

J J-2 Comments on the Draft EA & FAA Responses

**Public Comments 101 (Curlette) through 200
(Harris) with FAA Responses**

Comments-Responses

Comment# 101 Submitted by: Curlette, Diane

Comment Received: The noise from the jet freeway over South Boulder is loud and obnoxious and to some absolutely intolerable. FAA switched the westbound DIA departures to a narrow flight path over South Boulder and have refused since 2015 to ameliorate this terrible noise. Now is the time to correct this mistake. Please adopt the Complete ZIMMR Noise Solution moving the reverberating booming noise south to Rocky Flats a permanently vacant and non-inhabited area. Our quality of life and peace and quiet have been obliterated by this noise. Please move this flight path.

Topics Identified in the Comment

- Existing Aircraft Noise
- Purpose and Need of Project
- ZIMMR SID

FAA Response for Comment #101 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

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.

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# 102 Submitted by: Dahl, Cory

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 #102 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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.

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# 103 Submitted by: Dahl, David

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

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- Projected Changes in Aircraft Noise Exposure

FAA Response for Comment #103 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 104 Submitted by: Dahl, Jay

Comment Received: Seeing diagrams of the proposed landing routes in inclement weather places the aircraft RIGHT OVER my house. Our neighborhood was built starting in the 1980's (LONG before DIA) and until recently has been a quiet place to live. We have all noticed increase noise from aircraft traffic and your proposal will make it all that much worse. I can guarantee that if you approve this change you will be receiving a huge amount of noise complaints and I can assure you that I will be one of those complaining on a regular basis.

I understand the need for safe air travel. But what you are proposing WILL have a detrimental affect on the quality of our life and the economic value of our homes.

Please re-think and re-engineer your plans to avoid disrupting populated areas.

Thank you.

Jay Dahl
Parker CO

Topics Identified in the Comment

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

FAA Response for Comment #104 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

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.

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# 105 Submitted by: Dahl, Michael

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 #105 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 106 Submitted by: Dahl, Stephanie

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 #106 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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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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)).

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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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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>

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.

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# 107 Submitted by: Dahnelt, Ursula

Comment Received: I bought my house in South Boulder 2013 and I didn't notice ANY air plan noise - I don't believe there were ANY air traffic lanes. With every year after the air traffic increase to the point it has become intolerable. A month ago I attended the 'meeting' at the Meadows Branch Library but the format just wouldn't allow a discussion to how this air traffic can be moved to were it was before 2013. Nobody was giving me an answer to why the air traffic was moved over densely populated arias??? Why??? I am complaining and asking for a change.

Topics Identified in the Comment

- Existing Aircraft Noise
- Purpose and Need of Project

FAA Response for Comment #107 Topics

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

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

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

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# 108 Submitted by: Daniel, L

Comment Received: Our community West of the airport in Centennial is extremely concerned about the possible rerouting of airplanes along the Arapahoe Rd corridor. Please do NOT reroute in the proposed manner as this places several hundred planes each day over a residential area and over several schools. The current approach pattern is over mostly commercial and undeveloped land.

Topics Identified in the Comment

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

FAA Response for Comment #108 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.

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# 109 Submitted by: Davenport, Darren

Comment Received: "The current DIA departure flight path protocol implemented by the FAA over Boulder Nederland and the Indian Peaks Wilderness Area based on GPS is an terrible departure from the previous protocol which fairly dispersed the impact. The rationale for the change of saving fuel and reducing the carbon footprint is unsubstantiated by the FAA's own Environmental Impact Statement (EIS) so this was and is an arbitrary and capricious change that detrimentally impacts the quality of life in Boulder Nederland and especially the Indian Peaks Wilderness Area which is by law mandated to be untrammled by mankind. It is especially obnoxious for Nederland folks and the Indian Peak Wilderness at 7:20pm when a stream of jets fly over shattering the quiet and peace of this beautiful place. I and my household endorse the alternative presented at <http://jetnoiseboco.org/history/#complete-zimmr-noise-solution> which provides a solution that spreads the noise impact and doesn't impact any new victims and is as good at meeting the FAA goals of fuel saving and carbon footprint reduction as the current focused obnoxiousness flight protocol."

Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project
- ZIMMR SID

FAA Response for Comment #109 Topics

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

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

Denver International Airport and all airports in the Denver metropolitan area using arrival flight procedures through this southwest airspace arrival gate.

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

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

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

Rocky Mountain Metropolitan Airport

303-271-4850

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

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.

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.

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# 110 Submitted by: Davis, Susan

Comment Received: Comment and Objection: The conclusions of the FANs Environmental Assessment (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 FANs 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 #110 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 111 Submitted by: Decker, Gloria

Comment Received: I

Strongly OPPOSE the NEXTGEN flight plan

Topics Identified in the Comment

- Purpose and Need of Project

FAA Response for Comment #111 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# 112 Submitted by: Dehner, Mikey

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 #112 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 113 Submitted by: Deitchman, Walter

Comment Received: Comment and Objection: The conclusions of the Environmental Assessment (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.

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- Air Quality/Air Pollution
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FAA Response for Comment #113 Topics

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pollutants”). The criteria pollutants include Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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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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.

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# 114 Submitted by: Dessi, Matt

Comment Received: My name is Matt, I live in the South Boulder area. The current flight path w/flights going to Salt Lake City, Portland, Idaho, San Francisco - typically Boeing 737's via United Air & Southwest - have been increasing in number of flights (concentration) and frequency (counting 21 flights) in on day over my house). The noise has been very disruptive to my sleep and /out enjoying my yard, or sitting inside my house. It is not the decibels, it is the low, constant rumbling of the Boeing 737 that has caused my getting more involved to try and impact moving the concentrated flight lane. I'm hoping the new flight track will mover further south over Rocky Flats in a win-win for all. Thank you EPA for coming to meet us here in Boulder. Than you again folks.

Topics Identified in the Comment

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

FAA Response for Comment #114 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

Greeley-Weld County Airport

970-336-3000

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

Northern Colorado Regional Airport

970-962-2850

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

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

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

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

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

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

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

Comments-Responses

Comment# 115 Submitted by: Dickensheets, Karl

Comment Received: "I would like to express my strong desire that the FAA select and fully incorporate the Complete ZIMMR Noise Solution as the final solution for flight paths out of Denver International Airport (DIA) as part of the Denver NEXTGEN portion of the DIA Metroplex project. The current ZIMMR flight path and the nudged ZIMMR flight paths create significant noise impacts to Boulder County specifically the mountain areas as well as the dramatic impact upon the Indian Peaks Wilderness Area. As much as is possible it is most sensible for flight paths to go over largely unpopulated areas rather than dense neighborhoods and Wilderness areas. Thank you for addressing this issue in a manner that satisfies those most impacted. Respectfully Yours Karl Dickensheets"

Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Projected Changes in Aircraft Noise Exposure
- ZIMMR SID

FAA Response for Comment #115 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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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.

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# 116 Submitted by: Dix, Megan

Comment Received: Hello

I would like to voice my concerns regarding the proposed new flight paths to Centennial Airport. I am concerned that routing more flights along Arapahoe Rd will increase the noise environmental pollutants and decrease the quality of life for those of us who live in the many residential areas along this road. It is also concerning that this could affect home values as our homes are a very significant personal investment. Thank you for your consideration in this matter.

Best
Megan

Topics Identified in the Comment

- Air Quality/Air Pollution
- Projected Changes in Aircraft Noise Exposure
- Property Values

FAA Response for Comment #116 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

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

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

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

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

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

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# 117 Submitted by: Dodds, Deborah

Comment Received: I have lived at my address for 29 years. I have never heard planes overhead that bothered me until 2 years ago. I went to the Meadows Branch Library meeting you held to gain information and spoke to a FAA representative who told me that I was wrong -no changes have been made to flights over south Boulder. I am here to say that I can no longer sit out on my deck around 4-5pm without the noise being so load that it interrupts conversations. With windows open at night I am bothered to such a degree that it is difficult to sleep - 10-11pm. Waking in the middle of the night I notice the planes are no longer flying overhead and they don't start again until morning. We in south Boulder are requesting that the flight patterns take off and fly over Rocky Flats which is south of us and undeveloped. There is now only an animal sanctuary there. Better they get the noise than those of us trying to enjoy the out of doors we so love and the reason we live in Boulder. Please consider moving the westerly flights south of Boulder's south neighborhoods!

Thank you
Deborah Dodds
415 S. 44th St
Boulder 80305

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #117 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

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# 118 Submitted by: Donaldson, Brian

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. 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
- Frequency of Aircraft Overflights
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Property Values
- Purpose and Need of Project
- Sleep Disturbance/Speech Interference
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID

FAA Response for Comment #118 Topics

Existing Aircraft Noise: The purpose of the proposed Denver Metroplex Project is to improve efficiency in the Denver Metroplex airspace. Addressing current noise issues associated with air traffic in the General Study Area is beyond the scope of the proposed Denver Metroplex Project Draft and Final Environmental Assessment (EA). However, the potential for environmental impacts, including noise associated with the proposed Denver Metroplex Project is assessed in the Draft and Final EA.

