the problem". We live 40 miles from this sickening airport and yet it fills our once peaceful mountain home with nauseating noise. It sometimes ls like living on a bombing range. A friend has noted that "you put your lives, your hearts, and your souls into your home". In the summer it is defiled by aircraft noise from Denver. If the history of years past prevails, by July we will be having breakfast, lunch, and dinner "with" DIA, and we will spend our evenings listening to bumper to bumper non stop aircraft noise.

The Lord gave us a beautiful, peaceful place to live, and the government (a.k.a., the FAA) taketh it away, especially on Sundays and holidays. Our once peaceful home on Sugarloaf, once a spiritual experience to enjoy has been made for all the dismal summer months into just another commercial industrial area.

But on a different note: the enclosure is an reprint from a Boeing in-house publication. It states that my father was in today's terms, a deputy director in the Boeing B-29 program during WWII. Because of my experience with aircraft programs, ala my illustrious. father, I witnessed the maiden flight of the B29. I was entranced and enclhanted. I once entertained the notion of becoming a pilot, and flying extensively for business and pleasure. Now because of DIA, the sight or sound of any airplane at all makes me feel ill and angry.

### Topics Identified in the Comment

- Air Quality/Air Pollution
- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Purpose and Need of Project

### FAA Response for Comment #286 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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)).

**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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[https://www.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

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**Rocky Mountain Metropolitan Airport**

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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.

**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# 287 Submitted by: Leigh, Shari

**Comment Received:** "To the FAA - Cherry Hills Village has many historic properties 35 miles of trails many natural public parks and open space which is cherished for its tranquility by residents and by Front Range residents. The Village is also home to an extensive wildlife population including rare birds. Members of our community live here because of the rural-like setting tranquility open space and wildlife. Our property values are also closely tied to an environment where aircraft noise is kept to a minimum. Over the past several years most residents have noticed increased air traffic. For the first time in my 20 year residence I have had to register multiple complaints to the FAA on noise and dangerous fly overs. Not long ago our house was shaken by a major airliner when it flew ridiculously low through the Village. We thought the plane might crash. My husband is a MIT aero/Astro graduate and worries and incensed by this and other similar events. We are highly concerned about safety environmental factors and noise. We urge the FAA to complete further environmental studies before implementing the recommended flight path changes. The FAA's noise modeling promises that adoption of the Preferred Alternative will decrease aircraft noise levels throughout Cherry Hills Village. We welcome the Preferred Alternative implementation only if: 1. Further environmental study is undertaken and 2. That 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 implementation we want assurances that 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. 3. 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 Shari Leigh"

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Historical and Cultural Resources
- Level of NEPA Review
- Projected Changes in Aircraft Noise Exposure
- Property Values

### FAA Response for Comment #287 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>

**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 overflowed, 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.

**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# 288 Submitted by: Leka, KD

**Comment Received:** "To whom it may concern; The new flight paths to DEN over South Boulder have added significant new noise that is very very noticeable and not appreciated. I understand that modeling is being used instead of real data. I am a scientist -- I know that for modeling to be effective that modeling must be verified and apparently that has not been performed. Please verify any model being used and until that is finished revert the flight paths thank you. -KD"

### Topics Identified in the Comment

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

### FAA Response for Comment #288 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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<http://www.centennialairport.com/index.php/noise/noise-management>

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Greeley-Weld County 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>

