Final General Conformity Determination for
New Runways, Terminal Facilities and Related Facilities at
Washington Dulles International Airport

Washington Dulles International Airport
Dulles, Virginia

This Final General Conformity Determination has been prepared by the FAA in accordance with the following public law requirements:
Section 176(c) of the Federal Clean Air Act, 42 U.S.C. 7506(c)(1).

Specifically, this document addresses the air quality impacts anticipated by the construction and operation of the Sponsor’s Preferred Alternative, Build Alternative 3, at Washington Dulles International Airport. This alternative includes the following: the acquisition of land; construction and operation of two new runways, taxiways, lighting, navigational aids, air traffic procedures; associated grading, drainage, utility improvements; Tier 3 Concourse development; extension of the APM system; and relocation of NOAA/NWS Sterling facilities. NOAA is preparing separate documentation that will contain an evaluation of air quality impacts associated with the relocation of NOAA/NWS Sterling facilities.

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EXECUTIVE SUMMARY

This Final General Conformity Determination (GCD) is provided in support of proposed improvements to the Washington Dulles International Airport (IAD), including new runway/taxiway systems and other associated developments. The potential environmental impacts of this proposal have been assessed by the Federal Aviation Administration (FAA) in this Final Environmental Impact Statement (FEIS). The anticipated effects to air quality are discussed in Section 5.5 of the FEIS and further assessed here for Build Alternative 3, which is the Preferred Alternative, to satisfy the General Conformity requirements of the Federal Clean Air Act (CAA).

Under Section 176(c) of the CAA (the “General Conformity Rule”), Federal agencies, including FAA, are prohibited from engaging in, supporting in any way, providing financial assistance for, licensing or permitting, or approving any action that does not conform to a State Implementation Plan (SIP). Therefore, in accordance with the General Conformity Rule (40 CFR, Part 93, Subpart B) and FAA guidelines, this document presents the results of the analysis undertaken to ascertain whether the planned improvements to IAD conform to the SIP for the Washington, DC-VA-MD Area.

Specifically, this Final GCD was prepared to address conformity in 2010 (the year with the greatest changes in project-related emissions) and 2015 (the year in which project-related emissions are expected to be greatest on an annual basis). For conservatism, the year 2005 SIP levels were held constant for the year 2010 and 2015 analyses. Since there are no off-site (i.e., off-airport) roadway improvements connected with the Build Alternative 3, the CAA Transportation Conformity Rule does not apply for this project.

Currently, parts of the Washington, DC-MD-VA area (including Dulles) have been designated by the U.S. Environmental Protection Agency (EPA) as a moderate “nonattainment” area for the ozone (O3) 8-hour standard. This designation signifies that a violation of the National Ambient Air Quality Standards (NAAQS) for this pollutant has occurred in the past. As a result, the Metropolitan Washington Council of Governments (MWCOG) must develop and submit a SIP with respect to the 8-hour O3 standard by June 2007. EPA revoked the 1-hour O3 standard on June 15, 2005 and required that current emission control measures for the 1-hour O3 standard, including SIP emission budgets and the General Conformity regulations, remain in place until the nonattainment area attains the 8-hour standard.

The EPA has also designated the Washington DC-MD-VA region as nonattainment for PM2.5 effective on April 5, 2005. Under this designation, the region is required to submit a SIP to the EPA by April 2008 with attainment by April 2010, based on monitoring data from 2007-2009. At this time, there are no de minimis thresholds for PM2.5. Therefore, no General Conformity Assessment can be performed for this pollutant.

The results of analysis are expressed in units of tons per year (tpy) for each pollutant and emission source. In this way, comparisons of emissions among the project alternatives (i.e., Build versus No-Action), at IAD can be easily made. The essential findings of this analysis are summarized as follows:
1. Project-related operational emissions of nitrogen oxides (NO\textsubscript{x}) are -3 tpy and volatile organic compounds (VOCs) are -9 tpy in 2010 for Build Alternative 3, when compared to the No-Action Alternative; and project-related operational emissions of NO\textsubscript{x} are -5 tpy and VOCs are -10 tpy in 2015 for Build Alternative 3, when compared to the No-Action Alternative.

2. Maximum annual project-related construction emissions of NO\textsubscript{x} are estimated to be 138 tpy and VOCs emissions are 28 tpy for Build Alternative 3.

3. By including other projects at IAD (i.e., Tier 2 developments), the annual construction emissions are estimated to range from 109 to 182 tpy for NO\textsubscript{x} and from 13 to 28 tpy of VOCs for the period 2006-2010.

4. When compared to the General Conformity Rule de minimis levels of 100 tpy, total project-related emissions (i.e., operational plus construction) of NO\textsubscript{x} and 50 tpy of VOCs call for a conformity determination.

5. Operational emissions are below de minimis levels and the current SIP for the Washington DC-MD-VA O\textsubscript{3} Nonattainment Area has sufficient emission budgets for NOx and VOCs to account for these emissions in 2010 and 2015.

6. Construction-related emissions of NO\textsubscript{x} and VOCs associated with IAD are also accounted for in the SIP. The SIP contains an annual emissions budget of 209 tpy for NO\textsubscript{x} and 35 tpy for VOC for IAD.

