

APPENDIX D
AIR QUALITY AND NOISE TECHNICAL
REPORT

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Austin Bergstrom International Airport Expansion and Development Program (AEDP) Environmental Assessment Noise & Air Quality Technical Report

HMMH Report No. 307330.001
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1. Introduction

Harris Miller Miller & Hanson Inc. (HMMH) is assisting KSA Engineers with aircraft noise and emissions evaluations for the Environmental Assessment (EA) related to the Airport Expansion and Development Program (AEDP) at Austin Bergstrom International Airport (ABIA, or AUS), pursuant to the National Environmental Policy Act (NEPA). The purpose of this technical memorandum is to present the noise and air quality assessment approach, input data, assumptions, and draft results. This memorandum will serve as Appendix D in the final EA document.

The Proposed Action for this EA, also known as the AEDP, is meant to meet the needs of airlines and passengers at AUS through improving the Barbara Jordan Terminal and enabling future airport expansion with utility and airfield infrastructure. Initial construction projects include:

- Optimizing the Barbara Jordan Terminal
- Building a midfield concourse and connecting underground tunnel
- Creating and relocating taxiways
- A new Central Utility Plant
- A new electrical substation
- Removing existing airfield structures

The EA will evaluate a total of six scenarios:

1. Existing Conditions (2019)
2. 2027 No-Action Alternative
3. 2027 Proposed Action (AEDP) Alternative
4. 2032 No-Action Alternative
5. 2032 Proposed Action (AEDP) Alternative
6. 2037 Forecast year¹

¹ The 2037 modeling year is for informational purposes only.

The subsequent sections provide the methodology and model inputs for the noise and air quality analyses. Upon review and approval of the information in this technical memorandum, HMMH ran the FAA approved AEDT software model to estimate air quality and noise results from aircraft operations for the six modeling scenarios.

2. Analysis

The noise analysis for this EA will be conducted in accordance with Federal Aviation Administration (FAA) Order 1050.1F and its associated Environmental Desk Reference. These documents specify several requirements for evaluating noise impacts, including:

- Acceptable noise models to be used and the circumstances under which their use is required.
- The metrics to be used for characterizing the noise environment and quantifying impacts; and
- Thresholds of significance for determining whether the effects of an action would constitute a significant impact under NEPA.

For an action occurring on, or in the vicinity of a single airport, the Environmental Desk Reference directs the use of the latest version of the Aviation Environmental Design Tool (AEDT) for detailed noise modeling or another model, as approved by FAA. In this case, it is AEDT Version 3d.² All AEDT modeling conducted for this study will adhere to “*Guidance on Using the AEDT to Conduct Environmental modeling for FAA Actions Subject to NEPA*”.³ The model must be used to produce Day-Night Average Sound Level (DNL) contours of 65 dB, 70 dB, and 75 dB, and others as needed. FAA considers a DNL of 65 dB as the threshold below which all land uses are compatible.

FAA Orders 1050.1F and 5050.4B determine a significant noise impact to be a DNL increase of 1.5 dB or more at a noise-sensitive location with a DNL of 65 dB or higher. For example, an increase from 63.5 dB to 65.0 dB DNL within the same timeframe due to the Proposed Project would be considered a significant impact. If a noise increase is determined to be a significant impact to any of the surrounding noise sensitive properties, as defined in FAA Order 1050.1F, mitigation would be required.

The FAA and NEPA guidance prescribes that aircraft noise studies should use DNL, this is the metric adopted by FAA and Environmental Protection Agency (EPA) as the most appropriate long-term measure of airport noise exposure. DNL is determined by adding up the noise energy from all modeled aircraft activity at every individual point of a large array of grid points around an airport. In the DNL calculation, a 10-decibel weighting is applied to nighttime⁴ operations.

Computer-generated estimates of DNL are often depicted as noise contours reflecting lines of equal exposure around an airport (much as topographic maps indicate contours of equal elevation). The contours usually reflect long-term (annual average) operating conditions, accounting for the average flights per day, how often each runway is used throughout the year, and where over the surrounding communities the aircraft normally fly.

The FAA requires that the following information must be disclosed for each modeled scenario that is analyzed:

- The number of residences or people exposed to DNL between 65 dB and 70 dB, 70 dB and 75 dB and greater than or equal to 75 dB, and the net increase or decrease in the number of people or residences exposed to those levels of noise.
- The location and number of noise sensitive uses in addition to residences (e.g., schools, hospitals, parks, recreation areas) exposed to DNL 65 dB or greater.

² Released March 29, 2021, https://aedt.faa.gov/3d_information.aspx

³ Published September 12, 2016

⁴ Nighttime is defined as 10 pm to 7 am in DNL

- The identification of noise sensitive areas exposed to DNL greater than or equal to 60 dB and are projected to experience a DNL increase of 3 dB or more, only when 1.5 dB DNL increases are predicted at noise sensitive areas with DNL of at least 65 dB.
- Discussion of the noise impact on noise sensitive areas exposed to DNL of at least 65 dB; and
- Mapping providing land use data, noise contours, and flight tracks for each scenario.
- If 1.5 dB DNL increases are predicted at noise sensitive areas with DNL of at least 65 dB, identification of noise sensitive areas exposed to DNL greater than or equal to 60 dB which may experience a DNL increase of 3 dB or more as a result of the Proposed Action.

