

Appendix B: Air Quality and Climate Assessment

Air Quality and Climate Assessment Appendix

The National Ambient Air Quality Standards (NAAQS) and their averaging periods are provided in Table B-1.

Table B-1: NAAQS

Pollutant	Primary/ Secondary		Averaging Time	Level	Form
Carbon Monoxide (CO)	primary		8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)	primary and secondary		Rolling 3-month average	0.15 µg/m ³	Not to be exceeded
Nitrogen Dioxide (NO ₂)	primary		1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	primary and secondary		1 year	53 ppb	Annual Mean
Ozone (O ₃)	primary and secondary		8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	PM _{2.5}	primary	1 year	12.0 µg/m ³	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m ³	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO ₂)	primary		1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	secondary		3 hours	0.5 ppm	Not to be exceeded more than once per year

Source: EPA NAAQS Table, <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

Emission factors for off-road construction equipment and on-road vehicles were developed using MOVES, version 3.1. The model input data were developed based on specific information (e.g., vehicle/fuel mix, fuel specifications, inspection maintenance program, meteorology data, etc.) related to the Proposed Action. Table B-2 summarizes the inputs to MOVES used to estimate worst-case emission rates for the emission sources associated with the Proposed Action.

Table B-2: MOVES Inputs – Off-road Equipment and On-road Vehicles

Parameter	Input Data
Evaluation Year(s):	2025, 2026, and 2027
Location:	St. Louis County, Missouri
Evaluation Month(s):	December (Winter) and July (Summer)
Days:	Weekdays
Evaluation Hour(s):	7:00-8:00 AM (Hour 8) – January 3:00-4:00 PM (Hour 16) – July
Level of Analysis:	National Level MOVES Defaults for Vehicle Age Distribution, I/M Programs, etc.
Source Type:	<u>Off-road Equipment:</u> Agriculture, Construction, and Industrial Sectors (Diesel Fuel) <u>On-road Vehicles:</u> 21 – Passenger Car (Gasoline Fuel) 31- Passenger Truck (Diesel Fuel) 52 - Single Unit Short-haul Truck (Diesel Fuel) 61 - Combine Short-haul Truck (Diesel Fuel)
Roadway Type:	Rural Unrestricted
Temperature:	Winter – 22.7°F (AM) Summer – 88.5°F (PM)
Relative Humidity:	Winter – 79.1% Summer – 52.7%
Criteria/Precursor Pollutants:	CO, VOC, NO _x , SO ₂ , PM ₁₀ , and PM _{2.5}
GHGs:	CO ₂ , N ₂ O, and CH ₄

Source: EPA MOVES, Version 3.1.

Table B-3 lists the construction projects needed to implement the Proposed Action and the schedule. Construction is assumed to begin in the spring of 2025 and be completed by the fall of 2027.

Table B-3: Construction Schedule and Projects

Projects	Schedule
Demolition of pavements in new Airfield Maintenance Area (AFM) Area	5/1/2025 – 8/31/2025
Demolition of existing AFM pavements in the new West De-icing Pad (WDP) Area	5/1/2026 – 7/31/2026
Demolition of structures in AFM Area	7/1/2026 – 10/31/2026
Demolition of parking lot infrastructure	7/1/2026 – 8/31/2026
Removal of existing taxiways	2/1/2027 – 3/31/2027
Construction of the WDP	5/1/2027 – 8/31/2027
Construction of taxiways/shoulders	5/1/2027 – 8/31/2027
Construction of AFM Building	1/31/2026 – 3/31/2026
Construction of fuel tank farm	9/1/2026 – 10/31/2026
Construction of three fueling stations	9/1/2026 – 10/31/2026
Construction of parking/paved areas/landscaping around the new AFM building(s)	8/1/2026 – 9/31/2026
WDP site work preparation and utility infrastructure	10/1/2026 – 1/31/2027
Construction of snow operations/control facility	9/1/2027 – 10/31/2027
Construction of crew rest structure	5/1/2027 – 8/31/2027
Drainage structures	10/1/2026 – 1/31/2027
Construction of compensatory storage area	10/1/2026 – 1/31/2027
Construction of glycol storage facility	5/1/2027 – 8/31/2027

Source: CMT, August 2023.

Table B-4 presents the types of off-road construction equipment and on-road construction vehicles as well as monthly activity levels associated with the projects needed to implement the Proposed Action.

Table B-4: Construction Equipment/Vehicles and Activity Levels

Construction Equipment/Vehicles	Off-Road/On-Road	Fuel Type	Activity Levels	Units
40 Ton Crane	Off-Road	Diesel	216	hours/month
40 Ton Crane (to unload & set tanks)	Off-Road	Diesel	6	hours/month
40 Ton Rough Terrain Crane	Off-Road	Diesel	819	hours/month
90 Ton Crane	Off-Road	Diesel	180	hours/month
Air Compressor	Off-Road	Diesel	53	hours/month
Asphalt 18-Wheeler	On-Road	Diesel	2,522	miles/month
Asphalt Deliveries/Ten Wheelers	On-Road	Diesel	386	miles/month
Asphalt Paver	Off-Road	Diesel	20	hours/month
Asphalt Paving Machine	Off-Road	Diesel	8	hours/month
Auger Drill	Off-Road	Diesel	1,228	hours/month
Backhoe	Off-Road	Diesel	6,900	hours/month
Bob Cat	Off-Road	Diesel	4,468	hours/month
Bulldozer	Off-Road	Diesel	4,216	hours/month
Cement Mixer	On-Road	Diesel	204,786	miles/month
Cement Truck for Fencing	On-Road	Diesel	33,997	miles/month
Chain Saw	Off-Road	Diesel	139	hours/month
Chain Saws	Off-Road	Diesel	2,578	hours/month
Chipper/Stump Grinder	Off-Road	Diesel	139	hours/month
Compacting Equipment	Off-Road	Diesel	1,629	hours/month
Concrete Pump	Off-Road	Diesel	180	hours/month
Concrete Ready-Mix Trucks	Off-Road	Diesel	2,517	hours/month
Concrete Saws	Off-Road	Diesel	53	hours/month
Concrete Truck	Off-Road	Diesel	279	hours/month
Crane	Off-Road	Diesel	2	hours/month
Delivery of Tanks (3)	On-Road	Diesel	434	miles/month
Distributing Tanker	On-Road	Diesel	201	miles/month
Dozer	Off-Road	Diesel	1,438	hours/month
Dump Truck	On-Road	Diesel	129,236	miles/month
Dump Truck - Asphalt	On-Road	Diesel	17,642	miles/month
Dump Truck (12 cy)	On-Road	Diesel	53,943	miles/month
Dump Truck Subbase Material	On-Road	Diesel	390,909	miles/month
Excavator	Off-Road	Diesel	1,076	hours/month