Please refer to “Appendix E: Basic of Noise” (Pages E-1 through E-11) attached to the April 22, 2019 Draft EA which has been duplicated, and attached to this Final EA. Analysis indicates that the Preferred Alternative when compared to the No Action Alternative would not result in changes to noise exposure that exceed the significant noise threshold. Noise complaints related to local air traffic are best addressed by the local airport. Please contact the local airport noise office for further information on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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Rocky Mountain Metropolitan Airport

303-271-4850

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

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

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

For noise modeling purposes, approximately 90 percent of aircraft to/from major airports on an RNAV procedure were forecasted to be located within a half mile of the published route centerline. However, all aircraft on an RNAV will be within one mile of the published route centerline. Not all aircraft are equipped to operate on an RNAV procedure; therefore, conventional procedures will still be used in the

Denver Metroplex airspace. Please see Table 3-2 in Chapter 3, Alternatives, for a listing of the conventional procedures that are maintained as part of the proposed Denver Metroplex Project.

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

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

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

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

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

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

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

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

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

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# 119 Submitted by: Donisi, Marirosa

Comment Received: I have lived in the Pinery for 24 years and I have loved every minute of it. I love the peace and quiet and being surrounded by nature. I work from home and a quiet and peaceful environment is particularly important to me. Being directly in a flight path is NOT what I moved out here for. I strongly disagree with the new flight path being over head and I think it will also negatively impact property values in my area. Please seek other alternatives that will not disrupt the life styles of those who like myself made a choice to live in this area many years ago precisely because of its peaceful nature.

Topics Identified in the Comment

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

FAA Response for Comment #119 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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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# 120 Submitted by: Donnelly, Sean

Comment Received: "I have noticed the noise from flights departing Denver International Airport increase significantly over the last several years. Either a move to the south over the former Rocky Flats area along the existing state highway or an increase in altitude would seem to make sense to diminish the noise levels in our neighborhood. Thank you for your consideration. Sean Donnelly"

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #120 Topics

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

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

Rocky Mountain Metropolitan Airport

303-271-4850

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

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# 121 Submitted by: Doubek, R.J.

Comment Received: I understand the need & agree with it. & I am an old G.A. pilot of 74 years. I have problem with DNL - AN Average which I cannot hear. Would rather SEL noise contours - before & after. The public cannot hear DNL but do hear LMAX ET. Have doubts with PINNR arrival - too close to Front Range foothills - Rough air - Long way in to APA. Would like to see more emphasis on lower altitudes (say less than 10,000' AGL) for noise considerations

Topics Identified in the Comment

- Noise Modelling Analysis
- Suggestions to Change Air Traffic Patterns
- Supplemental Noise Metrics

FAA Response for Comment #121 Topics

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.

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.

Supplemental Noise Metrics: Noise is often the predominant aviation environmental concern of the public. The commenter requested the FAA use of supplemental noise metrics to characterize specific noise effects of the proposed Denver Metroplex Project. The Federal Interagency Committee on Noise (FICON) report, "Federal Agency Review of Selected Airport Noise Analysis Issue," dated August 1992, concluded that the DNL is the recommended metric and should continue to be used as the primary metric for aircraft noise exposure. There is no single supplemental methodology that is preferable in all situations and these metrics often do not reflect the magnitude, duration, or frequency of the noise events under study. Such supplemental noise analysis is not, by itself, a measure of adverse aircraft noise or significant aircraft noise impact. Because of the diversity of situations, the variety of supplemental metrics available, and the limitations of individual supplemental metrics, the FICON report concluded that the use of supplemental metrics to analyze noise should remain at the discretion of individual agencies.

The results of the noise modelling analysis indicate that the proposed Denver Metroplex Project would not exceed the thresholds of significance for changes in aircraft noise exposure. Based on the results of the noise modelling analysis, and the fact the proposed flight procedures are refinements to existing Area Navigation flight procedures and air traffic management strategies, the FAA has determined that the use of supplemental noise metrics would not inform its decision in assessing the impacts from the proposed Project.

Comments-Responses

Comment# 122 Submitted by: Downs, Melaine

Comment Received: "proposed project to redesign air space"...I'm not really sure what that entails but I came to this website for the noise abatement link. However I'll make my comments here as well. I am assuming that the aircraft that fly over our neighborhood are either from Centennial Airport or Rocky Mountain Airport. Assuming it is training planes would be willing to ask your instructors to move to space where there is not a neighborhood? To fly over the neighborhood and then back isn't a problem but loop after loop after loop is made over Plum Valley Heights. Please help us enjoy our outdoor hobbies in peace while you enjoy yours.

Topics Identified in the Comment

- Existing Aircraft Noise
- General Aviation/Visual Flight Rules

FAA Response for Comment #122 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

Greeley-Weld County Airport

970-336-3000

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

Northern Colorado Regional Airport

970-962-2850

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

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

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

Comments-Responses

Comment# 123 Submitted by: Dunckley, Judi

Comment Received: I have lived with my family here in South Boulder since 1992. We have noticed a noticable change and are highly annoyed with the constant flight pattern of planes since the planes come over our house. The planes used to go over Rocky Flats to the south and it was not a problem. It is too loud and too frequent now. Please help.

Topics Identified in the Comment

- Existing Aircraft Noise
- Frequency of Aircraft Overflights

FAA Response for Comment #123 Topics

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

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

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

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

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

Comments-Responses**Comment# 124 Submitted by: Dwulet, Cathy****Comment Received:** Please move your DIA departure flight paths to some less populated areas south of Boulder.**Topics Identified in the Comment**

- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #124 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# 125 Submitted by: Dwulet, Ed****Comment Received:** I've had enough! Move your DIA departure flight paths to unpopulated areas south of Boulder.**Topics Identified in the Comment**

- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #125 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# 126 Submitted by: Ebel, Brooke

Comment Received: I am a resident of The Pinery in Parker CO. I am OPPOSED to the new flight plan proposed out of DIA that will route planes directly over my home. We have too much air traffic noise as it is and more will definitely decrease our quality of life and property values.

Topics Identified in the Comment

- Existing Aircraft Noise
- Property Values

FAA Response for Comment #126 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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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# 127 Submitted by: Eggers, Jon

Comment Received: From: Jon Eggers <jonweggers@gmail.com>

Sent: Tuesday, June 04, 2019 7:12 PM

To: Coonce, Joseph (FAA) <joseph.coonce@faa.gov>

Subject: Denver Metroplex Air Space

Mr. Joseph Coonce,

Thank you for accepting feedback for the Denver Metroplex Air Traffic airspace issue.

As we all know, along Colorado's Front Range, as our cities quickly grow so does our air traffic.

I live in Berthoud, Colorado, right between the larger cities of Longmont and Loveland. Our three cities too are growing quickly, and we are experiencing increased air traffic and noise above our homes every day and night.

I am writing you and your constituents to seriously consider revised efficient air traffic patterns around or away from our three-city region for our safety in conjunction with your Environmental Assessment through NEPA.

Thank you for reaching out to the public for feedback, this action is greatly appreciated in order for our voices to be heard as we all look to the future together.

Topics Identified in the Comment

- Existing Aircraft Noise
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #127 Topics

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

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

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# 128 Submitted by: Eikelberner, Emily

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

Topics Identified in the Comment

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

FAA Response for Comment #128 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

(NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments-Responses

Comment# 129 Submitted by: Ellis, Gary
Comment Received: I strongly object to the proposed project which will route concentrated traffic over heavily populated urban and suburban areas. Please route traffic over lightly populated areas. The current plan will very negatively impact the Town of Parker and the surrounding currently peaceful neighborhoods. Thank you.

Topics Identified in the Comment

- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #129 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# 130 Submitted by: Elliston, Diane

Comment Received: The flight path seems to have gotten worse lately. Jet sounds at night when the neighborhood is quiet and early in the morning as well. Since Rocky Flats is directly to the south and has more open space no flatirons for sound to bounce off of it would seem to make sense for planes to fly over that area rather than South Boulder neighborhoods

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #130 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

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# 131 Submitted by: Emberley, Todd

Comment Received: I have owned a Home in the Pinery for over 30 years. During that time I have invested substantial money to make this a home my wife and I can retire to. Now that we are in our mid 60s and are leaving our careers to enjoy the environment here in the Pinery you want to steal this away from us with substantial aircraft noise. We invested our hard earned savings to build this retreat and this plan will decrease our property value to the point we can't get out. Please rethink this horrible change.

Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure
- Property Values

FAA Response for Comment #131 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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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# 132 Submitted by: Encinas, Kyrie

Comment Received: I do not approve of Centennial airport rerouting planes to the Arapahoe corridor. This will devalue our community and homes.

Topics Identified in the Comment

- General Aviation/Visual Flight Rules
- Property Values

FAA Response for Comment #132 Topics

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

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Comments-Responses

Comment# 133 Submitted by: Ernst, Gina

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

Topics Identified in the Comment

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

FAA Response for Comment #133 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

(NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

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

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

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

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

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

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

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

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

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

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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# 134 Submitted by: Erwin, Dawn

Comment Received: I have recently learned of your plans to reroute air traffic. I am 100% opposed to this as the noise will affect our way of life which is extremely quiet and peaceful. Our property values will decline and it will be an utter disruption to the wildlife here as well. 2 minutes of efficiency does not equate to the headache it will cause for all involved. Stop trying to change what doesn't need to be changed. Your efficiency is on you not the people who chose to live in a nice quiet area far from the airport.

Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure
- Property Values

FAA Response for Comment #134 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# 135 Submitted by: Evans, David

Comment Received: "I am a resident of the Colorado front range foothills midway between Boulder and Nederland surrounded by Roosevelt National Forest and approximately 37 miles west of Denver International Airport (DIA). Since 1991 I have noted a slow and steady increase in commercial jet aircraft fly-over noise. Although my motivation for living here is rooted in the natural beauty and tranquility I accept some increase in noisy interruptions associated with wider availability of modern air travel for a broad spectrum of our population. However in the recent few years it has become apparent that flight paths directly over my home have become quite precise. Flight after flight seem to have identical travel vectors averaging barely 10 000 feet directly overhead (some smaller noisier jets are even a few thousand feet lower). DIA is the origination of these westward flights as they climb to clear the continental divide. Summer evening conversations on our deck or patio are punctuated repeatedly. The sound profile lasts nearly a minute and can repeat every few minutes especially during the prime 6 - 8 pm time period. On one late summer 2018 evening I counted 8 direct overhead flights in a 12 minute span clearly viewing an approaching plane while still observing the previous one. Lest we believe this to be only a seasonal outdoor issue today May 22 2019 we are enduring a snowstorm fully enclosed inside and I counted the following loud overflights: 1:42 1:47 1:49 2:02 and 2:07 pm. That's 5 clearly defined obtrusive noise events in a 25-minute sample time period in the middle of an ordinary weekday while inside. Using the PublicVue flight tracking tool on the DIA website specific flight details can be observed in a given corridor. Choosing a corridor of +/- 1.5 miles in width above my home (encompassing the pathwidth between Boulder Creek canyon on the north and Gross Reservoir on the south a random date of 8/10/2018 produced 11 overflights in a 50 minute sample time with data shown below:

Time	Airline	Plane	Altitude above ground level (AGL)
7:07 pm	Skywest	CRJ 9100	7:13 Skywest CRJ 9600
7:19	UAL	B77	9900
7:22	Skywest	Em 10500	7:34 UAL B73 11000
7:37	UAL	A320	11400
7:39	UAL	A319 10400	7:43 Skywest Em 9800
7:46	UAL	B73	9700
7:51	LOF	Em 10500	7:57 UAL B73 10000

As an ex-recreational VFR pilot these recorded altitudes AGL seem quite realistic based on visual observations. Subjectively this data seems representative of a typical evening however weather conditions and wind direction at DIA could certainly introduce a variant scenario. After scanning hours of the PublicVue flight paths what becomes startlingly apparent is the high precision repeatability of the flight paths over our neighborhood. The attached screenshot shows three UAL flights with 780 just passed 453 approaching and 829 following behind. When letting the time lapse proceed the paths seem tightly within a one mile lateral spacing when they pass over Gross Reservoir but many many examples show the flights literally overlapping in a completely co-linear fashion. This precision however repeatedly penalizes a strip of the population living and recreation space. To avoid simply pushing the problem onto a different area it seems that a mitigating solution would be to develop a distributed or randomized pathing methodology. With airplanes traveling approximately 2 miles in altitude AGL in this region a lateral shift in flight path of only 3.5 miles would result in doubling the distance between the sound source (plane) and the original person on the ground. This doubling of distance reduces sound pressure by a factor of 2 while sound intensity drops by a factor of 4. Thus having a nominal east-west flight pathway augmented with random alternatives located perhaps 4- and 8-miles south and similarly to the north gives a 20% probability of getting the full-strength noise 40% chance of a significant reduction and a 40% chance of virtually imperceptible fly-over noise. Of course this is only rationally achievable if the population density is reasonably uniform under these distributed pathways which is mostly true in our immediate vicinity. Thank you for considering the possibility of using the precision guidance features of the Denver Metroplex NextGen project to mitigate noise-concentrating pathways."

Topics Identified in the Comment

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

FAA Response for Comment #135 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.

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# 136 Submitted by: Eyre, Sonia

Comment Received: "The Pinery Homeowners' Association Inc. represents 1800 homes in northeastern Douglas County. The Board only very recently became aware of the proposed flight path changes which are part of the FAA NextGen implementation. There was no official referral notice from the FAA as we have come to expect from large scale changes potentially affecting our residents. Instead our residents notified us of the planned changes. We regret that had we been aware members of our Board and our residents could have attended your scheduled informational meetings. At this late date that is no longer possible. Therefore we are unclear what the impact to our homeowners will be. Our main concern is maintenance of the quality of life in the Pinery. We cannot support any changes which would result an overall increase in noise from air traffic."

Topics Identified in the Comment

- Public Outreach/Public Involvement
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

FAA Response for Comment #136 Topics

Public Outreach/Public Involvement: The views and input of communities are important to the FAA as the Agency takes the next steps to advance the NAS. Since 2016, the FAA has engaged individual communities through holding public workshops in the Denver metropolitan area to explore possible solutions to their concerns while ensuring the safety and efficiency of the National Airspace System. Twelve public workshops across the Denver metropolitan area were held in 2017, and again recently in April and May 2019. The public workshop locations, dates and time were publicized in the Denver Post, posted on the FAA Community Involvement website, and the Denver Metroplex Project website, in addition to being publicized through social media and local press releases. Comments received from the 2017 and 2019 public workshops were considered when designing the proposed flight procedures for the Denver Metroplex Project.

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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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# 137 Submitted by: Falardeau, Karen

Comment Received: Dear FAA: We live near RMMA and have constant airplane noise from flight schools and outgoing planes. Superior and Louisville are trying to work with the airport to solve current issues. Please do not send additional planes over our area. I understand that Representative Joe Neguse is working with the FAA to have flights go further south over Rocky Flats. Please help us to quiet our too noisy skies. Thank you.

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #137 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# 138 Submitted by: Fanatic, Hiking

Comment Received: "1. We don't understand WHY the FAA moved the flight path from uninhabited Rocky Flats to directly over 3 heavily populated towns. Flight paths from 2012 show the main westbound flight path from DIA was directly over Rocky Flats (from 1995-2013 the Rockies Two flight path with Meeker Transition) with a wide dispersion of flight paths between Golden and Eldorado Springs. Before the NextGen navigation paths in 2013 all of Rocky Flats was under considerable jet noise and we had none in southwest Boulder. The FAA cannot reasonably claim the 2013 path is the new normal. 2. In response to our complaints in 2016 you moved the path south BEFORE the public comment period ended and have made no other changes despite letters asking for noise relief from mayors the former governor and other elected officials. Describing this change you said ZIMMR was 3 miles south of FOOOT when in reality it is ONLY half a mile south of the southern city limit. This is NOT far enough to mitigate jet noise because the flatirons Bear Peak and South Boulder Peak (our parabolic dish which amplifies sound) does not disappear until south of Eldorado Canyon. 3. Your noise consultant admitted that the noise modelling software does NOT take geography into consideration. Given that Boulder's southwest wall of rock towers 3000-3500' above our homes any projections for a reduction in noise using this model are scientifically invalid. I urge you to be skeptical of data from this software as justification for keeping the current ZIMMR path. In all likelihood the model also does not adjust for sound propagation differentials at sea level versus 5600' above sea level. 4. We believe you can move ZIMMR south far enough to mitigate the noise by making a couple of very small changes (while maintaining the Adams county flight path separation requirement). These SMALL changes will significantly alleviate jet noise over the heavily impacted towns of Boulder Louisville and Nederland. Shift the RALFI waypoint (east of Boulder on the ZIMMR flight path) about 0.7 nautical miles south; and shift the IPALE waypoint (on the COORZ flight path south of RALFI) about 0.7 nautical miles south. This is made possible by reducing the departure angle between COORZ and CONNR from 17 degrees to 15 degrees. Shift ZIMMR another 1.3 miles south (for a total southward shift of 2 miles for ZIMMR). This would then involve shifting the COORZ CONNR and BAYLR flightpaths 1.3 miles south. 5. FAA guidelines seek to minimize jet noise over national parks and wilderness areas. Boulder County owns/manages 165 000 + acres of mountain parks and open space. While not strictly national parks or wilderness □ these acres function identical to wilderness--- structures roads cars motors and camping are prohibited. By comparison Rocky Flats is 5237 acres and has no residents (prairie dogs that glow in the dark?). It is essential that you consider the REAL history of westbound DIA flight paths not only those since the illegal path change in 2013. Please please restore the peace and serenity we have treasured for 40 years."

Topics Identified in the Comment

- COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles
- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Noise Modelling
- Public Outreach/Public Involvement
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID - Move 1.3 Nautical Miles
- ZIMMR SID

FAA Response for Comment #138 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.

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.

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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.