3. Noise Modeling Methodology and Inputs

AEDT noise model inputs are developed under the following categories and are required to develop noise model results:

- Physical description of the airport layout
- Aircraft operations
- Aircraft noise and performance characteristics
- Runway utilization
- Aircraft maintenance runup activity
- Flight track geometry and usage
- Meteorological conditions
- Terrain data

3.1 Physical Description of the Airport Layout

AUS is located within Travis County, approximately five miles southeast of downtown Austin, TX. As shown in **Figure 1**.

Runway length, runway width, instrumentation, and declared distances do not directly affect noise calculations. However, these parameters may affect which aircraft might use a particular runway and under what conditions, and therefore how often a runway would be used relative to the other runways at the airport.

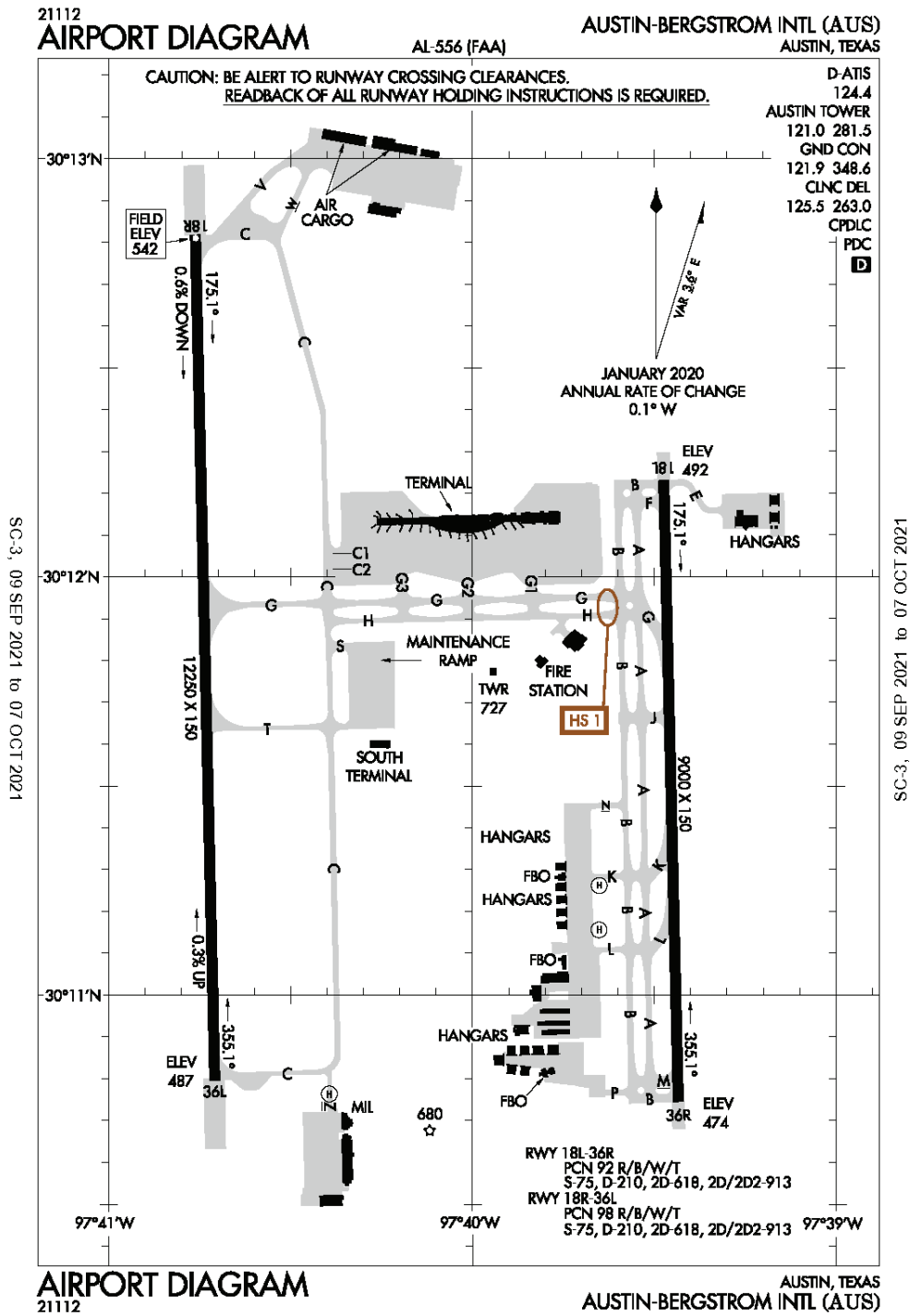
Table 1 provides the detailed parameters for each runway end. The proposed action does not include any changes or modifications to the Runways. However, the proposed action includes the creation and relocation of taxiways, which alter the taxi times for aircraft in both action alternative years.

