APPENDIX A

Air Quality/Climate Assessment
Rickenbacker International Airport (LCK)

Hangar Demolition and
Cargo Facility Construction

Prepared by:
Crawford, Murphy & Tilly, Inc.

Prepared for:
Woolpert

Draft June 2023

1.0 INTRODUCTION

This document presents the methodologies and findings of the air quality and climate assessments that were conducted to support the Environmental Assessment (EA) that is being prepared for the proposed demolition of the existing hangar and the construction of a new Cargo Facility (i.e., the Proposed Action) at Rickenbacker International Airport (LCK), located in Columbus, Ohio.

2.0 AIR QUALITY ASSESSMENT

The following provides an overview of the regulatory framework that drives the need for the air quality assessment and describes existing air quality conditions (i.e., the affected environment) within the EA study area. Potential air quality impacts (i.e., environmental consequences) associated with the Proposed Action (i.e., with the improvements) compared to the No Action (i.e., without the improvements) are presented in **Section 2.2**.

2.1 Affected Environment

2.1.1 Regulatory Agencies

At the federal level, under the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) establishes the guiding principles and policies for protecting air quality conditions in the study area (and throughout the nation). EPA's primary responsibility is to promulgate and update National Ambient Air Quality Standards (NAAQS) which define outdoor levels of air pollutants that are considered safe for the health and welfare of the public. The EPA's other responsibilities include the approval of State Implementation Plans (SIPs) that detail how a state will comply with the CAA.

The Federal Aviation Administration (FAA) is the primary agency involved in, and responsible for, ensuring that air pollutant emissions associated with proposed airport projects adhere to the reporting and disclosure requirements of the National Environmental Policy Act (NEPA) as well as the General Conformity Rule of the CAA. The General Conformity Rule is applicable to non-highway projects that are federally funded, licensed, permitted, or approved. The rule ensures that project-related air pollutant emissions do not cause or contribute to the degradation of air quality conditions in an area.

At the state level, the Ohio Environmental Protection Agency (OEPA) – Air Pollution Control Division ensures compliance with the federal CAA and the Emergency Planning and Community Right-to-Know Act as part of its mission to attain and maintain air quality at a level that protects the environment and public health. The division reviews, issues and enforces permits for installation and operation of sources of air pollution and operates an extensive outdoor air monitoring network. Additionally, the division oversees an automobile emission testing program to minimize emissions from mobile sources.

2.1.2 National Ambient Air Quality Standards

The CAA requires the EPA to establish and periodically review the NAAQS. There are NAAQS for six "criteria" air pollutants—carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), and sulfur dioxide (SO_2). There are standards for two sizes of PM—$PM_{2.5}$ which are particles with a diameter of 2.5 microns or less and PM_{10} which are particles with a diameter of 10 microns or less. There are two sets of standards for each pollutant. Primary standards provide protection for the health of the public and secondary standards provide public welfare protection.[1]

[1] A list of the NAAQS and their averaging periods can be found at: https://www.epa.gov/criteria-air-pollutants/naaqs-table, June 2023.

2.1.3 Attainment/Nonattainment Status

The EPA "designates" areas based on whether or not the area is meeting the NAAQS. An area with measured pollutant concentrations which are lower than or meeting the NAAQS is designated as an attainment area and an area with pollutant concentrations that exceed the NAAQS is designated as a nonattainment area. After air pollutant concentrations in a nonattainment area are reduced to levels that meet or are below the NAAQS, the EPA re-designates the area to be a maintenance area for a period of 20 years. An area is designated as unclassifiable when there is a lack of sufficient data to determine the status of a pollutant within the area.

LCK is located in two counties: Franklin and Pickaway. The majority of the airport property is located in Franklin County, while southern portions of the airport are located in Pickaway County. Franklin County is designated as a maintenance area for both the 2008 and 2015 8-Hour O_3 standards, and attainment for all other NAAQS. Pickaway County is designated to be an attainment area for all NAAQS.

2.1.4 CAA Conformity Requirements

Within areas designated to be maintenance and/or nonattainment for the NAAQS, the General Conformity Rule of the CAA prohibits federal agencies (including the FAA) from permitting or funding non-highway projects that do not conform to a SIP. The CAA also contains a Transportation Conformity Rule that is applicable to transportation plans, programs, and projects that are developed, funded, or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA).