7. The project-related NO\textsubscript{x} and VOC emissions are not regionally significant (i.e., >10 percent of the nonattainment areas emissions budget) according to General Conformity Rule criteria.

FAA has concluded that the planned improvements to IAD conform to the goals and requirements of the CAA and the SIP. Thus, FAA has met the requirements of the General Conformity Rule and hereby makes a finding of General Conformity for the proposed project.
SECTION 1.0
INTRODUCTION AND BACKGROUND

The following information provides a summary of the proposed improvements to the Washington Dulles International Airport (IAD) and the air quality conditions in the Washington DC-MD-VA area. The general location of IAD is illustrated on Figure 1. The material in this section is intended to give a broad overview of the proposed project and the purpose of this Final General Conformity Determination (GCD).

1.1 PROPOSED IMPROVEMENTS

In 1985, the Metropolitan Washington Airports Authority (MWAA), the operator of IAD and the project Sponsor, completed a Master Plan Update that identified a comprehensive development program for the expansion and improvement of IAD (PMACS, 1985). These proposed improvements were included in the 2003 and 2004 updates to the Airport Layout Plan (ALP) and submitted to the Federal Aviation Administration (FAA) for Federal funding assistance.

As a prerequisite to this funding approval, and in accordance with NEPA, the planned improvements to IAD have been fully assessed by FAA in terms of their potential environmental impacts. These findings, including those pertaining to air quality, can be found in Section 5.5.9 of the Final Environmental Impact Statement (FEIS).

Through this comprehensive evaluation process, FAA has identified a “Preferred Alternative,” designated as Build Alternative 3, shown on Figure 2 and described below:

- New parallel north-south runway (1W/19W), approximately 9,473 feet long by 150 feet wide and a new parallel east-west runway (12R/30L), 10,500 feet long by 150 feet wide;
- Associated taxiways and navigational aids (NAVAIDS) for the proposed runways;
- Property acquisition (448 acres) on the west side of IAD to accommodate FAR Part 77 clearance surfaces, a Runway Protection Zone, and a buffer area;
- Tier 3 concourse development;
- Extension of the Automated People Mover (APM); and the
- Relocation of the National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS) facilities. NOAA is preparing separate NEPA documentation that will contain an evaluation of alternatives, a detailed analysis of environmental impacts, selection of a Preferred Alternative, and description of mitigation measures to compensate for unavoidable impacts. NOAA’s NEPA document is being prepared separate from the FAA EIS.
For the project to go forward, MWAA needs to acquire a State Water Quality Certification Section 401 and U.S. Army Corps of Engineers (USACE) Section 404 Wetland fill permit prior to start of construction and implementation of mitigation measures. This project is planned to be constructed and operational by the year 2010.

For comparative purposes, the No-Action Alternative was also evaluated in the EIS and is illustrated in Figure 3.

1.2 AIR QUALITY CONDITIONS

Based on historical air monitoring data, all of Loudoun and Fairfax counties are designated by the EPA as an “attainment” area for four “criteria” air pollutants carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulate matter (PM₁₀). Criteria air pollutants are pollutants for which there are National Ambient Air Quality Standards (NAAQS): standards set by the EPA to signify acceptable air quality conditions. Attainment areas are areas that meet the NAAQS.

However, the Washington DC-MD-VA area (which includes Loudoun and Fairfax counties), has been designated by the EPA as a “moderate nonattainment” area for the 8-hour NAAQS for the criteria air pollutant ozone (O₃) (EPA, 2004) and a nonattainment area for PM₂.₅ (EPA, 2005). Nonattainment areas are areas that do not meet the NAAQS for one of the criteria air pollutants. Section 4.3.6.4, along with Table 4.3.6-4 of the EIS, summarizes these current attainment/nonattainment designations for the Washington DC-MD-VA area, which includes IAD. A copy of the attainment designation table is shown below, as Table 1.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Designation</th>
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<tbody>
<tr>
<td>Carbon monoxide (CO)</td>
<td>Attainment</td>
</tr>
<tr>
<td>Nitrogen oxides (NOₓ)</td>
<td>Attainment</td>
</tr>
<tr>
<td>Ozone (O₃) (8-Hour)</td>
<td>Nonattainment (Moderate)</td>
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<tr>
<td>Sulfur oxides (SOₓ)</td>
<td>Attainment</td>
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<tr>
<td>Particulate matter (PM₁₀)</td>
<td>Attainment</td>
</tr>
<tr>
<td>Particulate matter (PM₂.₅)</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>Lead</td>
<td>Attainment</td>
</tr>
</tbody>
</table>


In accordance with the CAA, MWCOG developed a State Implementation Plan (SIP) outlining the measures that were considered necessary to help bring the area into attainment (MWCOG, April 2003). The currently approved SIP for the Washington DC-MD-VA area extends through the year 2005. Presently, MWCOG is updating this Plan, also in accordance with the CAA (MWCOG, February 2004). Since the area was designated as a moderate nonattainment area for the 8-hour O₃ standard in April 2004, a SIP for the 8-hour O₃ pollutants must be submitted by June 2007. The EPA has also designated the Washington DC-MD-VA region as nonattainment for PM₂.₅ effective on April 5, 2005. Under this designation, the region is required to submit a SIP to the EPA by April 2008 with attainment by April 2010, based on monitoring data from 2007-2009.
SECTION 2.0
CONFORMITY RULES AND CRITERIA

Under Section 176(c) of the CAA, Federal agencies (including FAA) are “prohibited from engaging in, supporting in any way, providing financial assistance for, licensing or permitting, or approving any activity that does not conform to an approved State Implementation Plan.” In other words, Federal actions will not:

- Cause or contribute to any new violation of any standard (e.g., NAAQS) in any area;
- Increase the frequency or severity of any existing violation of any standard in any area; or
- Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

Conformity criteria have been subdivided into two components: General Conformity (for Federal actions except Federal highway and transit actions) and Transportation Conformity (for Federal Highway and Transit actions).