Table 1. Runway Details

Sources: FAA Form 5010, accessed 8/1/2021

Runway End	Latitude (decimal degrees)	Longitude (decimal degrees)	Elevation (feet, MSL)	Displaced Landing Threshold (feet)	Glide Slope (degrees)	Threshold Crossing (feet, AGL)
18L	30.203830	-97.657891	491.6	0	3	74
18R	30.213616	-97.679365	541.4	0	3	60
36L	30.179943	-97.678475	487.3	0	3	60
36R	30.179091	-97.657243	473.6	0	3	59
H1	30.185475	-97.661006	541.5	N/A		
H2	30.187672	-97.661067	541.5			
H3	30.179486	-97.673208	479			

Figure 1. Existing AUS Airport Layout
 Source: FAA



3.2 Aircraft Operations

HMMH obtained flight track data from the AUS noise and operations monitoring system (NOMS) for calendar year 2019. The radar data was then scaled to the FAA reported tower counts for 2019⁵, and to the Terminal Area Forecast (TAF) for the EA forecast years 2027,2032, and 2037 as shown in **Table 2**.

Table 2. Modeled Annual Aircraft Operations

Sources: FAA TAF, RS&H 2021

Modeling Scenario	Air Carrier	Air Taxi	General Aviation		Military		Total
			Itinerant	Local	Itinerant	Local	
	180,504	15,895	43,971	685	4,782	239	246,076
2027 No Action	180,504	15,895	43,971	685	4,782	239	246,076
	209,788	16,801	44,755	690	4,782	240	277,056
2032 No Action	187,843	16,801	44,755	690	4,782	240	255,111
	241,106	17,761	45,553	803	4,782	134	310,139

Fleet changes provided by ABIA and RS&H were applied to account for retiring and new entrant aircraft through the future scenarios as provided in **Table 3**

Table 3. Fleet Retirements and Phase Outs for EA Forecast Years

AEDT Type in Baseline	AEDT Type Replacement in Forecast	2027 and 2032 Changes
717200	A220-100	50% replaced in 2027 100% replaced in 2032
737400	737700	100% replaced in 2027
747400	A350	50% replaced in 2027 100% replaced in 2032
A320-211	A320-271N	10% replaced in 2027 15% replaced in 2032
DC1010	777 Freighter	100% replaced in 2027
DC1030	777 Freighter	100% replaced in 2027
MD11GE	777 Freighter	50% replaced 2032
MD11PW	777 Freighter	50% replaced 2032
MD83	A220-300	100% replaced in 2027

⁵ <https://aspm.faa.gov/opsnet/sys/airport.asp>

Operational changes, such as the addition of five new passenger international long-haul flights, were made based on the best available information. Other factors considered for growing baseline to the action scenarios also included:

- The FAA approved changes contained in the NEPA CATEX cargo expansions which are not included in the “planned growth” in the TAF. For the buildout year (2027) the aircraft listed in the CatEX were added. The proposed action calls for up to four (4) additional cargo operations to occur once the new cargo facility is constructed and fully operational. These operations are anticipated to be nighttime operations consisting of two 737-800s, one 767-300ER, and one 767-200.
- For the buildout year plus five (2032), all four of the additional cargo operations in 2027 are 767-300ER.
- By 2032, the existing airfield aircraft parking area cannot accommodate the unconstrained growth forecast in the 2032 TAF
 - To constrain the No Action alternative, RS&H calculated what the enplanements translates to flights. The difference between the Action and No Action in 2032, is about 1.3 million passengers higher in the TAF. This yields an Average of 122 enplanements, or 10,912 operations, which is 30 departures (60 operations) a day that cannot be accommodated.
 - The 2032 Action alternative was scaled down by 60 operations (30 arrivals / 30 departures); scaling was completed on only the air carrier flight to accommodate the TAF enplanements. No change to Air Taxi, General Aviation, or Military was applied to the 2032 Action Scenario.
- The 2037 Action alternative is the 2032 Action alternative scaled up to the 2037 TAF operations levels.

Table 4 through Table 8 present the Future Action and No Action Conditions cases of average daily operations by aircraft type for arrivals and departures for each modeling scenario. Note that general aviation circuit operations are representative of both general aviation and military circuit operations.

Table 4. Modeled Average Daily Itinerant Aircraft Operations for 2027 Action Conditions