Public Outreach/Public Involvement: The views and input of communities are important to the FAA as the Agency takes the next steps to advance the NAS. Since 2016, the FAA has engaged individual communities through holding public workshops in the Denver metropolitan area to explore possible solutions to their concerns while ensuring the safety and efficiency of the National Airspace System. Twelve public workshops across the Denver metropolitan area were held in 2017, and again recently in April and May 2019. The public workshop locations, dates and time were publicized in the Denver Post, posted on the FAA Community Involvement website, and the Denver Metroplex Project website, in addition to being publicized through social media and local press releases. Comments received from

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

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

ZIMMR SID - Move 1.3 Nautical Miles: The commenter requests that the FAA consider modifying the proposed ZIMMR Area Navigation (RNAV) Standard Instrument Departure (SID) by moving the flight path 1.3 nautical miles southward from the location that was depicted at the workshops for the Draft Environmental Assessment. The proposal would affect the proposed COORZ (RNAV) SID, CONNR (RNAV) SID, and the BAYLR (RNAV) SID; requiring the same 1.3 nautical miles movement southward in order to maintain aircraft separation standards. The FAA reviewed this proposal while also considering the effects of weather and winds in the area. Rapidly changing atmospheric conditions and convective activity over the Front Range requires air traffic control to build in a greater margin of safety 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# 139 Submitted by: Farrell, Charles

Comment Received: I am opposed to concentrating flight traffic on specific corridors. The noise from departing flights is significant, and concentrated corridors severely and negatively impact the quality of life for those who live underneath those flight paths. The flight paths should be spread out and distributed more evenly across the metro area. It's surprising how many aircraft create significant noise even though my home is almost 40 miles from the airport. In addition to reducing the concentration of aircraft over specific areas, the FAA should also require noise reduction techniques for takeoff procedures. It's unreasonable to subject residents to the massive amounts of noise from these concentrated flight paths. These "external" environmental costs and damages are being dropped on residents, while the airport authority and the airlines bear none of these costs. The noise also has significant negative health impacts on residents, from disturbing sleep patterns to general noise pollution. This is also true for livestock, like horses, and wildlife underneath these concentrated flight paths. Please adjust the process for establishing these corridors so that flights are consistently and fairly distributed over multiple areas in the Denver metropolitan region. Also please implement additional procedures to reduce noise created by departing flights in terms of speed, elevation and acceleration.

Topics Identified in the Comment

- Existing Aircraft Noise
- Physical and Mental Health
- Purpose and Need of Project
- Sleep Disturbance/Speech Interference
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #139 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

Greeley-Weld County Airport

970-336-3000

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

Northern Colorado Regional Airport

970-962-2850

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

Rocky Mountain Metropolitan Airport

303-271-4850

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

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

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.

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# 140 Submitted by: Feuer, Jack

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

Topics Identified in the Comment

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

FAA Response for Comment #140 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

(NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments-Responses

Comment# 141 Submitted by: Feuer, Marsha

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 Marsha"

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 #141 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 142 Submitted by: Feuer, Stephanie

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

Topics Identified in the Comment

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

FAA Response for Comment #142 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

(NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) and Carbon Monoxide (CO). Typically, significant air quality impacts would be identified if an action would result in the exceedance of one or more of the NAAQS for any time period analyzed. Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate State Implementation Plan (SIP) in order to attain the air quality goals identified in the CAA. However, a conformity determination is not required if the emissions caused by a federal action would be less than the de minimis levels established in regulations issued by EPA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments-Responses

Comment# 143 Submitted by: Fink, Deborah

Comment Received: As a southwest Boulder resident for 39 years I am acutely aware of the steady growth of air traffic and noise especially in the last 5+ years. I understand that there is a proposed shift of flight patterns to the south that will bring little to minimal relief for SW Boulder residents and wildlife. It has also been brought to my attention that another option is a several mile shift to the south over much less populated areas and following a state highway that already brings noise to that area. I not only live in SW Boulder most of my walking and hiking takes place there (saving car trips) and so I am aware of the impact that the current flight patterns inflict on other outdoor users and wildlife. I have noticed for some years now that low-flying planes are almost non-stop most nights from 10:30-11:30 p.m. This is extremely disruptive. Both the more frequent low flights and the sound reflection off the Flatirons and in the canyons are contributing to adverse conditions in what had been a healthier environment to live and exercise. Please enact the more significant southern flight pattern shift to Coal Creek Canyon and require a steeper climb-out so that aircraft are at FL160 before crossing the longitude of State Highway 93. Thank you

Topics Identified in the Comment

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

FAA Response for Comment #143 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>

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Greeley-Weld County Airport
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Northern Colorado Regional Airport

970-962-2850

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Rocky Mountain Metropolitan Airport

303-271-4850

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

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

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

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

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

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

Comments-Responses

Comment# 144 Submitted by: Fiore, Nicholas

Comment Received: "My home is DIRECTLY under one of your ""freeway"" paths in Boulder CO. I moved into the house in 2012 and I have noticed the last several years a very large surge in the frequency and consistency of path of flights overhead in a westerly direction. Yes low flying jet engines make some noise dont they? Now imagine they're also bouncing noise off of 2 000 feet of rock wall 1/2 mile from your neighborhood as well. Our geography being immutable the solution seems to be move the GD planes. (pretty please). Folks from all over the front range state USA and world visit the famous Flatirons - and this is how we treat them ourselves? No peace no quiet at the rooftop vista of the great American plains? I think as people first and FAA employees second most any of you may agree the right thing to do is alter the path of the sky freeway south over uninhabited portions of Boulder or Jefferson county. Please make this happen its the right thing to do."

Topics Identified in the Comment

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

FAA Response for Comment #144 Topics

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

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

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

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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# 145 Submitted by: Fischer, Howard

Comment Received: "Last October 2018 I started to hear and see large jets flying over Superior CO more frequently. The jets were flying lower in altitude and much noisier. Now there are than 20 flights a day that fly at low altitude while climbing to fly over the rocky mountains . It seems to me the slow climb from Denver international airport is too save the airlines fuel. This has a disruptive presence to the citizens of Superior and of one's home peace and quiet. The low flying jets produce a lot of noise from the jet engines which is disruptive to peace and quiet and the enjoyment of ones home. The citizens Superior are already bombarded by small aircraft and business jets from Rocky mountain regional airport RMMA. the management of the airport basically ignores the noise complaints from the Superior Co residents. Incidentally on March 28 2019 in twelve hour period a Boeing 737 and Boeing 757 landed an took off from RMMA flying over Superior CO. I do not know if the large jets violated a 1995 Avigation Easement agreement based on a 1998 Master plan from RMMA. I do know the the 2012 master plan of RMMA was written without input from the citizens of superior CO and the 2012 master plan most likely violates the 1995 Avigation Easement agreement. but RMMA does no care. Additionally the small single engine aircraft perform their training exercises stop and go take off and landings over the rock creek subdivision of Superior. If that engine fails while flying over Superior CO I do not know what the damage or the consequences would be. Since I could not make either the Boulder or Broomfield meeting. Both flights out of DIA and RMMA has affected the quality of life in superior CO. I am writing the FAA to force the aircraft flying out of DIA to climb quickly upon leaving the airport. By the time the jets are over the Denver metropolitan area Superior and Boulder the noise will be a lot less. This move is not unprecedented Orange County CA and Phoenix have both sued to require jet aircraft climb quickly over metropolitan areas to reduce noise and vibration the jet engines cause. It is not the position of the FAA to favor airlines in their quest to save fuel . But to protect the citizens of Superior CO from noise and vibration caused by slow climbing large jets. Sincerely Howard Fischer"

Topics Identified in the Comment

- Existing Aircraft Noise
- General Aviation/Visual Flight Rules
- Intergovernmental Agreements - 1995 Aviation Easement
- Purpose and Need of Project
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #145 Topics

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

on existing noise concerns and complaints. Contact information for registering noise complaints at the five study airports can be found below.

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Rocky Mountain Metropolitan Airport

303-271-4850

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

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

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

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

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

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

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# 146 Submitted by: Fischer, Klaus

Comment Received: "FAA NextGen Project We are a family of 4 with 2 young children and live in the Pinery in Parker Colorado. I was just informed about the new flight changes due to NextGen affecting us here in the Pinery. I am very concerned about the proposed flight pattern which would consistently bring more noise and pollution to the Pinery and my family. We moved here last year because of the nature and the beautiful environment. I am afraid that the change the FAA is planning will affect our community with consistent increase in noise and pollution long-term health impacts for the members of my family and a significant decrease in value of the home we just purchased in December 2018. I provided my address and contact information and I would please ask for a response to my concerns. Very appreciated. Thank you Klaus Fischer"

Topics Identified in the Comment

- Air Quality/Air Pollution
- Children's Environmental Health and Safety
- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure
- Property Values

FAA Response for Comment #146 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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.

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# 147 Submitted by: Floistad, Sharon

Comment Received: We built our home in The Pinery in 1984. We did most of the construction ourselves. We chose The Pinery for its natural greenbelts and the great schools and parks in Douglas County, which was recently named the healthiest community in the U.S. I am concerned that the flight patterns proposed will have a severe negative impact on our neighborhood. If you go only a very few miles to the east, there is much less population density. The Pinery also has Bingham Lake, which is one of the very few bodies of water in Douglas County that support migratory birds. Every year thousands of Canadian Geese pass over our neighborhood, not to mention a variety of ducks and other waterfowl because they rely on Bingham Lake. I believe only a slight adjustment to the east will help minimize the environmental impact to the citizens and wildlife in Douglas County.

Topics Identified in the Comment

- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #147 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# 148 Submitted by: Fox, Barbara

Comment Received: The current noise level is unbearable. Airplanes flying too low and circling over and over and over again. Terrified there will be a crash. Please do NOT allow any expansion at this airport ! Ben and Barbara Fox

Topics Identified in the Comment

- Existing Aircraft Noise
- Purpose and Need of Project

FAA Response for Comment #148 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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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# 149 Submitted by: Fox, Janet

Comment Received: I am writing in to support a 2 step process put forward by the citizens of south Boulder. 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. A lot of time and effort has gone into researching this issue and putting together a very workable plan.

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 #149 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

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# 150 Submitted by: Frahm, Lisa

Comment Received: These changes in flight parth are absurd. I live in the area South of Parker and we are going to have constant airplane noise according to your new layout. Last night we had planes flying over our house at 20-30 minute intervals how is anyone supposed to sleep with that kind of house rattling noise. The noise reduction is a false way to get your plan through we all know that once you implement this new plan is not going to be better.