2.1 GENERAL CONFORMITY

The Federal General Conformity Rule, codified in the document Determining Conformity of General Federal Actions to State or Federal Implementation Plans, provides guidelines, or options, for addressing and demonstrating conformity (40 CFR Parts 51 and 93). The Commonwealth of Virginia has also adopted these General Conformity guidelines (9 VAC 5 Chapter 160). An overview of these Federal and state criteria follows:

- Conformity is demonstrated if the emissions are below the established de minimis levels and they are not considered “regionally significant” (e.g., greater than 10 percent of the region’s total emissions).

If de minimis levels are exceeded:

- Conformity is demonstrated if the emissions (direct and indirect) from an action are specifically identified and accounted for in the approved SIP.
- Conformity is demonstrated (for CO and PM nonattainment areas) if dispersion modeling indicates that the action will not cause or contribute to, or worsen, a violation of any existing NAAQS for CO or particulate matter. (Notably, this does not apply to areas such as Dulles that are attainment areas for CO and PM.)
- Conformity is demonstrated if the state commits to revise the SIP to accommodate the action.
Conformity is demonstrated if the emissions are determined and documented to result in a level of emissions that, together with all other emissions in the area, would not exceed the emissions budgets specified in the SIP.

Conformity is demonstrated if the emissions are determined and documented to result in levels of emissions which, together with all other emissions in the area, would exceed the emissions budgets specified in the SIP and the following written commitments are made:

- A schedule for adoption and submittal of a revision to the SIP that would achieve the necessary emission reductions prior to the time the emissions from the Federal action would occur;
- Identification of specific measures for incorporation into the SIP which would cause the emission budgets not to be exceeded;
- Demonstration that all existing measures for incorporation into the SIP are being implemented;
- Demonstration that the responsible Federal agencies have required all reasonable mitigation measures associated with their action; and
- Provision of written documentation including all air quality analyses supporting the conformity determination.

A GCD is required for each pollutant where the total emissions in a nonattainment or maintenance area caused by the Federal action would equal or exceed any of the de minimis rates shown in Table 2. In short, increases in emissions below the de minimis rates are automatically considered to conform to a SIP. Alternatively, increases in emissions above these allowances call for a demonstration of General Conformity. Importantly, increases (or decreases) in emissions are determined by comparing the Build to the No-Action condition. In this way, emissions associated with “existing” airport sources and normal growth in the area are not inappropriately combined with the "project-related" emissions.

Notably, because Washington DC-MD-VA is an attainment area for CO, PM_{10}, and SO_{2}, the requirements of the General Conformity Rule do not apply to these pollutants. With respect to PM_{2.5}, no de minimis levels have yet been established, and no General Conformity Analysis can be conducted for this pollutant.

### TABLE 2

GENERAL CONFORMITY DE MINIMIS LEVELS FOR THE WASHINGTON DC-MD-VA AREA

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<tr>
<th>Pollutants</th>
<th>De Minimis Levels(^1) (tpy)</th>
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<tr>
<td>NO(_x)</td>
<td>100</td>
</tr>
<tr>
<td>VOCs</td>
<td>50</td>
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Source: General Conformity Rule, 40 CFR Part 51.

\(^1\) NO\(_x\) = nitrogen oxides.

\(^2\) VOCs = volatile organic compounds.

\(^\dagger\) Applicable to moderate O\(_3\) nonattainment areas.
2.2 TRANSPORTATION CONFORMITY

As stated above, Transportation Conformity applies to Federal highway and transit actions (e.g., roadway and transit system improvements). The applicable guidelines for demonstrating Transportation Conformity are codified in the document *Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans* (40 CFR, Parts 51 and 93). However, unlike General Conformity, the criteria for Transportation Conformity are based on whether or not the proposed roadway or transit projects are contained in a conforming Transportation Improvement Program (TIP). There are no off-site (i.e., off-airport) roadway improvements connected with Build Alternative 3 at IAD, therefore, the CAA Transportation Conformity Rule does not apply for this project.
SECTION 3.0
AIR QUALITY ANALYSIS METHODOLOGY AND RESULTS

As previously stated, an air quality impact analysis was conducted as part of this EIS for the proposed improvements to IAD. This analysis consisted of a comprehensive emission inventory of IAD, and the overall methodology is generally consistent with the latest version of the Air Quality Procedures for Civilian Airports and Air Force Bases (FAA, 1997). Essentially, the emissions inventory represents a compilation of air emissions generated by all the individual sources at IAD (e.g., aircraft, aircraft service vehicles, motor vehicles, and fuel facilities) with and without the planned improvements. For consistency, this Final GCD is largely based on the air quality analysis contained in Section 5.5 of the FEIS.