Sources: AUS NOMS, HMMH

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
Air Carrier	717200	305	81	325	60	0	0	772
	737400	0	0	0	0	0	0	0
	737700	20,359	5,403	21,729	4,033	0	0	51,524
	737800	15,141	4,418	16,160	3,463	0	0	39,245
	747400	108	29	115	21	0	0	274
	777200	25	7	26	5	0	0	62
	7378MAX	236	63	252	47	0	0	598
	757PW	23	6	24	4	0	0	57
	757RR	311	83	332	62	0	0	787
	7673ER	0	232	0	232	0	0	463
	767CF6	0	232	0	232	0	0	463
	7773ER	458	122	489	91	0	0	1,160
	7878R	103	27	110	20	0	0	260
	A300-622R	627	166	669	124	0	0	1,586
	A319-131	7,852	2,084	8,380	1,556	0	0	19,872
	A320-211	4,510	1,197	4,813	893	0	0	11,412
	A320-232	6,907	1,833	7,371	1,368	0	0	17,479
	A320-271N	1,957	519	2,089	388	0	0	4,952
	A321-232	4,991	1,324	5,327	989	0	0	12,631
	A330-343	174	46	186	34	0	0	440
	A350-941	29	115	21	0	0	274	108
	CRJ9-ER	756	201	807	150	0	0	1,914
	DC1010	0	0	0	0	0	0	0
	DC1030	0	0	0	0	0	0	0
	EMB170	1,682	446	1,795	333	0	0	4,256
	EMB175	2,643	701	2,821	524	0	0	6,690
	EMB190	1,069	284	1,141	212	0	0	2,705
MD11GE	162	43	173	32	0	0	411	
MD11PW	86	23	92	17	0	0	217	
MD83	0	0	0	0	0	0	0	
Subtotal		70,593	19,659	75,341	14,911	0	0	180,504
Air Taxi	BD-700-1A10	64	10	59	15	0	0	148
	BD-700-1A11	29	5	27	7	0	0	68

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	CIT3	26	4	24	6	0	0	59
	CL600	730	115	674	170	0	0	1,690
	CL601	166	26	154	39	0	0	385
	CNA172	35	6	32	8	0	0	81
	CNA208	1,312	207	1,212	306	0	0	3,037
	CNA510	100	16	93	23	0	0	233
	CNA525C	81	13	75	19	0	0	187
	CNA55B	645	102	596	151	0	0	1,493
	CNA560U	106	17	98	25	0	0	245
	CNA560XL	598	94	553	140	0	0	1,386
	CNA680	547	86	506	128	0	0	1,267
	CNA750	710	112	656	166	0	0	1,644
	DHC6	325	51	301	76	0	0	753
	EMB145	58	9	54	14	0	0	135
	EMB14L	174	28	161	41	0	0	404
	FAL900EX	156	25	144	36	0	0	361
	G650ER	35	6	32	8	0	0	81
	GASEPV	38	6	35	9	0	0	88
	GIV	139	22	129	33	0	0	323
	GV	34	5	31	8	0	0	79
	IA1125	33	5	30	8	0	0	75
	LEAR35	607	96	561	142	0	0	1,406
	MU3001	116	18	107	27	0	0	269
	Subtotal	6,864	1,084	6,345	1,603	0	0	15,895
Itinerant General Aviation	737700	23	1	23	1	0	0	49
	BD-700-1A10	120	7	120	7	0	0	254
	BD-700-1A11	33	2	33	2	0	0	70
	BEC58P	507	28	505	30	0	0	1,070
	CIT3	242	13	241	14	0	0	510
	CL600	493	27	491	29	0	0	1,040
	CL601	498	28	496	29	0	0	1,052
	CNA172	3,409	189	3,396	202	0	0	7,196
	CNA182	240	13	239	14	0	0	507
	CNA206	144	8	144	9	0	0	305
	CNA208	1,088	60	1,084	64	0	0	2,297
	CNA441	237	13	236	14	0	0	500
	CNA500	109	6	109	6	0	0	230

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	CNA510	381	21	379	23	0	0	804
	CNA525C	1,335	74	1,330	79	0	0	2,817
	CNA55B	634	35	631	37	0	0	1,338
	CNA560U	497	28	495	29	0	0	1,049
	CNA560XL	611	34	609	36	0	0	1,290
	CNA680	365	20	363	22	0	0	769
	CNA750	573	32	571	34	0	0	1,209
	COMSEP	634	35	632	38	0	0	1,339
	DHC6	2,237	124	2,228	132	0	0	4,720
	ECLIPSE500	84	5	83	5	0	0	176
	EMB145	45	2	44	3	0	0	94
	FAL900EX	548	30	546	32	0	0	1,157
	G650ER	39	2	39	2	0	0	82
	GASEPF	723	40	721	43	0	0	1,527
	GASEPV	1,567	87	1,561	93	0	0	3,308
	GIIB	25	1	25	2	0	0	54
	GIV	442	24	441	26	0	0	934
	GV	258	14	257	15	0	0	546
	HS748A	33	2	33	2	0	0	69
	IA1125	197	11	196	12	0	0	416
	LEAR35	1,369	76	1,364	81	0	0	2,890
	MU3001	374	21	372	22	0	0	789
	PA28	469	26	467	28	0	0	990
	PA30	41	2	41	2	0	0	87
	SA350D	193	11	192	11	0	0	407
	T-38A	15	1	15	1	0	0	32
Subtotal		20,833	1,153	20,754	1,232	0	0	43,971
Itinerant Military	CNA208	1,022	88	1,074	36	0	0	2,220
	T-38A	253	22	266	9	0	0	549
	CNA510	182	16	192	6	0	0	396
	MU3001	165	14	173	6	0	0	359
	S70	151	13	158	5	0	0	328
	B429	140	12	147	5	0	0	305
	DHC6	110	9	116	4	0	0	239
	A7D	92	8	97	3	0	0	200
	F18EF	48	4	51	2	0	0	105
	KC135R	38	3	40	1	0	0	82