Topics Identified in the Comment

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

FAA Response for Comment #150 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.

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# 151 Submitted by: Frahm, Lisa

Comment Received: We are being inundated with airplane noise especially at night when our family is going to bed between 9 and 11pm. We have screen shots of the current air traffic when two planes are flying on either side of our house almost simultaneously. We moved out of town to cut the noise now it's worse than ever. This plan doesn't benefit anyone. Even your charts show how overused the southeast part of the metro area is for landing patterns. It's a horrible plan and should be revised.

Topics Identified in the Comment

- Existing Aircraft Noise
- Purpose and Need of Project

FAA Response for Comment #151 Topics

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

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970-962-2850

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

Rocky Mountain Metropolitan Airport

303-271-4850

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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# 152 Submitted by: Friedman, Morgan

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 Morgan"

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 #152 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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.

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# 153 Submitted by: Friedman, norman

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 Norman"

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 #153 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 154 Submitted by: Fuller, Brian

Comment Received: "The FAA has circumvented the will of congress by neglecting to do a full environmental impact statement for implementation of NextGen in Denver. They have instead opted for the toothless Environmental Assessment which has the same effect on the people of Denver as the FAA completely disregarding the health well being and property values of the people on the ground. Those of us under the new flight paths bear a highly disproportional burden of noise and pollution regardless of the flawed models that the FAA has used to justify its actions. Here are just a few problems with the FAA Environmental Assessment. 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. FAA leaders should feel nothing but shame for the burden they have inflicted on their fellow Americans and the rampant disregard they have shown for the quality of life that the FAA has trashed for so many of us. Sincerely Brian Fuller PhD Geophysics Cherry Hills Village CO"

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
- Property Values

FAA Response for Comment #154 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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.

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# 155 Submitted by: Fuller, June

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 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. Regarding indoor and outdoor noise levels. I have lived with Chronic Fatigue Syndrome for 26 years in the Denver Metro area. One of the very significant symptoms of this retched disease can be an over sensitivity to light and sound. Of those two, noise is my bigger issue and has at times, negatively impacted my already limited life. With this in mind, my sweet husband supported the choice of buying a retirement home in a quiet city neighborhood, near my many doctors. This neighborhood had heretofore not had jet airplane traffic of any significance. It has been heavenly quiet for me and I am very grateful to him for the peace it brings. NextGen will change all this as can already be heard from the noisy rush of departing jets now running alongside I-25. What am I to do? I am now at a point with the CFS that moving away from my home would be extremely difficult for me, thus grounding this once outdoors Colorado girl to a life of indoors only, windows shut, no enjoying my beautiful backyard. I am only 59. WHERE IS MY REPRESENTATION? Certainly not in an Environmental Assessment; we need an Environmental Impact Statement. I grew up in Park Hill in Denver in the 1960s and 70s, very near Stapleton airport. Over that time, the jet noise went from minimal to constant at times, and was quite deafening. Home prices dropped and my parents ended up selling to escape the noise in 1977. In 1989, Denver area voters approved funds for DIA to be built to remove jet engine noise from over the city. Fast forward to now when it is quite shocking - especially to those of us who voted for and then paid for DIA - to see that vote and those expenses so flagrantly disregarded thirty years later by the FAA. Seriously, how could this happen? Well, NextGen is overseen by the NextGen Advisory Committee (board). Of the 30 voting members on the board, 19 are technical experts, 10 are industry leaders, and only one has a vote for us people on the ground. This is no way to run a government board and ends up looking very much like a money grab for the airline industry at the expense people on the ground. WHERE IS MY REPRESENTATION? June Fuller junefuller740@gmail.com

Topics Identified in the Comment

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

FAA Response for Comment #155 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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.

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.

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.

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# 156 Submitted by: Gall, Robert

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

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

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

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

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

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

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

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

Topics Identified in the Comment

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

FAA Response for Comment #156 Topics

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

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

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

Centennial Airport

303-790-4709

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

Denver International Airport

303-342-2380

https://www.flydenver.com/about/administration/noise_management

Greeley-Weld County Airport

970-336-3000

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

Northern Colorado Regional Airport

970-962-2850

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

Rocky Mountain Metropolitan Airport

303-271-4850

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

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

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

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

Comments-Responses

Comment# 157 Submitted by: Gallagher, Michael

Comment Received: Thank you for coming to Denver. There are concerns 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 #157 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 158 Submitted by: Gallagher, Michael

Comment Received: Thank you for coming to Denver. There are concerns 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

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

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

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

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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
<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.

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# 159 Submitted by: Gardner, Deb

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 #159 Topics

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

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Rocky Mountain Metropolitan Airport

303-271-4850

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

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# 160 Submitted by: Gebhart, Pauline
Comment Received: I was unable to make the 4/29 meeting in south Boulder. I live in South Boulder and the currant flight paths are right over my home and on the hiking trails just to the west of me. This is the ECAR area of hiking trails Mesa trail Skunk Canyon trail and all the other connecting trails. If the flight path was moved just a bit south to go over rocky flats(where no one lives or hikes) that would be Great for my neighborhood and for quiet hikes in nature.
Thank you
Pauline

Topics Identified in the Comment

- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #160 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# 161 Submitted by: Gerberding, Dan

Comment Received: Response to FAA proposal for Denver Metroplex

As a citizen living in the proposed Denver Metroplex, I am seeking an air traffic solution that does not adversely affect the community I live in just west of the Centennial airport in Denver (about 20 some miles from Denver International airport). The proposed routing of aircraft over my area appears to concentrate some of the south bound traffic over our community. I have experienced in the increase in air traffic and noise over the past few years, starting about the time Denver International airport was replacing one of its runways. I accept the need to build a better air traffic routes over Denver, but with the following caveats. First, the traffic cannot be concentrated in one "highway" for southbound traffic. This southbound traffic needs to be fanned out over south metropolitan area. Also, as proposed, it needs to be in more than one highway "band", meaning several (3 or more) flight paths dispersing the air traffic over the southern metro communities. Two, the frequency of the traffic needs to be limited. There cannot be air traffic every minute or 3 minutes over the neighborhood. The engine wake from airliners, lasts for up to 30 seconds or more, at the altitude the traffic is flying over our neighborhood. Third, there needs to be significant breaks from the jetliner noise, or significant reduction in the noise by flying higher (above 20000 feet) or slower over the community, located at 5800 feet. The best remedy, is of course, not flying over the community which may not be an option. It is important, though, to minimize the noise impact to the community. I believe this can be accomplished through dispersing the airliner noise over a wider area in south metro Denver (limiting the concentration of aircraft in one area), reducing the level of the noise (decibels) by flying higher or slower, and limiting the frequency of the aircraft over our community. All these considerations would make the experience of aircraft flying overhead more tolerable and manageable for everyone. Thank you for allowing me to comment on the proposed changes.

Topics Identified in the Comment

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

FAA Response for Comment #161 Topics

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

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

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

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

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# 162 Submitted by: Gerberding, Dan

Comment Received: "Response to FAA proposal for Denver Metroplex (My apologies if this a duplicate message. The online form was not working this past week) As a citizen living in the proposed Denver Metroplex I am seeking an air traffic solution that does not adversely affect the community I live in just west of the Centennial airport in Denver (about 20 some miles from Denver International airport). The proposed routing of aircraft over my area appears to concentrate some of the south bound traffic over our community. I have experienced in the increase in air traffic and noise over the past few years starting about the time Denver International airport was replacing one of its runways. I accept the need to build a better air traffic routes over Denver but with the following caveats. First the traffic cannot be concentrated in one "highway" for southbound traffic. This southbound traffic needs to be fanned out over south metropolitan area. Also as proposed it needs to be in more than one highway "band" meaning several (3 or more) flight paths dispersing the air traffic over the southern metro communities. Two the frequency of the traffic needs to be limited. There cannot be air traffic every minute or 3 minutes over the neighborhood. The engine wake from airliners lasts for up to 30 seconds or more at the altitude the traffic is flying over our neighborhood. Third there needs to be significant breaks from the jetliner noise or significant reduction in the noise by flying higher (above 20000 feet) or slower over the community located at 5800 feet. The best remedy is of course not flying over the community which may not be an option. It is important though to minimize the noise impact to the community. I believe this can be accomplished through dispersing the airliner noise over a wider area in south metro Denver (limiting the concentration of aircraft in one area) reducing the level of the noise (decibels) by flying higher or slower and limiting the frequency of the aircraft over our community. All these considerations would make the experience of aircraft flying overhead more tolerable and manageable for everyone. Thank you for allowing me to comment on the proposed changes. Dan Gerberding Centennial CO"

Topics Identified in the Comment

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

FAA Response for Comment #162 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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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# 163 Submitted by: Gnuse, Larry

Comment Received: The Denver Metro FAA April 2019 report is purposely written to be totally comprehensible to the public. There can be no effective public input from a report written to prevent public input. This reports willful over complexity uses many methods that prevents the public from understanding and thus giving public input. The Denver April 2019 Metroplex report should be withdrawn and rewritten into a report that the public can understand how their area will be impacted. Many obscuring techniques were willfully inserted to make The Denver 4-2019 report to make it non comprehensible to the public such as removing labels from exhibits hiding exhibits with text overlays that cannot be removed despite statements to the contrary. The FAA created massive inappropriate noise increases since 2010 with Next Gen - LOW and LOUD and now tries to justify this incomprehensible report with conclusions stating that the currently totally unacceptable levels of noise won't get any worse on average. Redo the report or you are preventing any effective means of public input. The FAA is totally disregarding the many billions of health care costs and societal costs of it's operations. The FAA calculations are for aircraft efficiency only. The FAA assumes all it's airports have no human populations except poor and minorities anywhere near. Withdraw and rewrite the report or the FAA has purposely denied public input.