The General Conformity Rule requires emission inventory data and analysis for the following:

1. The year the region is expected to reach attainment or the farthest year for which emissions are projected in the SIP. As discussed above, the current SIP for the Washington DC-MD-VA area forecasts emissions out to 2005.

2. The year in which the total emissions from the Federal action are expected to be the greatest. According to the emission inventory results, the greatest amounts of project-related (i.e., construction + operational) emissions would occur in the year 2015.

3. Any year for which the applicable SIP specifies an emissions budget. For the current SIP, that would be the year 2005.

The results of the emissions inventory for IAD are expressed in units of tons per year (tpy) for each pollutant and emissions source. In this way, comparisons among the alternatives, development phases, and General Conformity de minimis levels can be easily made.

As noted above, the area around IAD is designated as a nonattainment area for the pollutant O₃. However, because O₃ emissions cannot be calculated directly, NOₓ and VOCs, which are precursors to O₃, are used as surrogate indicators of this pollutant. Emissions of CO were also included in the IAD EIS emissions inventory but not reported in this conformity document as the Washington DC-MD-VA area is in attainment of the NAAQS for this pollutant.

3.1 EMISSIONS INVENTORY MODEL

Version 4.12 of the FAA Emissions and Dispersion Modeling System (EDMS) was used for this analysis as it was the most recent available at the time of the publication of the FEIS (August 2005). For this analysis, all standard EDMS parameters and databases were used except where IAD-specific inputs were more appropriate and allowable under FAA, EPA, and MWCOG emissions inventory conventions. The most important of these data sources, assumptions, and other EDMS input selections used in this analysis are discussed in Section 5.5 of the FEIS and repeated below.
3.1.1 AIRCRAFT

The number of aircraft operations at IAD, by aircraft type (e.g., commercial, cargo, general aviation, etc.), were developed from data provided for the Noise Analysis in Section 5.1 of the FEIS and were also used as the basis for the Air Quality Analysis. Aircraft/engine combinations and individual aircraft engine emission factors were obtained from the EDMS database. Summary tables provided in Appendices G-1 through G-4 list the aircraft and engine type combinations used for this analysis.

Taken altogether, the time that the aircraft are in their airborne and ground-based operational modes are referred to as a Landing and Takeoff (LTO) cycle. An LTO cycle equals two operations (i.e., one landing and one takeoff) and within EDMS they are further subdivided into the following four modes:

- **Approach/Landing Mode** - Begins when an aircraft descends below the atmospheric mixing height (default 3,000 feet above ground level (AGL)) and ends when the aircraft touches down on the runway and decelerates to the taxi/idle mode. Depending on the aircraft type, this time varies from 1.75 to 5 minutes in this analysis.

- **Climbout Mode** - Begins when the aircraft is 1,000 feet AGL and ends when the aircraft reaches an altitude of 3,000 feet or the atmospheric mixing height (1,608 feet for Annual IAD mixing height). Again, depending on the aircraft type, this time ranges from 0.15 and 1.1 minutes.

- **Takeoff Mode** - Begins when takeoff power is applied to an aircraft and ends when an aircraft reaches 1,000 feet AGL. This time varies between 0.7 and 1.8 minutes, again by aircraft type.

- **Taxi/Idle Mode** - Comprises all of the time periods when an aircraft is on the airport taxiway system or terminal area aprons with its engines running. This includes all ground-based delays incurred or encountered between the runway ends and the terminal gates. The total duration of this mode is largely a function of the airport design, layout, and operational capacity and assumes that all aircraft travel at approximately the same speed while on the airfield. For this air quality analysis, the full time for this mode (which includes taxi-in, taxi-out, and delay) is taken to be about 20 minutes under existing conditions and projected to extend up to about 27 minutes in the future.

EDMS automatically calculates the times-in-mode for the approach/landing, climbout and takeoff modes for each aircraft classification type (e.g., heavy jet, turbo prop, etc.) and the mixing height. These times are assumed to be the same among all the project alternatives at IAD because the durations of these low-level airborne operations are essentially independent of runway/taxiway utilization and location scenarios. For this analysis, the taxi/idle times were derived from the SIMMOD airfield operational data for IAD combined with measurements of aircraft taxiing distances at the airport under the alternative improvement plans (HNTB, 2002). Consistent with the FAA guidelines, it was also assumed that aircraft emissions above the atmospheric mixing height would have no ground-level effect and were not included in the inventory. All of the aircraft times-in-modes used in this analysis are listed in summary tables contained in Appendices G-1 through G-4.
3.1.2 **GROUND SERVICE EQUIPMENT**

Ground service equipment (GSE) associated with both commercial and cargo aircraft at IAD include baggage and pushback tugs; baggage and cargo loaders; fuel trucks and other service vehicles; and auxiliary power units (APU). For this analysis, the GSE fleet, fuel types and operating times were derived from in-the-field surveys performed at the airport in February 2004 (memo in EIS, Appendix G). Wherever necessary, these data were supplemented with information contained in the EDMS database of GSE, which is also the source of the GSE emission factors. Summary tables contained in Appendices G-1 through G-4 list the GSE population, operational times, etc., used in this analysis.