As stated above, Franklin County is a maintenance area for the 8-hour 2008 and 2015 O_3 standards, therefore, the General Conformity Rule applies to the Proposed Action and a General Conformity Applicability Analysis is required for the O_3 precursors nitrogen oxides (NO_x) and volatile organic compounds (VOC).

A General Conformity Applicability Analysis compares the results of a project-related emissions inventory to *de minimis* thresholds. If project-related emissions are below the *de minimis* thresholds, then it can be assumed that the emissions conform to an applicable SIP and no further analysis is required. If project-related emissions are above the *de minimis* thresholds, a formal General Conformity Determination is required. Because of the O_3 maintenance status for Franklin County, the *de minimis* threshold is 100 tons per year of either NO_x or VOC.

2.1.5 NEPA Requirements

In addition to the requirements of the CAA, Section 102(2) of the NEPA also requires environmental review of federally funded projects that have the potential to affect the environment, irrespective of any EPA NAAQS designation. The results of the construction and operational emission inventories presented in **Section 2.2.4**, which disclose project-related emissions of criteria air pollutants and pollutant precursors, were prepared for the required environmental review.

2.2 Environmental Consequences

This section discloses the potential change in air pollutant and pollutant precursor emissions estimated to occur with the Proposed Action at LCK. For the analysis, the short-term air pollutant and pollutant precursor emissions that would result from construction as well as long-term operational emissions that would result with the Proposed Action were derived.

2.2.1 Construction Emissions

Air pollutant emissions associated with construction activities are temporary and variable depending on project location, duration and level of activity. These emissions occur predominantly in engine exhaust from operating construction equipment (scrapers, dozers, etc.), vehicles that transport material and supplies to and from the site (delivery trucks, haul trucks, etc.), and from construction worker vehicles commuting to and from the site. Additionally, fugitive dust emissions of PM_{10} and $PM_{2.5}$ result from site preparation, land clearing, material handling, equipment movement on unpaved areas; and fugitive evaporative emissions of VOCs occur during the application of asphalt from paving activities.

The construction equipment typically utilized in airport projects is comprised both of on-road vehicles (i.e., on-road-licensed) and non-road equipment (i.e., off-road). The former category of vehicles is used for the transport and delivery of supplies, material, and equipment to and from the site and includes construction worker vehicles. The latter category of equipment is operated on-site for activities such as, but not limited to, soil/material handling, site clearing and grubbing.

The Airport Construction Emissions Inventory Tool (ACEIT)[2] was used to estimate construction activities and equipment/vehicle activity data (e.g., equipment mixes/operating times) based on project-specific details. Because the default emission factors used by ACEIT are outdated and do not reflect the emission rates from the latest version of the EPA's MOtor Vehicle Emission Simulator (i.e., MOVES)[3] model, only activity data was extracted from ACEIT. Emission factors were then developed using MOVES, which provides emissions data for both on-road vehicles and off-road construction equipment. Fugitive dust emissions were calculated using emission factors within EPA's Compilation of Air Pollutant Emission Factors (AP-42)[4] and evaporative emissions were developed using EPA guidance on asphalt paving[5].

The construction projects that would be necessary to implement the Proposed Action at LCK are listed below. It was assumed that the construction of the proposed improvements would begin in the fourth quarter of 2024 and continue through quarter three of 2026.

- Demolition of three (3) existing Cargo Hangars and removal of associated pavement
- Removal of existing access roadway pavement
- Construction of new access roadway
- Construction of new cargo facility
- Construction of new truck dock
- Construction of new parking lots

Notably, the Transportation Conformity Rule is not applicable to the new access roadway because the project would not be developed, funded, or approved by the FHWA or FTA.

2.2.2 Mitigation Measures

All possible best management practices would be taken to reduce fugitive dust emissions including the practices in the FAA Advisory Circular (AC) Standards for Specifying Construction of Airports. Methods of

[2] TRB, ACRP Report 102, Guidance for Estimating Airport Construction Emissions, https://www.trb.org/ACRP/Blurbs/170234.aspx.