Topics Identified in the Comment

- Existing Aircraft Noise
- NEPA and FAA Order 1050.1F
- Public Outreach/Public Involvement
- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project

FAA Response for Comment #163 Topics

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

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

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

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

Public Outreach/Public Involvement: The views and input of communities are important to the FAA as the Agency takes the next steps to advance the NAS. Since 2016, the FAA has engaged individual communities through holding public workshops in the Denver metropolitan area to explore possible solutions to their concerns while ensuring the safety and efficiency of the National Airspace System. Twelve public workshops across the Denver metropolitan area were held in 2017, and again recently in April and May 2019. The public workshop locations, dates and time were publicized in the Denver Post, posted on the FAA Community Involvement website, and the Denver Metroplex Project website, in addition to being publicized through social media and local press releases. Comments received from the 2017 and 2019 public workshops were considered when designing the proposed flight procedures for the Denver Metroplex Project.

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

The noise modelling analysis for the forecasted years 2019 and 2024 evaluated noise exposure to provide updated estimates of where noise increases may occur. Potential impacts were evaluated under 2019 and 2024 conditions for both the Preferred Alternative and the No Action Alternative using the

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

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

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

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

Comments-Responses

Comment# 164 Submitted by: Gnuse, Larry

Comment Received: 1--- Denver Metro Plex public input meetings designed to prevent ,stop public input 2- FAA using DbA, to massively mislead the public. DbA is the mathematical formula used purely because it mathematically excludes most objectionable human damaging aircraft noise heard inside buildings by the body. DbA used to mislead and confuse the public 3 ---People who attended meeting were shown a show of lines that meant nothing, gave attendees no useful information they could react to, understand, , like or object too. FAA stonewalled attendees to stop public input. Public cant object if they learned nothing they could possibly relate to. Information on how much actual real noise, not fake DbA noise, Db Eq, or DbZ , the real noise that the FAAs own training manuals confirm dbZ, not DbA correlates to learning loss, loss of sleep, permanent blood pressure increase , stroke and heart attack and noise complaints. 4--- Centennial Airport approach / departure patterns of 05 North over the middle of the 10 sq miles of purposely created aircraft noise abatement zone was and still is a set in stone, condition under which the airport was allowed to be built and operated. Arapahoe County, Denver, Greenwood Village and Aurora specifically set aside 10 square miles of land on the 05 North heading for the primary use as an aircraft noise buffer. It has been a set in stone expectations and condition of allowing Arapahoe Airport, now Centennial Airport to be built. It is still a set in stone expectation. Now the FAA has tried to overturn the set rules that governed where communities and schools were built. The FAA has abandoned the 10 sq miles of aircraft noise abatement zone and instead is directing aircraft low and loud directly over over homes and the largest concentration of schools in the area, built there because the area was explicitly outside the area that should, except in weather emergencies, experience aircraft noise. The FAA in it's gross negligence and total disregard of the of 50 years of community planning , and a total disregard of the massive human damage it inflicts is now flying aircraft on routes that inflict maximum human damage and public costs. We demand that the FAA return aircraft to traditional 50 yr, 05 North departure and approach . The public supported the massive costs of moving Stapleton Airport 15 miles further away and travelling 30 miles further each trip specifically so Arapahoe, now Centennial Airport would have massively increased airspace to allow aircraft to descend steeply from 4000 ft on that 05 North 10 sq mile aircraft noise abatement area. Now the FAA has done the exact opposite. Now the FAA, through it's public input designed to stop public input, tried to sneak another unnecessary, damaging to the total economy, damaging to taxpayers , aircraft operation plan into existence, while falsely claiming it allowed public input. Follow the Centennial Roundtable recommendations as mandated policy, as the FAA has prevented all effective public input. Shame, shame on you.

Topics Identified in the Comment

- Existing Aircraft Noise
- General Aviation/Visual Flight Rules
- Noise Modelling Analysis
- Physical and Mental Health
- Purpose and Need of Project

FAA Response for Comment #164 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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Rocky Mountain Metropolitan Airport

303-271-4850

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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.

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.

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# 165 Submitted by: Godrick, Daniel

Comment Received: The noise from planes flying overhead from DIA has become relentless over my house in Louisville. I know that there are acoustical models, however there is a saying that every model is wrong, so as a mechanical engineer, I tested the impact of this noise. I performed a timed experiment. For over an hour, every 2-3 minutes there was a plane flying directly over my house at takeoff power, which created a thunderous noise. I tested sound levels just 1/4 mile away were substantially reduced compared to my house, which shows that dispersing the airplanes will have a beneficial impact. Please reconsider flying the planes on the same route over populated areas, including Louisville and South Boulder. If there must be a small flight window, there are areas just further south, over Rocky Flats, that would have minimal impact. If you increase the window that planes can travel in, this also would help tremendously. Please note that as a mechanical engineer, I love planes. I regularly travel to local airports to watch them takeoff and land. However, the relentless noise every 2-3 minutes for hours at a time is simply unbearable. Thank you for your consideration.

Topics Identified in the Comment

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

FAA Response for Comment #165 Topics

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

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

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

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

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

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

Comments-Responses

Comment# 166 Submitted by: Goga, Michael

Comment Received: I am a homeowner who lives in Idledale near to "BAYLR" flight route. Noticed an increase in jet noise in the last 3-4 months. As soon as one jet leaves the airspace another jet enters the airspace. Noise is heard inside house. North of Idledale to I-70 is open space with fewer homes. If the trajectory of "BAYLR" could be shifted slightly to the north, this action would alleviate jet noise for the entire community of Idledale and not negatively impact the community of Genesee. If the patch of "BAYLR" cannot be adjusted to the north or south, perhaps the jets can reach a higher altitude by the time they fly over Idledale. The noise is particularly noticeable at this address as there is no background noise. Thank you for the consideration.

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #166 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>

Denver International Airport

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Greeley-Weld County Airport

970-336-3000

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

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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# 167 Submitted by: Goldstein, Candice

Comment Received: "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 quiet found in Cherry Hills is why we purchased a home in this community and a change in the air traffic after the fact would be very disruptive to our family. This change will likely hurt our property values and decrease the charm and appeal of the village. 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 Candice Goldstein"

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
- Property Values

FAA Response for Comment #167 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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Rocky Mountain Metropolitan Airport
 303-271-4850
<https://www.jeffco.us/1697/Noise-Complaint-Online-Form>

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

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

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

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

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

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

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

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

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

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise

analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

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

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

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

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

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# 168 Submitted by: Goldstein, Colin

Comment Received: I am dismayed and disturbed by the new flight path routing planes over South Boulder. Our previously quiet neighborhood has planes flying overhead all day now- with the accompanying noise. Why go over a heavily populated area instead of over the almost vacant land South of here?

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #168 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# 169 Submitted by: Goldstein, Doug

Comment Received: "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 quiet found in Cherry Hills is why we purchased a home in this community and a change in the air traffic after the fact would be very disruptive to our family. This change will likely hurt our property values and decrease the charm and appeal of the village. 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 Doug Goldstein"

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
- Property Values

FAA Response for Comment #169 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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NEPA and FAA Order 1050.1F: The National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) §4321 et seq.], requires federal agencies to disclose to decision makers a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action and reasonable alternatives to a proposed action, including a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (FAA Order 1050.1F). The Proposed Action for this Environmental Assessment (EA) is the proposed Denver Metroplex Project. The Draft EA was prepared in accordance with FAA Order 1050.1F and meets the required elements of the National Environmental Policy Act.

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

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

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

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

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

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

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

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

The FAA's noise guidelines for compliance with NEPA define a significant impact as an increase of DNL1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, the noise

analysis results indicate that the Preferred Alternative when compared to the No Action Alternative would not result in a DNL 1.5 dB or higher increase in sensitive areas exposed to DNL 65 dB or higher.

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

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

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

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

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# 170 Submitted by: Goldstein, Erica

Comment Received: "Please move the flight path south. There are far less populated areas just south of boulder so can you please not fly early morning to late night over our homes? It wakes my daughter up from sleeping and it just doesn't make sense since so many less people would be affected but moving the flights south of town. Please I hope you will make that change. Thanks"

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #170 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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https://www.flydenver.com/about/administration/noise_management

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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>

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# 171 Submitted by: Goldstein, Erica

Comment Received: "It's 10:36pm on Wednesday June 5th and a plane going over my house just woke my daughter. Please move the flight path further south where there are way less home. Why would you not? Thank you Erica"

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #171 Topics

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

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Rocky Mountain Metropolitan Airport

303-271-4850

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

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

Comments-Responses**Comment# 172 Submitted by: Goldstein, Leonard**

Comment Received: The reason I came to the workshop is the bombardment of misinformation circulated before the workshop. Thank you for doing this.

Topics Identified in the Comment

- No Concerns Identified

FAA Response for Comment #172 Topics

No Concerns Identified: Thank you for your comment.