**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.

**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# 289 Submitted by: Lekan, A

**Comment Received:** "It should be recognized this public input process to the formidable FAA task of assessing impacts of air traffic - of which ground-level noise is just one of many impacts - and developing a plan that balances all interests is part of a healthy democracy we all should value. The notable rise of increasing voices of concern who live under the concentrated (2013) west-bound flight paths over Louisville So Boulder and Nederland tell us something important - we are losing something vital to the human experience which is protection for unnecessary levels and FREQUENCY of noise. Unwanted noise creates inner stress. Inner stress depending on the psychological health of the individual leads to increasing mental/emotional imbalance which then can erode health in various ways. My main point is less the dB level in Louisville/South Boulder but the frequency that causes this psychological stress for many. Is this merely whining about some First World Problem? I don't think so. Without going into academic studies I would offer a basic analogy to the idea behind the so-called Chinese Water Torture - persistent predictable anticipated doses of something fairly innocuous over long periods of time (exposure) and without control to stop it leads to psychological stress. School kids trying to focus on reading can't shake the anticipation in the back of their mind of the next fly over 1-2 minutes apart during peak times breaking their concentration. Hikers in the Flatirons trying to revel in the silence of nature -only broken by the subtle sounds of the Boulder creek birds chirping or the wind rustling leaves - await the disturbing unwanted roar of the next fly over. My point is frequency - especially regular intervals - create a stress far beyond what would seem modest decibels this far from DIA. More than disturbance over residential areas I would state the highest priority is to protect our very special public park lands that are increasingly important last refuges of solitude and connection to wilderness nearby that serve a very important role to all of us - both Colorado locals as well as the million plus visitors. It is downright disheartening to hear up to 50 jet passing by (not to mention countless prop planes buzzing the Flatirons) during a hike in these parts. We protect the natural environment in unique places like Boulder Mountain Parks Eldorado State park and others in many other ways why should be not protect these priceless public nature preserves from noise pollution. The fix would seem easy and even obvious to reroute traffic a few miles south of Eldorado Springs where the impact is far far less. Last it is important to recognize that air traffic will only increase as will population under it. Perhaps the real answer to these dilemmas lies in new jet propulsion technology that literally can almost silence the thrust to very low dB readings. I saw one of these commercial jets make an approach over South Boulder into Jeffco airport some time back. It looked something like a 727 but you almost could not hear any jet engine. A spark of hope lit in me for the future of this balance of convenient air travel and quiet spaces. If that technology is real safe and scaleable then let's put a concerted effort both as citizens and as industries to support airline transition to such equipment. It would seem the future solution to so many problems. Thank you for considering my comments."

### Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- General Aviation/Visual Flight Rules
- New Technology - Aircraft Engines
- Physical and Mental Health
- Sleep Disturbance/Speech Interference
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #289 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.flydenver.com/about/administration/noise\\_management](https://www.flydenver.com/about/administration/noise_management)

**Greeley-Weld County Airport**

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<http://www.gxy.net/>

**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>

**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.

**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.

**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.

**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.

**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.

**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# 290 Submitted by: Lekson, Stephen**

**Comment Received:** Please re-route air traffic further south away from south Boulder. The flights over the southern third of Boulder have completely changed the environment of our neighborhoods and we didn't ask for this. It's not like we bought houses near the airport. The airport has come to us and it was not like this in the past -- flights were further south over much less densely occupied lands. Thank you.

**Topics Identified in the Comment**

- Suggestions to Change Air Traffic Patterns

**FAA Response for Comment #290 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# 291 Submitted by: Levinson, Mordechai

**Comment Received:** "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 understate 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. I request that my personal identifying information be withheld from public availability."

### 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 #291 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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 overflowed, 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 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.

**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# 292 Submitted by: Loeb, Roger

**Comment Received:** I have two objections to the Denver Metroplex project:

1. This seems like a done deal and that the review process is simply theater. However from my perspective this is a "taking" and subject to compensation under the 5th amendment of the U.S. Constitution.
2. My primary concern is that the available noise model data is deceptive and useless. It's an average of 24/hours/day 365+ days/year which masks the real noise impact. Without details such as a standard deviation and a count of the number of events that exceed twice the median the noise model is worse than useless. If in a typical day we had 50 events in which the noise level exceeded 90db for 30 seconds that would only increase the average for that day by less than 1 db but would be unbearable for anyone subjected to that particularly on a daily basis. Without necessary detail for the noise model I must object to this plan and expect to join a any class action lawsuit that opposes it largely because if I don't then I'm subject to whatever horror if any follows. I don't trust the government and the use of an average in this situation validates that lack of trust.

### Topics Identified in the Comment

- Noise Modelling
- Purpose and Need of Project

### FAA Response for Comment #292 Topics

**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.

**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# 293 Submitted by: Lohner, Patricia A

**Comment Received:** "I have lived in the Pinery for 34 years and have enjoyed the peace and quiet that this area provides. I hope to enjoy this for the rest of my retirement years. I am concerned about the flight pattern changes that are being proposed . I totally understand that when the weather is less than ideal for flights they do need to use this flight pattern for safety concerns. However to hear these planes 24/7 would be unbelievable and extremely disruptive to those of us who cannot even enjoy our own yards. Please consider some alternatives that would not impact so many in our community. Thank you for your consideration."

### Topics Identified in the Comment

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

### FAA Response for Comment #293 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# 294 Submitted by: Lohner, Richard

**Comment Received:** "I have lived at this location for 34 yrs. and have enjoyed the peace and quiet of the area. I would ask you to consider flight plans that would not impact so many in this beautiful area. Thank you for your consideration regarding this plan."