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
Subtotal		2,201	190	2,313	78	0	0	4,782
Local General Aviation and Military	CNA172	0	0	0	0	641	45	685
	GASEPV	0	0	0	0	150	10	161
	GASEPF	0	0	0	0	73	5	78
Subtotal		0	0	0	0	864	60	924
Total		100,491	22,085	104,753	17,823	864	60	246,076

Table 5. Modeled Average Daily Itinerant Aircraft Operations for 2027 No Action Conditions

Sources: AUS NOMS, HMMH

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
Air Carrier	717200	305	81	325	60	0	0	772
	737400	0	0	0	0	0	0	0
	737700	20,359	5,403	21,729	4,033	0	0	51,524
	737800	15,141	4,481	16,160	3,463	0	0	39,245
	747400	108	29	115	21	0	0	274
	777200	25	7	26	5	0	0	62
	7378MAX	236	63	252	47	0	0	598
	757PW	23	6	24	4	0	0	57
	757RR	311	83	332	62	0	0	787
	7673ER	0	232	0	232	0	0	463
	767CF6	0	232	0	232	0	0	463
	7773ER	458	122	489	91	0	0	1,160
	7878R	103	27	110	20	0	0	260
	A300-622R	627	166	669	124	0	0	1,586
	A319-131	7,852	2,084	8,380	1,556	0	0	19,872
	A320-211	4,510	1,197	4,813	893	0	0	11,412
	A320-232	6,907	1,833	7,371	1,368	0	0	17,479
	A320-271N	1,957	519	2,089	388	0	0	4,952
	A321-232	4,991	1,324	5,327	989	0	0	12,631
	A330-343	174	46	186	34	0	0	440
	A350-941	29	115	21	0	0	274	108
	CRJ9-ER	756	201	807	150	0	0	1,914
	DC1010	0	0	0	0	0	0	0
DC1030	0	0	0	0	0	0	0	
EMB170	1,682	446	1,795	333	0	0	4,256	

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	EMB175	2,643	701	2,821	524	0	0	6,690
	EMB190	1,069	284	1,141	212	0	0	2,705
	MD11GE	162	43	173	32	0	0	411
	MD11PW	86	23	92	17	0	0	217
	MD83	0	0	0	0	0	0	0
Subtotal		70,593	19,659	75,341	14,911	0	0	180,504
Air Taxi	BD-700-1A10	64	10	59	15	0	0	148
	BD-700-1A11	29	5	27	7	0	0	68
	CIT3	26	4	24	6	0	0	59
	CL600	730	115	674	170	0	0	1,690
	CL601	166	26	154	39	0	0	385
	CNA172	35	6	32	8	0	0	81
	CNA208	1,312	207	1,212	306	0	0	3,037
	CNA510	100	16	93	23	0	0	233
	CNA525C	81	13	75	19	0	0	187
	CNA55B	645	102	596	151	0	0	1,493
	CNA560U	106	17	98	25	0	0	245
	CNA560XL	598	94	553	140	0	0	1,386
	CNA680	547	86	506	128	0	0	1,267
	CNA750	710	112	656	166	0	0	1,644
	DHC6	325	51	301	76	0	0	753
	EMB145	58	9	54	14	0	0	135
	EMB14L	174	28	161	41	0	0	404
	FAL900EX	156	25	144	36	0	0	361
	G650ER	35	6	32	8	0	0	81
	GASEPV	38	6	35	9	0	0	88
GIV	139	22	129	33	0	0	323	
GV	34	5	31	8	0	0	79	
IA1125	33	5	30	8	0	0	75	
LEAR35	607	96	561	142	0	0	1,406	
MU3001	116	18	107	27	0	0	269	
Subtotal		6,864	1,084	6,345	1,603	0	0	15,895
Itinerant General Aviation	737700	23	1	23	1	0	0	49
	BD-700-1A10	120	7	120	7	0	0	254
	BD-700-1A11	33	2	33	2	0	0	70
	BEC58P	507	28	505	30	0	0	1,070
	CIT3	242	13	241	14	0	0	510

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	CL600	493	27	491	29	0	0	1,040
	CL601	498	28	496	29	0	0	1,052
	CNA172	3,409	189	3,396	202	0	0	7,196
	CNA182	240	13	239	14	0	0	507
	CNA206	144	8	144	9	0	0	305
	CNA208	1,088	60	1,084	64	0	0	2,297
	CNA441	237	13	236	14	0	0	500
	CNA500	109	6	109	6	0	0	230
	CNA510	381	21	379	23	0	0	804
	CNA525C	1,335	74	1,330	79	0	0	2,817
	CNA55B	634	35	631	37	0	0	1,338
	CNA560U	497	28	495	29	0	0	1,049
	CNA560XL	611	34	609	36	0	0	1,290
	CNA680	365	20	363	22	0	0	769
	CNA750	573	32	571	34	0	0	1,209
	COMSEP	634	35	632	38	0	0	1,339
	DHC6	2,237	124	2,228	132	0	0	4,720
	ECLIPSE500	84	5	83	5	0	0	176
	EMB145	45	2	44	3	0	0	94
	FAL900EX	548	30	546	32	0	0	1,157
	G650ER	39	2	39	2	0	0	82
	GASEPF	723	40	721	43	0	0	1,527
	GASEPV	1,567	87	1,561	93	0	0	3,308
	GIIB	25	1	25	2	0	0	54
	GIV	442	24	441	26	0	0	934
	GV	258	14	257	15	0	0	546
	HS748A	33	2	33	2	0	0	69
	IA1125	197	11	196	12	0	0	416
	LEAR35	1,369	76	1,364	81	0	0	2,890
	MU3001	374	21	372	22	0	0	789
	PA28	469	26	467	28	0	0	990
	PA30	41	2	41	2	0	0	87
	SA350D	193	11	192	11	0	0	407
	T-38A	15	1	15	1	0	0	32
Subtotal		20,833	1,153	20,754	1,232	0	0	43,971
Itinerant Military	CNA208	1,022	88	1,074	36	0	0	2,220
	T-38A	253	22	266	9	0	0	549