Construction Equipment/Vehicles	Off-Road/On-Road	Fuel Type	Activity Levels	Units
Excavator with Bucket	Off-Road	Diesel	1,425	hours/month
Excavator with Hoe Ram	Off-Road	Diesel	210	hours/month
Flat Bed or Dump Trucks	On-Road	Diesel	118,683	miles/month
Flatbed Truck	On-Road	Diesel	8,130	miles/month
Fork Truck	Off-Road	Diesel	8,871	hours/month
Forktruck (Hoist)	Off-Road	Diesel	2,700	hours/month
Front Loader	Off-Road	Diesel	3,413	hours/month
Generator	Off-Road	Diesel	60	hours/month
Generator Sets	Off-Road	Diesel	1,215	hours/month
Grader	Off-Road	Diesel	17	hours/month
Grout Mixer	Off-Road	Diesel	315	hours/month
Grout Wheel Truck	Off-Road	Diesel	120	hours/month
Grub the site down 2'-0	Off-Road	Diesel	1,350	hours/month
High Lift	Off-Road	Diesel	2,013	hours/month
Hydroseeder	Off-Road	Diesel	50	hours/month
Line Painting Truck and Sprayer	On-Road	Diesel	10,237	miles/month
Loader	Off-Road	Diesel	84	hours/month
Log Chipper	Off-Road	Diesel	2,578	hours/month
Man Lift	Off-Road	Diesel	4,792	hours/month
Man Lift (Fascia Construction)	Off-Road	Diesel	108	hours/month
Material Deliveries	On-Road	Diesel	32,015	miles/month
Mulcher	Off-Road	Diesel	2,578	hours/month
Off-Road Truck	Off-Road	Diesel	50	hours/month
Other General Equipment	Off-Road	Diesel	670	hours/month
Passenger Car	On-Road	Gasoline	290,007	miles/month
Paving Machine	Off-Road	Diesel	1,638	hours/month
Pickup Truck	On-Road	Diesel	106,190	miles/month
Pumps	Off-Road	Diesel	46	hours/month
Roller	Off-Road	Diesel	2,897	hours/month
Rubber Tired Loader	Off-Road	Diesel	53	hours/month
Scraper	Off-Road	Diesel	689	hours/month
Seed Truck Spreader	On-Road	Diesel	13,500	miles/month
Skid Steer Loader	Off-Road	Diesel	87	hours/month
Slip Form Paver	Off-Road	Diesel	53	hours/month
Small Dozer	Off-Road	Diesel	1,629	hours/month
Stripping Machine & Truck	Off-Road	Diesel	8	hours/month
Surfacing Equipment (Grooving)	Off-Road	Diesel	78	hours/month

Construction Equipment/Vehicles	Off-Road/On-Road	Fuel Type	Activity Levels	Units
Survey Crew Trucks	On-Road	Diesel	14,209	miles/month
Ten Wheelers	On-Road	Diesel	54,223	miles/month
Ten Wheelers- Material Delivery	On-Road	Diesel	40,946	miles/month
Tool Truck	On-Road	Diesel	71,987	miles/month
Tractor	Off-Road	Diesel	4,747	hours/month
Tractor Trailer	On-Road	Diesel	94,602	miles/month
Tractor Trailer- Material Delivery	On-Road	Diesel	224,195	miles/month
Tractor Trailer- Steel Deliveries	On-Road	Diesel	7,115	miles/month
Tractor Trailer with Boom Hoist- Delivery	On-Road	Diesel	50,960	miles/month
Tractor Trailers Temp Fac.	On-Road	Diesel	8,755	miles/month
Tractors/Loader/Backhoe	Off-Road	Diesel	124	hours/month
Trowel Machine	Off-Road	Diesel	30	hours/month
Truck Tower (Mantiwoc type)	Off-Road	Diesel	690	hours/month
Water Truck	On-Road	Diesel	169,201	miles/month

Source: CMT, August 2023.

The type and number of aircraft operations directly affects emissions. Table B-5 provides the aircraft fleet and operations modelled in AEDT for the future years 2028 and 2033 for both the No Action and Proposed Action alternatives. Notably, the number of aircraft operations and fleet mix does not change between the No Action and Proposed Action alternatives.

Table B-5: Aircraft Operations

AEDT Aircraft/Engine	2028	2033
Embraer ERJ175/01P08GE198	243	276
Boeing 737-900 Series/3CM034	17	19
Boeing 737-800Series/3CM032	2443	2772
Tecnam P2012 Traveller/TIO540	10	11
Airbus 320-100 Series/2CM017	79	90
Gulfstream G500/3BR001	75	85
Cessna 320/TIO540	6	6
Total Annual Deicing Events	2,873	3,259

Source: CMT, August 2023.