### Topics Identified in the Comment

- Purpose and Need of Project

### FAA Response for Comment #294 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# 295 Submitted by: Lonnon, Daryl

**Comment Received:** This complaint is concerning the flight paths from DIA over the South Boulder/Table Mesa area. There is consistent noise of flights passing overhead throughout the day and into the night. It's my understanding that previous to 2013 the flight paths passed further South over less populated land. Could the flight paths be redirected back to their old pattern.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

### FAA Response for Comment #295 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# 296 Submitted by: Loth, Thorsten

**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 understate 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."

### 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 #296 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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 overflowed, 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 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.

**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# 297 Submitted by: Lubeck, Marisa

**Comment Received:** Please move the current jet freeways flying over Boulder further south to the permanently vacant Rocky Flats area. Rocky Flats is the largest long-term vacant space on the Front Range, and no Flatiron rock faces exist there to reverberate airplane noise. More specifically, please, PLEASE adopt the Complete ZIMMR Noise Solution as the official, final map of DIA Departure flight for the Denver NEXTGEN portion of the DIA Metroplex project: <https://jetnoiseboco.org/>. This solution is well-researched and based on FAA technical rules that the FAA follows to determine flight paths. The current flight path generates sustained, heavy noise that impacts at least 100,000 people. I live in the Devil's Thumb neighborhood of Boulder, Colorado, just west of Lehigh St, a bit south of Table Mesa, and very near NCAR. The airplane noise over my community is extreme; it's literally constant at certain points of the day, it's loud enough to wake people up with the windows closed, and it's increasing in severity. My family bought our home about two years ago using our entire life's savings and all of our inheritances, becoming first-time homeowners. We were overjoyed. However, we quickly came to wonder if we had made a terrible mistake. The airplane noise has caused intense sleep deprivation and stress for us and many of our neighbors, and we fear it's severely affecting our property value as well as our health. Noise pollution is a severe public and environmental health concern. (Please see this in-depth article describing how noise is a factor in myriad ailments, especially heart disease: <https://www.newyorker.com/magazine/2019/05/13/is-noise-pollution-the-next-big-public-health-crisis>.) The geology of southwest Boulder's open space makes the area a natural amphitheater, causing noise from each plane to be louder and last much longer than in most other terrain. Shanahan Ridge and the Flatirons create a bowl, which encompasses southwest Boulder neighborhoods and hiking trails. The rocky ridge, high peaks, and bowl terrain combine to amplify, reflect, and propagate jet noise. The FAA created the ZIMMR jet flight path over South Boulder in an area that had no prior air traffic lanes. The policy was executed secretly and without public comment or notice in 2013, and the FAA began using it heavily in 2015. Citizens began heavy protests, noise complaints, and proposing alternatives in 2017. The FAA said no changes would be made until 2019, yet 2019 is here and the noise is worse than ever. Using inaccurate noise simulations and flight altitude estimates, the FAA justifies retaining a slightly "nudged" ZIMMR flight path as its final solution. This solution is not enough. Four years of this debilitating noise IS enough! Please prioritize the safety and well-being of humans over lazy conveniences and minimal profits. Move the flight paths south over Rocky Flats. Thank you.

### Topics Identified in the Comment

- Existing Aircraft Noise
- Noise Modelling
- Physical and Mental Health
- Property Values
- Sleep Disturbance/Speech Interference
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID

### FAA Response for Comment #297 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.

**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.

**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.

**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.

**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# 298 Submitted by: Lundquist, Gordon

**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 understate 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.

### 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 #298 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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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<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 overflowed, 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 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.

**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# 299 Submitted by: Lundquist, Judith

**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 understate 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.

### 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 #299 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 [PM<sub>2.5</sub>] and 10 micrometers [PM<sub>10</sub>]), 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 overflowed, 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 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.

**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# 300 Submitted by: Lundquist, Judith A.

**Comment Received:** The conclusions of the Environmental Assessment report are seriously flawed. The implementation of DEN metroplex is highly controversial on both health and environmental grounds. A full EIS should be conducted for public review and comment regarding the environmental and health impact to the Denver Metroplex. I wish my personal identifying information to be withheld.

### Topics Identified in the Comment

- Level of NEPA Review
- Withold Personal Identifying Information

### FAA Response for Comment #300 Topics

**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.

**Withold 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".