[3] EPA's MOVES3.1 at the time of the analysis, was the latest version of MOVES, which includes the NONROAD model. Additional information on MOVES is available at https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves.

[4] EPA, Emissions Factors & AP-42, Compilation of Air Pollutant Emission Factors, https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors.

[5] EPA, Emission Inventory Improvement Program, Asphalt Paving, Chapter 17, Volume III, April 2001.

controlling dust and other airborne particles could include, but may not be limited to, the following:

- Exposing the minimum area of erodible earth
- Applying temporary mulch with or without seeding
- Using water sprinkler trucks
- Using covered haul trucks
- Using dust palliatives or penetration asphalt on haul roads
- Using plastic sheet coverings

2.2.3 Operational Emissions

The operational emissions inventories were prepared for the future (2026) No Action and Proposed Action alternatives for the following air pollutant/precursor emission sources— aircraft, auxiliary power units (APUs), ground support equipment (GSE), and motor vehicles. For the analysis, it was assumed that the new cargo facility at LCK would result in the following operations:

- Six 747-800 series cargo aircraft operations per day.
- 108 single-unit short haul diesel truck trips per day travelling a distance of 40 miles per roundtrip.
- 276 employee vehicle trips per day travelling a distance of 30 miles per roundtrip.

Aircraft, APU, and GSE-related emissions were computed using the latest version of FAA's Aviation Environmental Design Tool (AEDT, Version 3e). AEDT defaults were used for APU and GSE types and time-in-mode data. Aircraft taxi-times were based on FAA's Aviation System Performance Metrics (ASPM) database. Motor vehicle-related emissions were computed based on vehicle-miles-travelled (VMT) data and emission factors derived from MOVES.

2.2.4 Emission Inventories Results

The estimated construction and operational emissions associated with the proposed project improvements at LCK are presented in **Table 1**. As shown, the O_3 pollutant precursors, NO_x, and VOC, are below the *de minimis* values of 100 tons per year. Because the NO_x and VOC emissions are below the *de minimis* level, the emissions can be assumed to conform to the applicable SIP, and therefore a General Conformity Determination is not required. For NEPA disclosure purposes, Table 1 also presents the emission inventories for CO, SO_2, PM_{10}, and $PM_{2.5}$.

Table 1
Construction and Operational Emissions (tons per year)

Year	Construction/ Operational	Source	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
2024	Construction	On-Road Delivery/Worker Veh.	2.7	0.5	<0.1	0.1	<0.1	0.1
		Off-Road Construction Equip.	0.5	1.5	<0.1	0.1	0.1	0.1
		Fugitives	--	--	--	0.9	0.1	<0.1
	Total		**3.2**	**2.0**	**<0.1**	**1.0**	**0.2**	**0.1**
	De Minimis Levels		**--**	**100**	**--**	**--**	**--**	**100**
	Exceeds De Minimis Thresholds?		**--**	**No**	**--**	**--**	**--**	**No**
2025	Construction	On-Road Delivery/Worker Veh.	10.3	2.0	<0.1	0.3	0.1	0.2
		Off-Road Construction Equip.	1.9	5.5	<0.1	0.3	0.2	0.3
		Fugitives	--	--	--	3.4	0.3	0.1
	Total		**12.2**	**7.5**	**<0.1**	**4.0**	**0.6**	**0.5**
	De Minimis Levels		**--**	**100**	**--**	**--**	**--**	**100**

Table 1
Construction and Operational Emissions (tons per year)

Year	Construction/ Operational	Source	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
	Exceeds De Minimis Thresholds?		--	**No**	--	--	--	**No**
2026	Construction	On-Road Delivery/Worker Veh.	7.3	1.5	<0.1	0.2	<0.1	0.1
		Off-Road Construction Equip.	1.3	3.9	<0.1	0.2	0.1	0.2
		Fugitives	--	--	--	2.6	0.3	<0.1
	Operational	Aircraft/APUs/GSE	25.8	56.8	4.4	0.4	0.4	0.9
		Delivery Trucks	2.3	3.6	<0.1	0.4	0.1	0.1
		Worker Vehicles	13.8	0.2	<0.1	0.2	<0.1	0.2
	Total		**50.6**	**65.9**	**4.4**	**4.0**	**1.0**	**1.6**
	De Minimis Levels		--	**100**	--	--	--	**100**
	Exceeds De Minimis Thresholds?		--	**No**	--	--	--	**No**