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	CNA510	182	16	192	6	0	0	396
	MU3001	165	14	173	6	0	0	359
	S70	151	13	158	5	0	0	328
	B429	140	12	147	5	0	0	305
	DHC6	110	9	116	4	0	0	239
	A7D	92	8	97	3	0	0	200
	F18EF	48	4	51	2	0	0	105
	KC135R	38	3	40	1	0	0	82
	Subtotal	2,201	190	2,313	78	0	0	4,782
Local General Aviation and Military	CNA172	0	0	0	0	641	45	685
	GASEPV	0	0	0	0	150	10	161
	GASEPF	0	0	0	0	73	5	78
	Subtotal	0	0	0	0	864	60	924
	Total	100,491	22,085	104,753	17,823	864	60	246,076

Table 6. Modeled Average Daily Itinerant Aircraft Operations for 2032 Action Conditions

Sources: AUS NOMS, HMMH

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
Air Carrier	717200	0	0	0	0	0	0	0
	737400	0	0	0	0	0	0	0
	737700	24,017	6,373	25,632	4,758	0	0	60,780
	737800	17,598	4,670	18,781	3,486	0	0	44,535
	747400	0	0	0	0	0	0	0
	777200	29	8	30	6	0	0	72
	7378MAX	275	73	293	54	0	0	695
	757PW	26	7	28	5	0	0	66
	757RR	361	96	386	72	0	0	915
	7673ER	0	1,077	0	1,077	0	0	2,154
	7773ER	677	180	723	134	0	0	1,713
	7878R	119	32	128	24	0	0	302
	A300-622R	729	193	778	144	0	0	1,844
	A319-131	9,126	2,422	9,740	1,808	0	0	23,096
	A320-211	4,368	1,159	4,661	865	0	0	11,053
	A320-232	8,027	2,130	8,567	1,590	0	0	20,315
	A320-271N	3,148	835	3,360	624	0	0	7,967
A321-232	5,801	1,539	6,191	1,149	0	0	14,680	

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	A330-343	202	54	216	40	0	0	512
	A350-941	251	67	268	50	0	0	636
	CRJ9-ER	879	233	938	174	0	0	2,224
	DC1010	0	0	0	0	0	0	0
	DC1030	0	0	0	0	0	0	0
	EMB170	1,954	519	2,086	387	0	0	4,946
	EMB175	3,072	815	3,279	609	0	0	7,775
	EMB190	1,242	330	1,326	246	0	0	3,143
	MD11GE	94	25	101	19	0	0	239
	MD11PW	50	13	53	10	0	0	126
	MD83	0	0	0	0	0	0	0
Subtotal		82,045	22,849	87,564	17,330	0	0	209,788
Air Taxi	BD-700-1A10	67	11	62	16	0	0	156
	BD-700-1A11	31	5	29	7	0	0	72
	CIT3	27	4	25	6	0	0	63
	CL600	771	122	713	180	0	0	1,786
	CL601	176	28	163	41	0	0	407
	CNA172	37	6	34	9	0	0	85
	CNA208	1,386	219	1,281	324	0	0	3,210
	CNA510	106	17	98	25	0	0	246
	CNA525C	85	13	79	20	0	0	198
	CNA55B	682	108	630	159	0	0	1,578
	CNA560U	112	18	104	26	0	0	259
	CNA560XL	633	100	585	148	0	0	1,465
	CNA680	578	91	535	135	0	0	1,339
	CNA750	750	118	694	175	0	0	1,738
	DHC6	344	54	318	80	0	0	796
	EMB145	62	10	57	14	0	0	143
	EMB14L	184	29	170	43	0	0	427
	FAL900EX	165	26	152	38	0	0	382
	G650ER	37	6	34	9	0	0	85
	GASEPV	40	6	37	9	0	0	93
	GIV	147	23	136	34	0	0	341
	GV	36	6	33	8	0	0	83
	IA1125	34	5	32	8	0	0	80
	LEAR35	642	101	593	150	0	0	1,486
	MU3001	123	19	113	29	0	0	284