Comments-Responses

Comment# 173 Submitted by: Goodman, Amy

Comment Received: My husband and I moved to Boulder in 2011 and purchased a home in a very quiet setting in Table Mesa. I am not an activist, but I am very concerned about the increase in jet noise in our neighborhood. I started to write comments a couple of days ago and thought, “Is it really bad enough to complain?” Last night I decided it was important for me to post my thoughts. We routinely leave our bedroom windows open because of the cool Colorado evenings. On June 5 from 9:00-10:00pm, I counted the number of jets that we heard overhead. There were at least 10 in that sample hour. Each jet was loud enough that we could not hear our TV. Most importantly, when we turned off our TV, we could not hear the sounds we typically can hear and enjoy on a quiet summer evening. Having a jet freeway over our neighborhood has significantly reduced our quality of life. Gone are the days of just silence. Even hiking up to our local open space trail a mile away is not a solution. Our trails in Chautauqua are also impacted. It feels like we now live and hike in an urban park. We can live in a city for that experience. We chose to invest in a community that values nature and open space. The jet freeway does not belong here. I am not a scientist nor do I understand all the possible solutions, but some concerned neighbors have studied this in depth. One thing I have learned about Boulder is the citizens are extremely well educated and informed, so I trust their problem solving. I would like the FAA to incorporate the Complete ZIMMR Noise Solution for the Denver NEXTGEN portion of the DIA Metroplex project. Thank you in advance for keeping my personal identifiers confidential although I understand there is no guarantee.

Topics Identified in the Comment

- DOT Section 4(f) Resources
- Existing Aircraft Noise
- Frequency of Aircraft Overflights
- Withold Personal Identifying Information
- ZIMMR SID

FAA Response for Comment #173 Topics

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

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

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

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

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

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

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

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".

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# 174 Submitted by: Gosman, Diane

Comment Received: "I am requesting that my personal identifying info be withheld. I attended the FAA Denver Metroplex Workshop May 1 2019 at Rocky Mountain Metropolitan Airport. All representatives were helpful and approachable. I am requesting that the current (sounds like nonstop thunder) and future paths for westbound DIA flights do not fly over or near Superior. We already receive a huge amount of overflights from BJC whose flight operations have increased 47% from 2014-2018. RMMA wants to grow more and have possible commercial flights in the future with possible 737's. They already have been BJC overflights of 737's and on March 28 2019 a 757. Our skies are already very crowded and some residents of Rock Creek are already moving because of the negative impact BJC is having on our quality of life (interrupted sleep vibration and risk to hearing) and safety issues with low single engine training aircraft (1970's) flying in continuous circles over our homes and schools. We do not benefit from an IGA like Adams County and Denver have with DIA. Why should the airlines benefit from some savings in fuel costs while the residents on the ground in the Denver Metro area suffer? Instead of the proposed path over Superior this path should go to the north where it is less populated. Thank you."

Topics Identified in the Comment

- Existing Aircraft Noise
- Commercial Airlines Operations Costs
- General Aviation/Visual Flight Rules
- Suggestions to Change Air Traffic Patterns
- Withold Personal Identifying Information

FAA Response for Comment #174 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>

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.

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# 175 Submitted by: Goubleman, Karen

Comment Received: Having an atmosphere without excessive noise that prevents people from sleeping is a reasonable request. Please move the flight paths to an area that does not cause excessive noise over residential areas.

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #175 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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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# 176 Submitted by: Graber, Christopher****Comment Received:** I bought a home near an airport and expect air traffic . No concerns here**Topics Identified in the Comment**

- No Concerns Identified

FAA Response for Comment #176 Topics**No Concerns Identified:** Thank you for your comment.

Comments-Responses

Comment# 177 Submitted by: Grayson, Alicia

Comment Received: "The noise pollution from planes overhead has gotten worse and worse. I hope there is consideration to create new flight paths so not all westward bound planes are above my house! Please withhold my personal identifying information thanks."

Topics Identified in the Comment

- Existing Aircraft Noise
- Purpose and Need of Project
- Withold Personal Identifying Information

FAA Response for Comment #177 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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Purpose and Need of Project: The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

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

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

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

Comments-Responses

Comment# 178 Submitted by: Grosjean, Martin

Comment Received: Please shift the air traffic lane over south Boulder to a more uninhabited space farther south. Once you get south of Eldorado Springs there is little habitation next to the mountains until you get to Golden so that would be the ideal place. It is way too noisy in south Boulder with the planes constantly overhead!

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #178 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

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# 179 Submitted by: Gubler, Robert

Comment Received: Please do not change the flight path at Centennial Airport. I live west of the airport. Change to the flight path to fly along Arapahoe Rd can impact the safety of my family and create noise unnecessarily.

Please leave the flight path as-is such that planes fly in/out from north/south.

Please do not disclose my personal identifying information.

Topics Identified in the Comment

- Projected Changes in Aircraft Noise Exposure
- Purpose and Need of Project
- Withold Personal Identifying Information

FAA Response for Comment #179 Topics

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

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

Purpose and Need of Project: The purpose for the metroplex initiative is to optimize air traffic control (ATC) procedures and airspace on a regional scale. This is accomplished by developing ATC

procedures that take advantage of technological advances in navigation, such as Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, while ensuring that aircraft not equipped to use RNAV flight procedures continue to have access to the National Airspace System. The overall intent is to use limited airspace as efficiently as possible for congested metroplex areas.

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

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

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# 180 Submitted by: Guedelhofer, Laura

Comment Received: "Please do not put a flight lane over south Boulder. You can fly South of us over Rocky Flats and there are no people there to care. 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 Analysis
- Projected Changes in Aircraft Noise Exposure
- ZIMMR SID

FAA Response for Comment #180 Topics

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

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Rocky Mountain Metropolitan Airport
303-271-4850

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

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.

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# 181 Submitted by: Gunter, Al

Comment Received: These comments refer to the NW flight path. History. As a condition to get the Boulder to support DIA, when both Adams County and Boulder were not supporting it, an agreement was made to have the NW flight path go over the Rocky Falts bomb factory. When 9/11 occurred that route was felt to be two dangerous and was moved slightly North. A few years ago it was moved even farther North in direct conflict with the original agreement. There are many reasons why the route was put over Rocky Flats. Less housing, less wildlife disturbance, less acoustic reflection and reverberation and less disturbance for people using the 44,000 acre Boulder Open Space which is the 2nd most frequented passive recreation site in the state with 491,000 visitors. Rocky Mountain National Park is the first. The almost constant airplane noise radically degrades that experience. The proposed route goes over housing that was in existence before DIA and is not new growth that knows about DIA noise. The Rocky flats wildlife refuge was first a plutonium contamination site but the politicians decided that calling it a refuge was the way to best protect it, not because there is lots of wildlife there. Talk to Boulder City Open Space department for wildlife information. The flatirons are home to Peegrine Falcons and other species of concern. The primary issue is noise. Your models do not deal with reflected noise, or noise reverberation. In addition, the older planes that are , type 2 and 3, are noisier. The planes are mostly under full power. If you put the route back to Rocky flats you will notice that there is less stone to reflect noise. That route is about 2 miles South of Eldorado state park. Noise is relative depending on the background noise. Current brain science is much farther advanced than you are using in your analysis. Please bring it up to date. Denver water is about to begin an enlargement of Gross lake water storage in the foothills above Rocky Flats that will be very loud (500 large trucks per day and heavy construction equipment. The Rocky flats route will have, relative to perception, less noticeable noise. Any planes leaving DIA between 9:30pm and 6:30 am should have to leave to the NE(that is now occurring sometimes, depending on the controller). Anything but stage 4 aircraft should go the way all the time. The older planes used by Air freight and on line retail companies are much noisier and fly while most people are trying to sleep. Poor sleep is a serious health issue. Please bring you understanding of the last 10 years of research up to date. Sleep disturbances are a far more serious problem than has been previously recognized. I would be glad to share some information on sources for understanding sleep and brain science. Making policy in the courts is a poor way to do it. Please put the NW flight path where it was agreed to over Rocky Flats. I would appreciate if my name and addresses were not released to the extent possible. I would be glad to share sources and information with you.

Topics Identified in the Comment

- Existing Aircraft Noise
- Noise Modelling
- Noise Modelling Analysis
- Sleep Disturbance/Speech Interference
- Suggestions to Change Air Traffic Patterns
- Withold Personal Identifying Information

FAA Response for Comment #181 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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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.

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# 182 Submitted by: Haakinson, Eldon

Comment Received: "At the FAA Metroplex workshop held on April 29 2019 recommendations were made that I support to improve the quality of life and reduced noise from aircraft to Boulder citizens. I attach the findings of the workshop for the specific recommendations. Signed by Eldon Haakinson 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 #182 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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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# 183 Submitted by: Hackett, Sean

Comment Received: The Colorado Department of Public Health and Environment (CDPHE) appreciates the opportunity to provide comments on the Denver Metroplex (DEN Metroplex) Draft Environmental Assessment (EA). We are encouraged to see the incorporation of an Environmental Justice analysis in the General Study Area. The EA states that the proposed Preferred Alternative would result in a slight increase in fuel burn at 3,000 feet above ground level or above and would not result in an increase in emissions and ground concentrations. We note that the Denver Metro/North Front Range Area is currently designated as a “moderate” ozone nonattainment area for the 2008 ozone standard and the area is likely to be designated “serious” in the near future for failing to reduce ozone levels per EPA requirements. Depending on meteorological conditions and cumulative emissions in the area, emissions at high varying elevations may rise and fall, affecting ground-level ozone. While the EA states that emissions from the Proposed Alternative would be minimal, CDPHE appreciates any efforts to decrease emissions. Thank you again for the opportunity to provide comments. If you have any questions or need additional assistance, please call or email me directly. sean.hackett@state.co.us

Topics Identified in the Comment

- Air Quality/Air Pollution
- Potential Increase In Fuel Burn and Emissions

FAA Response for Comment #183 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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)).