Source: Woolpert and CMT Inc.
Notes: CO – carbon monoxide, NO_x – nitrogen oxides, SO_2 – sulfur dioxide, $PM_{10/2.5}$ – particulate matter, and VOC – volatile organic compounds.
Totals may reflect rounding.
The symbol "-" implies data are not applicable.
Table reflects the change in operational emissions due to the proposed project only.

3.0 CLIMATE ASSESSMENT

The following provides an overview of the existing climate conditions (i.e., the affected environment) within the EA study area. Potential climate impacts (i.e., environmental consequences) with and without the Proposed Action are presented in **Section 3.2**.

3.1 Affected Environment

Research has shown that the increase in atmospheric greenhouse gas (GHG) emissions is significantly affecting the Earth's climate. These conclusions are based upon a scientific record that includes substantial contributions from the United States Global Change Research Program (USGCRP)—a program mandated by Congress in the Global Change Research Act to "assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change.[6] In 2009, based primarily on the scientific assessments of the USGCRP, as well as the National Research Council (NRC) and the Intergovernmental Panel on Climate Change (IPCC), the EPA issued a finding that it was reasonable to assume that changes in our climate caused by elevated concentrations of GHGs in the atmosphere endanger the public health and public welfare of current and future generations.[7] By the summer of 2016, the EPA acknowledged that scientific assessments by that time "highlight the urgency of addressing the rising concentration of carbon dioxide (CO_2) in the atmosphere" and formally announced that GHG emissions from certain classes of aircraft engines contribute to climate change.[8,9]

[6] Global Change Research Act of 1990, Pub. L. 101–606, Sec. 103 (November 16, 1990), http://www.globalchange.gov.
[7] Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66496 (December 15, 2009).
[8] EPA, Final Rule for Carbon Pollution Emission Guidelines for Existing Stationary Sources Electric Utility Generating Units, 80 Fed. Reg. 64661, 64677 (October 23, 2015).
[9] EPA finalized findings that GHG emissions from certain classes of engines used in aircraft contribute to the air pollution that causes climate change endangering public health and welfare under section 231(a) of the Clean Air Act.

Although there are no federal standards for aviation related GHG emissions, it is well established that GHG emissions affect climate.[10] Consistent with Executive Order (E.O.) 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, the Council on Environmental Quality (CEQ) issued interim National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change and sought public comment through April 10, 2023. CEQ issued the interim guidance so that agencies could use it while CEQ seeks public comment. Currently, the FAA is developing the future procedures that will be used to comply with the CEQ guidance.

Following procedures detailed in FAA's 1050.1F Desk Reference, FAA's policy is that GHG emissions should be quantified in a NEPA document when there is a reason to quantify emissions for air quality purposes. The FAA does not have a threshold of significance for climate, and thus, the information presented below is solely for disclosure purposes.

3.2 Environmental Consequences

The GHG emissions associated with the construction and operation of the Proposed Action are presented in metric tons of CO_2 equivalent (CO_2e) in **Table 2**. Similar to the air quality analysis, construction-related GHG emissions were computed for on-road vehicles and off-road construction equipment and operational emissions were computed for aircraft, APUs, GSE and the motor vehicles associated with worker vehicles and delivery trucks.

Table 2
CO_2e Emissions (metric tons)

Year	Construction/Operational	CO_2e
2024	Construction	1,001
2025		3,963
2026		2,944
	Operational	16,052

Source: CMT Inc.
Note: Construction emissions modelled using ACEIT and MOVES3.1 modeling tools.
Operational emissions modelled using AEDT 3e.
Table reflects the change in operational emissions due to the proposed project only.

[10] FAA, An Environmental Desk Reference for Airport Actions, October 2007, https://www.faa.gov/airports/environmental/environmental_desk_ref/.