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
Subtotal		7,255	1,145	6,707	1,694	0	0	16,801
Itinerant General Aviation	737700	24	1	23	1	0	0	50
	BD-700-1A10	122	7	122	7	0	0	258
	BD-700-1A11	34	2	34	2	0	0	72
	BEC58P	516	29	514	30	0	0	1,089
	CIT3	246	14	245	15	0	0	519
	CL600	501	28	500	30	0	0	1,058
	CL601	507	28	505	30	0	0	1,071
	CNA172	3,470	192	3,457	205	0	0	7,324
	CNA182	245	14	244	14	0	0	516
	CNA206	147	8	146	9	0	0	310
	CNA208	1,107	61	1,103	65	0	0	2,337
	CNA441	241	13	240	14	0	0	509
	CNA500	111	6	110	7	0	0	234
	CNA510	388	21	386	23	0	0	818
	CNA525C	1,358	75	1,353	80	0	0	2,867
	CNA55B	645	36	643	38	0	0	1,362
	CNA560U	506	28	504	30	0	0	1,068
	CNA560XL	622	34	620	37	0	0	1,313
	CNA680	371	21	370	22	0	0	783
	CNA750	583	32	581	34	0	0	1,231
	COMSEP	646	36	643	38	0	0	1,363
	DHC6	2,276	126	2,268	135	0	0	4,805
	ECLIPSE500	85	5	85	5	0	0	179
	EMB145	45	3	45	3	0	0	96
	FAL900EX	558	31	556	33	0	0	1,177
	G650ER	40	2	39	2	0	0	84
	GASEPF	736	41	734	44	0	0	1,554
	GASEPV	1,595	88	1,589	94	0	0	3,367
	GIIB	26	1	26	2	0	0	55
	GIV	450	25	449	27	0	0	951
GV	263	15	262	16	0	0	555	
HS748A	33	2	33	2	0	0	70	
IA1125	200	11	200	12	0	0	423	
LEAR35	1,394	77	1,388	82	0	0	2,941	
MU3001	380	21	379	22	0	0	803	
PA28	477	26	476	28	0	0	1,007	

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	PA30	42	2	42	2	0	0	89
	SA350D	196	11	196	12	0	0	415
	T-38A	16	1	15	1	0	0	33
Subtotal		21,204	1,173	21,124	1,254	0	0	44,755
Itinerant Military	CNA208	1,022	88	1,074	36	0	0	2,220
	T-38A	253	22	266	9	0	0	549
	CNA510	182	16	192	6	0	0	396
	MU3001	165	14	173	6	0	0	359
	S70	151	13	158	5	0	0	328
	B429	140	12	147	5	0	0	305
	DHC6	110	9	116	4	0	0	239
	A7D	92	8	97	3	0	0	200
	F18EF	48	4	51	2	0	0	105
	KC135R	38	3	40	1	0	0	82
Subtotal		2,201	190	2,313	78	0	0	4,782
Local General Aviation and Military	CNA172	0	0	0	0	645	45	690
	GASEPV	0	0	0	0	151	11	162
	GASEPF	0	0	0	0	73	5	78
Subtotal		0	0	0	0	870	60	930
Total		112,706	25,357	117,707	20,356	870	60	277,056

Table 7. Modeled Average Daily Itinerant Aircraft Operations for 2032 No Action Conditions

Sources: AUS NOMS, HMMH

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
Air Carrier	717200	0	0	0	0	0	0	0
	737400	0	0	0	0	0	0	0
	737700	21,510	5,708	22,956	4,261	0	0	54,435
	737800	15,761	4,182	16,821	3,122	0	0	39,886
	747400	0	0	0	0	0	0	0
	777200	26	7	27	5	0	0	65
	7378MAX	246	65	262	49	0	0	622
	757PW	23	6	25	5	0	0	59
	757RR	324	86	345	64	0	0	819
	7673ER	0	964	0	964	0	0	1,929
	7773ER	606	161	647	120	0	0	1,534
	7878R	107	28	114	21	0	0	271

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	A300-622R	653	173	696	129	0	0	1,651
	A319-131	8,173	2,169	8,723	1,619	0	0	20,685
	A320-211	3,912	1,038	4,175	775	0	0	9,899
	A320-232	7,189	1,908	7,673	1,424	0	0	18,194
	A320-271N	2,819	748	3,009	559	0	0	7,135
	A321-232	5,195	1,379	5,545	1,029	0	0	13,148
	A330-343	181	48	193	36	0	0	458
	A350-941	225	60	240	0	0	0	525
	CRJ9-ER	787	209	840	156	0	0	1,992
	DC1010	0	0	0	0	0	0	0
	DC1030	0	0	0	0	0	0	0
	EMB170	1,750	464	1,868	347	0	0	4,430
	EMB175	2,752	730	2,937	545	0	0	6,964
	EMB190	1,112	295	1,187	220	0	0	2,815
	MD11GE	85	22	90	17	0	0	214
	MD11PW	45	12	48	9	0	0	113
	MD83	0	0	0	0	0	0	0
Subtotal		73,481	20,463	78,423	15,477	0	0	187,843
Air Taxi	BD-700-1A10	67	11	62	16	0	0	156
	BD-700-1A11	31	5	29	7	0	0	72
	CIT3	27	4	25	6	0	0	63
	CL600	771	122	713	180	0	0	1,786
	CL601	176	28	163	41	0	0	407
	CNA172	37	6	34	9	0	0	85
	CNA208	1,386	219	1,281	324	0	0	3,210
	CNA510	106	17	98	25	0	0	246
	CNA525C	85	13	79	20	0	0	198
	CNA55B	682	108	630	159	0	0	1,578
	CNA560U	112	18	104	26	0	0	259
	CNA560XL	633	100	585	148	0	0	1,465
	CNA680	578	91	535	135	0	0	1,339
	CNA750	750	118	694	175	0	0	1,738
	DHC6	344	54	318	80	0	0	796
	EMB145	62	10	57	14	0	0	143
	EMB14L	184	29	170	43	0	0	427
	FAL900EX	165	26	152	38	0	0	382
	G650ER	37	6	34	9	0	0	85