Potential Increase In Fuel Burn and Emissions: The commenter also asked how the proposed Denver Metroplex Project could be presumed to conform to the SIP if it would result in an increase in fuel burn or emissions. As described in Section 5.2.3 of the Final Environmental Assessment under the proposed Denver Metroplex Project there would be a slight increase in fuel burn (1.83 percent in 2019 and 1.85 percent in 2024) when compared to the No Action Alternative. While increased fuel burn corresponds with an increase in emissions, operational changes that could result in an increase in fuel burn would occur at 3,000 feet AGL or above and would not result in an increase in ground concentrations. Any operational changes that could result in an increase in fuel burn would occur at or above 3,000 feet AGL. As discussed above, procedures above 3,000 feet AGL are considered a de minimis action, would have little if any effect on emissions and ground concentrations of criteria pollutants, and are presumed to conform to all applicable SIPs. (72 Fed. Reg. 6641 (February 12, 2007)).

Comments-Responses

Comment# 184 Submitted by: Halle, Curtis

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 #184 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 185 Submitted by: Halle, Henri

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.

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- Physical and Mental Health
- Projected Changes in Aircraft Noise Exposure

FAA Response for Comment #185 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 186 Submitted by: Halle, Madeleine

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 #186 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

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

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

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

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

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

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

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

Denver International Airport
303-342-2380
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.

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# 187 Submitted by: Halle, Richard

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 #187 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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.

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# 188 Submitted by: Halle, Suzanne

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 #188 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 189 Submitted by: Hamilton, John

Comment Received: This comment is in regard to the ZIMMR flight path. I am a resident of the Boulder area for over 20 years and in the last few years we've heard the aircraft noise level increase to very high levels. I've been following the developments and I urge the FAA to adopt the Complete ZIMMR Noise Solution to address this. I, like many tens of thousands of people in the area, have anecdotes illustrating the intrusion of the increased noise - standing on my child's playground unable to hear an after school conversation; relentless noise over the Indian Peaks area; being woken many times at night as planes fly over our city. Having a 30 year career as an engineer, including working in the aerospace industry (F-15 Radar), I can appreciate the complexity that can surround "obvious" problems - it's often not simple to implement what sounds straightforward. But, I also draw on my experience to know that it's always best to do the task correctly and completely to avoid future issues. It seems that the FAA is at that point with this flight path and noise issue. Adopting the Complete ZIMMR Noise Solution is the right way forward to best address all the issues. Thanks very much,

Topics Identified in the Comment

- Existing Aircraft Noise
- ZIMMR SID

FAA Response for Comment #189 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

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# 190 Submitted by: Hansford, Tim

Comment Received: "FAA flight paths over Boulder Louisville and Nederland The FAA is in the process of finalizing the flight paths of commercial jet airliners over south Boulder. The routes they are currently using have been in place over residential areas of south Boulder Louisville and Nederland since 2016. They are proposing minor changes to flight paths that will leave disruptive noise patterns in place for years to come. Thanks to extensive research done by south Boulder residents Jerry Meehl and Pamela Barsam Brown they have found a way that the existing flight paths can be tweaked with minimal effort to significantly reduce the noise impact over a large residential area of Boulder County shifting the noise instead to the largely unoccupied area over Rocky Flats where the flight corridors were situated up until 2013. Significantly the noise estimates used by FAA are not actual measurements but from computer modeling. The FAA admitted that topographical reflection and amplification of noise from the Flatirons would NOT be accurately modeled by their procedure. Therefore the FAA jet noise estimates are not credible for south Boulder. Meehl and Brown's 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. IMPORTANT!!! 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. The ZIMMR flight path as proposed by the FAA WILL NOT work to alleviate ongoing unrelenting jet noise from the FOOOT- westbound flightpath from DIA over Louisville Boulder Nederland and Indian Peaks Wilderness that was newly instituted in 2014 as part of the FAA NextGen navigation program for the following reasons: The proposed ZIMMR flight path over south Boulder is only shifted about 0.5 miles south of the southern city limit- this does NOT solve the jet noise problem for south Boulder The proposed ZIMMR flight path is only shifted a bit more than a mile south of Louisville - this does NOT solve the jet noise problem for Louisville The proposed ZIMMR flight path would directly overfly Nederland and Indian Peaks Wilderness thus causing even more of a jet noise problem there What this tweak WILL DO: 1. Alleviate jet noise problem for south Boulder with the flight path being about 3 miles south of southern city limit 2. Alleviate jet noise problem for Louisville with the flight path being about 3 miles south of town 3. Alleviate jet noise problem for Nederland and Indian Peaks Wilderness with the flight path being about 3 miles south With this tweak both ZIMMR and COORZ would shift the westbound flight path back to the south over uninhabited Rocky Flats where it had been for over 20 years thus providing jet noise relief to approximately 73 000 to 140 000 people. This proposal would not shift the problem over different people since Rocky Flats is mostly uninhabited and not create a new jet noise problem for a different set of people since the first 20 miles of the proposed westbound departure paths from DIA are very close to the previous flight paths in use since DIA opened. We strongly urge the FAA to do the right thing for 73 000 to 140 000 people and enact this tweak. Tim Hansford 2680 Stephens Road Boulder CO 80305"

Topics Identified in the Comment

- COORZ SID - Move IPALE Waypoint 0.7 Nautical Miles
- Existing Aircraft Noise
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure
- Suggestions to Change Air Traffic Patterns
- ZIMMR SID - Move 1.3 Nautical Miles
- ZIMMR SID

FAA Response for Comment #190 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>

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Greeley-Weld County Airport

970-336-3000

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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>

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.

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

ZIMMR SID - Move 1.3 Nautical Miles: The commenter requests that the FAA consider modifying the proposed ZIMMR Area Navigation (RNAV) Standard Instrument Departure (SID) by moving the flight path 1.3 nautical miles southward from the location that was depicted at the workshops for the Draft Environmental Assessment. The proposal would affect the proposed COORZ (RNAV) SID, CONNR (RNAV) SID, and the BAYLR (RNAV) SID; requiring the same 1.3 nautical miles movement southward in order to maintain aircraft separation standards. The FAA reviewed this proposal while also considering the effects of weather and winds in the area. Rapidly changing atmospheric conditions and convective activity over the Front Range requires air traffic control to build in a greater margin of safety 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# 191 Submitted by: Hanson, Don

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 Don Hanson"

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 #191 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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
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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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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.

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# 192 Submitted by: Hanson, Harper

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 Harper Hanson"

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 #192 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 193 Submitted by: Hanson, Kathy

Comment Received: I am concerned about the plan the FAA has for air traffic patters and the health affects that will be caused by the noise and pollution if this plan is implemented. I feel it is vital that a study be done using real data not just algorithms to measure the impact this will have on residents of Denver and the surrounding area.

Topics Identified in the Comment

- Air Quality/Air Pollution
- Noise Modelling Analysis
- Projected Changes in Aircraft Noise Exposure

FAA Response for Comment #193 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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)).

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# 194 Submitted by: Hanson, Kendal

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 Kendal Hanson"

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 #194 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 195 Submitted by: Hanson, Nate

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 Nate Hanson"

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 #195 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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

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.

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# 196 Submitted by: Harmon, Kimman

Comment Received: To Whom it may concern;

We have lived in our home in South Boulder for 25 years and have noticed more and more planes flying overhead.

We like to dine on our outdoor patio as often as possible and enjoy our yard and the birds but with a jet flying overhead every 30 seconds it makes it rather unpleasant. We have the right to the peaceful enjoyment of our home but with your flight plan going right over our house continuously there is no way that is happening. We kindly ask that you direct the flights much further south than they currently are headed.

Please help us get back to our quiet evenings at home that we enjoyed for years until you decided to fly over our home.

Thank you for your attention to this matter.

Sincerely

Kimman

Topics Identified in the Comment

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

FAA Response for Comment #196 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

Greeley-Weld County Airport

970-336-3000
<http://www.gxy.net/>

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

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

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

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

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

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

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

Comments-Responses

Comment# 197 Submitted by: Harper, Sandra

Comment Received: I recently moved from central Boulder to South Boulder where the air traffic is painfully present especially at night between 9 and midnight. The airplanes are noticeably loud and dining outside has become a frustrating experience. Moving the planes further south where it is less populated and away from the mountain communities would be a life saver. Thanks for taking my comments.

Topics Identified in the Comment

- Existing Aircraft Noise
- Suggestions to Change Air Traffic Patterns

FAA Response for Comment #197 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

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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# 198 Submitted by: Harris, Brian

Comment Received: "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 Brian 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 #198 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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.

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# 199 Submitted by: Harris, Chase

Comment Received: "Dear 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. My parents 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! This makes me sad to think we will have so many planes over our house. The noise scares me. We have heard some really loud ones lately. 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. Please just say ""NO"". Thank you Chase 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 #199 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 (NO₂), Ozone (O₃), Particulate Matter (PM)(up to both 2.5 micrometers [PM_{2.5}] and 10 micrometers [PM₁₀]), and Sulfur Dioxide (SO₂). 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 (O₃) 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.

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

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FAA Response for Comment #200 Topics

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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.

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.