3.1.3 **MOBILE LOUNGES**

For this analysis, it was assumed that the future-year use of mobile lounges at IAD will be reduced by about 80 percent as they will be replaced by the Automated People Mover (APM) that will connect the various terminals. The 2010 and 2015 utilization estimates provided by MWAA are provided in Appendices G-1 through G-4.

3.1.4 **MOTOR VEHICLES**

For this analysis, airport-related motor vehicles were segregated into two categories: 1) on-site motor vehicles and 2) off-site motor vehicles. This differentiation method avoids the duplication, or double counting, of motor vehicle emissions associated with IAD.

On-site motor vehicles (i.e., cars, vans, limousines, buses, trucks, etc.) are those that are operating on the airport's primary internal roadway network and within the parking facilities located near the Main Terminal Complex. These motor vehicles are primarily associated with airport patron, employee, and cargo trips operating within the airport's borders. Traffic volumes on these roadways and facilities were based on the *Project Definition Document - North Area Roads* [HNTB, 2001]. For this analysis, trip distances were derived from scaled drawings of the IAD airport layout plan (ALP).

The motor vehicle engine emission factors were derived from the EPA mobile source emissions model, MOBILE 6.2, which is contained in EDMS 4.12. For this analysis, Fairfax County-specific motor vehicle operating characteristics (i.e., fleet mix, emission control programs, operating temperatures, etc.) were obtained from the MWCOG (MWCOG, 2003). These and other supporting data used to assess on-site motor vehicle emissions are contained in Appendices G-1 through G-4.

Off-site, airport-related motor vehicle traffic traveling to and from IAD are inherently integrated with all of the non-airport traffic operating on the same highways, toll roads and roadways. Therefore, this airport traffic is already included in the regional transportation system Traffic Demand Model for the metropolitan Washington DC-MD-VA area. As a result, the emissions associated with these vehicles are already accounted for in the Transportation Improvement Plan (TIP) for Fairfax and Loudoun counties (MWCOG, 2002). As such, IAD-related off-site motor vehicles emissions are considered covered under the TIP and are not duplicated in this analysis.
3.1.5 Other Sources of Air Emissions

Stationary sources of emissions at IAD such as boilers, incinerators, and emergency generators were independently identified from this analysis and are documented as the Final Air Emissions Inventory - Calendar Year 2002 (URS, 2003). This information served as the basis of the existing conditions (year 2002) emissions inventory as discussed in Section 4.3.6, Air Quality, of the EIS. Future year emissions from stationary sources were derived by extrapolation from this baseline to the years 2010 and 2015 based on the forecasted increase in operations at IAD over this same timeframe and the Tier 3 Concourse area. Emissions from propane fuel used at the ARFF Training Facility were also estimated within EDMS using data from the Final Air Emissions Inventory document. It was also assumed that the same amount and type of fuel used in the training fires in 2002 would be used in 2010 and 2015.

Fueling activities represent potential sources of evaporative VOC emissions. At IAD, the vast majority is associated with the refueling of commercial jet aircraft, with comparatively smaller utilization of avgas, gasoline, and diesel. For this analysis, the amounts of fuel-related VOC emissions generated are based on the types and amounts of fuels stored and dispensed combined with appropriate emission factors contained in the Final Air Emissions Inventory (URS, 2003). Future year emissions were adjusted from existing values according to the forecasted increases in aircraft operations at IAD for the year 2010 and 2015.

Other potential air emissions sources at IAD such as the storage and use of evaporative solvents, paints, and other coatings that contain VOCs, constitute a minor contribution and were not included in the inventory.

3.1.6 Construction Emissions

The types and amounts of construction emissions must also be included in the GCD. As a result, the following information discusses the construction period emissions inventory for the planned improvements to IAD.

These emissions are primarily associated with the exhaust products from construction equipment; the disturbance and movement of earthen materials, various forms of solid waste and debris and building materials; and evaporative VOCs from asphalt paving operations. Even though these emissions are temporary, they are potentially subject to the CAA General Conformity requirements as a “direct source” and make up part of the SIP emissions budget for the metropolitan Washington DC-MD-VA O₃ nonattainment area. For this reason, construction-related emissions are also included in the emissions inventory.

The following construction projects are included in this analysis:

- Runway 1W/19W and associated taxiways,
- Runway 12R/30L and associated taxiways,
- Installation of NAVAIDS,
- Tier 3 Concourse Development; and
- APM to Tier 3.
According to the development schedule for the proposed project at IAD, these projects are planned for construction between the years 2006 to 2010.

For this analysis, it was assumed that there are no construction emissions associated with the No-Action Alternative. For Build Alternative 3, construction-related emissions were computed independently from this analysis on behalf of MWAA (Appendix G-4). These estimates were based on conservative approximations of scheduling, manpower, and equipment required for the individual elements of the project. For those elements of the construction projects for which emission estimates were not readily available from the MWAA materials, data from similar projects constructed at other airports were used (URS, 2003).

Additional information and data collected and developed in support of this analysis are provided in Appendices G-1 through G-4.

NOAA will prepare separate documentation that will contain an evaluation of air quality impacts associated with the relocation of NOAA/NWS Sterling facilities.

3.2 AIR QUALITY ANALYSIS RESULTS

The emission inventory results are summarized and discussed in this section for Build Alternative 3 and the No-Action Alternative. These results form the basis by which the need for a GCD is made.

3.2.1 OPERATIONAL EMISSIONS

The term "operational emissions" includes the following emission sources: aircraft (takeoff, climb out, approach, taxi-in, taxi-out, and delay), ground service equipment, fuel storage and handling and on-site motor vehicles. (See Appendices G-1 through G-4 tables for individual source contributions.)

As shown in Table 3, project-related operational emissions of NOx and VOCs associated with Build Alternative 3 are expected to decrease by 3 and 9 tpy, respectively, in 2010 when compared to the No-Action Alternative. This decrease is attributable to the forecasted reduction in aircraft taxi/idle (delay) times associated with this alternative.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>2010 Emissions (tpy)</th>
<th>2015 Emissions (tpy)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NOx</td>
<td>VOCs</td>
</tr>
<tr>
<td>Build Alternative 3</td>
<td>2,075</td>
<td>787</td>
</tr>
<tr>
<td>No-Action</td>
<td>2,078</td>
<td>778</td>
</tr>
<tr>
<td>Project-Related Operational Emissions</td>
<td>-3</td>
<td>-9</td>
</tr>
</tbody>
</table>

NOx = nitrogen oxides.
VOCs = volatile organic compounds.

Construction-period emissions of NO\textsubscript{x} and VOCs are summarized in Table 4. As shown, the maximum annual NO\textsubscript{x} emissions are forecasted to be approximately 138 tpy and maximum annual VOC emissions are expected to be approximately 28 tpy for projects associated with Build Alternative 3. Based on a preliminary schedule, these annual emissions are estimated to occur during 2008 for NO\textsubscript{x} and 2010 for VOCs (the maximum year of construction emissions for the project years 2006-2010).

<table>
<thead>
<tr>
<th>Pollutants (tons)</th>
<th>NO\textsubscript{x}</th>
<th>VOCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Total</td>
<td>599</td>
<td>49</td>
</tr>
<tr>
<td>Maximum Annual Total(^1)</td>
<td>138</td>
<td>28</td>
</tr>
</tbody>
</table>

\(^1\) Construction emissions estimated to occur during the year 2008 for NO\textsubscript{x} and 2010 for VOCs.

Source: URS, 2004a.

Project-related emissions represent the sum of both operational and construction emissions (i.e., operational + construction = total project-related) associated with the planned improvements to IAD. However, operational emissions from this project will not occur until after the project is constructed and since operational emissions show a net decrease over the No-Action scenario, construction emissions are the principal subject of this Conformity Determination.

From the results of the construction emissions analysis (Table 4), project-related emissions of NO\textsubscript{x} are above the established de minimis level of 100 tpy indicating that a GCD is warranted for this pollutant. This demonstration of conformity with the SIP is provided in Sections 4.1 and 4.2 of this report.
SECTION 4.0
CONFORMITY DETERMINATION

As discussed previously in Section 2.0, the CAA conformity rules are subdivided into two components: General and Transportation Conformity, since only General Conformity applies to this project, it is addressed in this section. Moreover, because construction and operational emissions are evaluated differently for General Conformity purposes, they are also discussed separately in this section as they apply to the Build Alternative 3 at IAD.

4.1 GENERAL CONFORMITY - OPERATIONAL EMISSIONS

The following section demonstrates FAA’s determination that the operational emissions associated with Build Alternative 3 at IAD conform to the SIP for the Washington DC-MD-VA area. Notably, because construction-related emissions are accounted for separately in the SIP (see Section 4.2), only operational emissions are discussed in this section. In addition, because the requirements and conditions for demonstrating General Conformity are multi-faceted and potentially confusing, a “question and answer” format is used for ease in disclosing this information. This format is based on the General Conformity Criteria discussed previously in Section 2.1.

1. Are the project emissions accounted for in the SIP?

The current Washington DC-MD-VA SIP for O3 contains NOx and VOC emissions inventories for the entire nonattainment area for the years 1990 through 2005. Emissions from aircraft and GSE in Loudoun and Fairfax counties were included.

Notably, the “opening year” (2010) and the “year of greatest emissions” (2015) for the IAD improvements are beyond the current SIP time frame (e.g., 1990 to 2005), and arguably represent timeframes beyond the approved SIP for which FAA is not obligated to provide a demonstration of conformity. However, it has been demonstrated that the operational emissions associated with Build Alternative 3 conform to the SIP by: a) project-related operational emissions are less than de minimis levels, and b) aircraft operational emissions are fully accounted for in the SIP.

2. Does the dispersion modeling indicate that the action will not cause or contribute to, or worsen, a violation of any existing NAAQS for CO or particulate matter?

All of the Washington, DC area (including IAD) is in an area designated by the U.S. EPA as an attainment area for CO. This designation means the area meets the NAAQS for this pollutant and there is no SIP required. Compliance with the General Conformity Rule is not applicable; therefore, dispersion modeling is not appropriate. However, dispersion modeling was conducted for both NOx and CO as part of the EIS and ambient concentrations were less than the NAAQS for those pollutants. Currently, there is no guidance from EPA regarding appropriate models or analysis techniques to use for modeling PM$_{2.5}$. Therefore, no dispersion modeling for PM$_{2.5}$ was performed.
3. Does the state need to commit to revise the SIP to accommodate the action?

As discussed above in connection with item no. 1, the current SIP allocations of NOx and VOC emissions for IAD account for the total amounts of aircraft and GSE emissions associated with the airport through the year 2015, both with and without Build Alternative 3. Therefore, the state is not required to commit to revise the SIP to accommodate Build Alternative 3.

4. Are the project emissions offset through a revision to the SIP or similarly enforceable measure so that there is no net increase in emissions?

Because all of the operational emissions associated with Build Alternative 3 to IAD are less than de minimis, and the project results in an overall net decrease of emissions, no emission offsets or similarly enforceable measures are required.

5. Are the project’s emissions determined and documented to result in a level of emissions, which, together with all other emissions in the area, would not exceed emissions budgets specified in the SIP?

As discussed above, the emissions of NOx and VOCs associated with Build Alternative 3 at IAD are accounted for in the current SIP. Thus, it has been determined that the project emissions, taken together with all other emissions in the area, will not exceed the emission budgets specified in the SIP. There is currently no SIP for PM_{2.5}, and thus, no emissions budgets to use for comparisons.

6. Are the project’s emissions regionally significant?

According to the General Conformity rule, a regionally significant action/project is a Federal project or action with total direct and indirect emissions greater than 10 percent of the emissions inventory for the nonattainment area. Based on the Build Alternative 3 analysis, operational emissions in 2010 and 2015 would show a net decrease compared to the No-Action scenario and, therefore, would not be regionally significant.

4.2 GENERAL CONFORMITY - CONSTRUCTION PERIOD EMISSIONS

The following section details FAA’s determination that the construction period emissions of Build Alternative 3 demonstrate conformity with the SIP. Construction-related emissions are identified in both the General Conformity Rule and FAA’s Air Quality Procedures for Civilian Airports and Air Force Bases as “direct” emissions associated with the project or action, and, therefore, also subject to the General Conformity requirements.

However, in the Washington DC-MD-VA SIP for O_3, construction-related emissions are accounted for separately from other mobile source categories (i.e., motor vehicles, farm equipment, aviation, etc.). Consistent with this division of emission sources in the SIP, airport- and construction-related emissions associated with the planned improvements to IAD are also subdivided in this report for the purposes of demonstrating conformity.
Again, because the requirements and conditions for demonstrating General Conformity are multi-faceted, a “question and answer” format is used for ease in assimilating this information. This format is based on the General Conformity Criteria discussed in Section 2.1.

1. **Are the project emissions accounted for in the SIP?**

As discussed previously, the current SIP for ozone contains emissions inventories for the entire nonattainment area for the years 1990 through 2005. Emissions of NO\textsubscript{x} and VOCs from construction activities area-wide are included. Construction emissions associated with IAD are specifically identified in the SIP as 209 tpy for NO\textsubscript{x} and 35 tpy for VOCs (URS, 2004b). These data are summarized below in Table 5. There is currently no SIP for PM\textsubscript{2.5}, and thus, no emissions budgets.

<table>
<thead>
<tr>
<th>Source</th>
<th>NO\textsubscript{x}</th>
<th>VOCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Build Alternative 3 construction emissions(^1)</td>
<td>138</td>
<td>28</td>
</tr>
<tr>
<td>Maximum construction emissions from all projects between 2006-2010(^2)</td>
<td>182</td>
<td>28</td>
</tr>
<tr>
<td>IAD Construction-Related SIP emissions(^3)</td>
<td>209</td>
<td>35</td>
</tr>
</tbody>
</table>


\(^1\) Includes all construction emissions associated with Build Alternative 3 for the year of greatest emissions.

\(^2\) Includes all construction emissions associated with Build Alternative 3 and other airport projects (i.e., Tier 2, APM) during the period 2006 through 2010.

\(^3\) Airport construction emissions in the current SIP budget.

**Cumulative Impacts**

As a means of evaluating the cumulative impacts on air quality at IAD, both Tier 2 and Build Alternative 3 emissions are addressed in this Conformity Determination. However, as shown in Table 6, the combined construction equipment emissions from the two projects will not exceed the budgets for NO\textsubscript{x} and VOC included in the SIP for IAD.
TABLE 6
CONSTRUCTION EMISSIONS BY YEAR FOR CUMULATIVE PROJECTS
Washington Dulles International Airport Final General Conformity Determination

<table>
<thead>
<tr>
<th>Year</th>
<th>Pollutants (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NOx</td>
</tr>
<tr>
<td>2006*</td>
<td>175</td>
</tr>
<tr>
<td>2007*</td>
<td>175</td>
</tr>
<tr>
<td>2008*</td>
<td>182</td>
</tr>
<tr>
<td>2009*</td>
<td>141</td>
</tr>
<tr>
<td>2010</td>
<td>109</td>
</tr>
<tr>
<td>SIP Budget</td>
<td>209</td>
</tr>
</tbody>
</table>

* The years 2006-2009 include emissions from both the Tier 2 and Build Alternative 3 development projects, while 2010 only includes the Build Alternative 3 EIS projects.

2. Does the dispersion modeling indicate that the action will not cause or contribute to, or worsen, a violation of any existing NAAQS for CO or particulate matter?

All of the Washington, DC area (including IAD) is in an area designated by the EPA as an attainment area for CO. This designation means the area meets the NAAQS for this pollutant and there is no SIP required. Compliance with the General Conformity Rule is not applicable; therefore, dispersion modeling is not appropriate. Currently, there is no guidance from EPA regarding appropriate models or analysis techniques to use for modeling PM$_{2.5}$. Therefore, no dispersion modeling for PM$_{2.5}$ was performed.

3. Does the state need to commit to revise the SIP to accommodate the action?

Because the SIP inherently includes construction emissions such as those associated with the IAD improvements, the state is not required to commit to revise the SIP to accommodate the action.

4. Are the project emissions offset through a revision to the SIP or similarly enforceable measure so that there is no net increase in emissions?

Because the emissions associated with the construction of Build Alternative 3 are accounted for in the SIP, no emission offsets or similarly enforceable measures are required.

5. Are the emissions determined and documented to result in a level of emissions, which, together with all other emissions in the area, would not exceed emissions budgets specified in the SIP?

As discussed above, the emissions of NO$_x$ and VOCs associated with the construction of Build Alternative 3 are accounted for in the current SIP. Thus, it has been determined that the construction emissions, taken together with all other emissions in the area, will not exceed the emission budgets specified in the SIP. There is currently no SIP for PM$_{2.5}$, and thus, no emissions budgets to use for comparison.
6. Are the project’s emissions determined to be regionally significant?

According to the General Conformity rule, a regionally significant action/project is a Federal project or action with total direct and indirect emissions greater than 10 percent of the emissions inventory for the nonattainment area. Based on an analysis completed in 2002, total IAD construction emissions would be much less than 10 percent of the total Northern Virginia Construction emissions for both pollutants, as shown in Table 7.

**TABLE 7**

IAD CONSTRUCTION-RELATED EMISSIONS COMPARED TO REGIONAL EMISSIONS (tpy)
Washington Dulles International Airport Final General Conformity Determination

<table>
<thead>
<tr>
<th>Source</th>
<th>NOx</th>
<th>VOCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Northern Virginia Construction Emissions for All Sources¹</td>
<td>12,217</td>
<td>1,613</td>
</tr>
<tr>
<td>Maximum construction emissions from all projects between 2006-2010²</td>
<td>182</td>
<td>28</td>
</tr>
<tr>
<td>Percent of Regional Total</td>
<td>1.5%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

¹ Includes all construction-related emissions in the Northern VA region (MWAA, 2002). TPY emissions equate to 33.47 tpd of NOx and 4.42 tpd VOC.

² Includes all construction emissions associated with Build Alternative 3 and other airport projects (i.e., Tier 2, APM) during the period 2006 through 2010.

Source: MWAA, 2002 (for Total for All Sources).
URS, 2004a (for IAD Construction-Related).

In this section of the Final GCD, the results of the construction period emissions inventory for Build Alternative 3 at IAD were summarized and discussed. Based on this information, FAA concludes that the construction activities will conform to the SIP because both NOx and VOC emissions are included in the current SIP. Therefore, FAA has demonstrated that the construction activities meet the requirements of the General Conformity Rule.
SECTION 5.0
CONCLUSIONS

In the preceding sections, the results of the air quality analysis conducted for this FEIS for the planned improvements to IAD are summarized and discussed. The primary purpose is to evaluate the proposed project within the context of the Federal CAA General Conformity Rule requirements. The results of these assessments are summarized below.

FAA concludes that the planned improvements to IAD associated with Build Alternative 3 conform to the SIP because it will not:

- Cause or contribute to any new violation of any standard (e.g., NAAQS) in any area;
- Increase the frequency or severity of any existing violation of any standard in any area; or
- Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

FAA finds:

- Both NO\textsubscript{x} and VOC emissions associated with the operation of Build Alternative 3 in 2010 and 2015 are less than \textit{de minimis}; therefore, the requirements of the General Conformity rule do not apply.
- Construction-related emissions associated with Build Alternative 3 are accounted for in the current SIP.

Based on these findings, FAA has demonstrated that the planned improvements to IAD conform to the goals of the SIP and meet the requirements of the General Conformity Rule.
SECTION 6.0
PUBLIC PARTICIPATION

The General Conformity Rule outlines minimum requirements for public review of findings. These requirements and appropriate actions are summarized below:

- A Federal agency must make available for review its Draft GCD by placing a notice in a daily newspaper or newspapers of general circulation in the area affected by the action and by providing 30 days for written public comment prior to taking any formal action on the Draft GCD.

- A Federal agency must document its responses to all the comments received on its Draft GCD and make the comments and responses available, upon request by any person within 30 days of issuing its Final GCD.

- A Federal agency must make public its Final GCD by placing a notice by prominent advertisement in a daily newspaper or newspapers of general circulation in the area affected by the action within 30 days of issuing its Final GCD.

- No action or decision can be approved by the FAA until it issues its Final GCD.

In order to meet the above requirements, this Final GCD has been included as an appendix to the Final EIS for the New Runways, Terminal Facilities, and Related Facilities at Washington Dulles International Airport.

In addition, a public notice of its availability has been published in a local newspaper along with the Final EIS notice of availability. This notification begins the public review and comment period on the Final GCD (minimum 30 days). Comments received on the Final GCD will be addressed and the responses will also be made available, upon request, before any formal action by FAA is undertaken. The Final GCD is being published concurrently with the FEIS.
SECTION 7.0

REFERENCES

The following references were used in support of this conformity determination.


SECTION 8.0
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