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	GASEPV	40	6	37	9	0	0	93
	GIV	147	23	136	34	0	0	341
	GV	36	6	33	8	0	0	83
	IA1125	34	5	32	8	0	0	80
	LEAR35	642	101	593	150	0	0	1,486
	MU3001	123	19	113	29	0	0	284
Subtotal		7,255	1,145	6,707	1,694	0	0	16,801
Itinerant General Aviation	737700	24	1	23	1	0	0	50
	BD-700-1A10	122	7	122	7	0	0	258
	BD-700-1A11	34	2	34	2	0	0	72
	BEC58P	516	29	514	30	0	0	1,089
	CIT3	246	14	245	15	0	0	519
	CL600	501	28	500	30	0	0	1,058
	CL601	507	28	505	30	0	0	1,071
	CNA172	3,470	192	3,457	205	0	0	7,324
	CNA182	245	14	244	14	0	0	516
	CNA206	147	8	146	9	0	0	310
	CNA208	1,107	61	1,103	65	0	0	2,337
	CNA441	241	13	240	14	0	0	509
	CNA500	111	6	110	7	0	0	234
	CNA510	388	21	386	23	0	0	818
	CNA525C	1,358	75	1,353	80	0	0	2,867
	CNA55B	645	36	643	38	0	0	1,362
	CNA560U	506	28	504	30	0	0	1,068
	CNA560XL	622	34	620	37	0	0	1,313
	CNA680	371	21	370	22	0	0	783
	CNA750	583	32	581	34	0	0	1,231
	COMSEP	646	36	643	38	0	0	1,363
	DHC6	2,276	126	2,268	135	0	0	4,805
	ECLIPSE500	85	5	85	5	0	0	179
	EMB145	45	3	45	3	0	0	96
	FAL900EX	558	31	556	33	0	0	1,177
	G650ER	40	2	39	2	0	0	84
	GASEPF	736	41	734	44	0	0	1,554
GASEPV	1,595	88	1,589	94	0	0	3,367	
GIIB	26	1	26	2	0	0	55	
GIV	450	25	449	27	0	0	951	

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	GV	263	15	262	16	0	0	555
	HS748A	33	2	33	2	0	0	70
	IA1125	200	11	200	12	0	0	423
	LEAR35	1,394	77	1,388	82	0	0	2,941
	MU3001	380	21	379	22	0	0	803
	PA28	477	26	476	28	0	0	1,007
	PA30	42	2	42	2	0	0	89
	SA350D	196	11	196	12	0	0	415
	T-38A	16	1	15	1	0	0	33
Subtotal		21,204	1,173	21,124	1,254	0	0	44,755
Itinerant Military	CNA208	1,022	88	1,074	36	0	0	2,220
	T-38A	253	22	266	9	0	0	549
	CNA510	182	16	192	6	0	0	396
	MU3001	165	14	173	6	0	0	359
	S70	151	13	158	5	0	0	328
	B429	140	12	147	5	0	0	305
	DHC6	110	9	116	4	0	0	239
	A7D	92	8	97	3	0	0	200
	F18EF	48	4	51	2	0	0	105
	KC135R	38	3	40	1	0	0	82
Subtotal		2,201	190	2,313	78	0	0	4,782
Local General Aviation and Military	CNA172	0	0	0	0	645	45	690
	GASEPV	0	0	0	0	151	11	162
	GASEPF	0	0	0	0	73	5	78
Subtotal		0	0	0	0	870	60	930
Total		104,141	22,972	108,566	18,502	870	60	255,111

Table 8. Modeled Average Daily Itinerant Aircraft Operations for 2037 Action Conditions

Sources: AUS NOMS, HMMH

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
Air Carrier	717200	0	0	0	0	0	0	0
	737400	0	0	0	0	0	0	0
	737700	27,602	7,325	29,459	5,468	0	0	69,853
	737800	20,225	5,367	21,585	4,007	0	0	51,183
	747400	0	0	0	0	0	0	0
	777200	33	9	35	7	0	0	83

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	7378MAX	316	84	337	63	0	0	798
	757PW	30	8	32	6	0	0	76
	757RR	415	110	443	82	0	0	1,051
	7673ER	0	1,238	0	1,238	0	0	2,475
	7773ER	778	206	830	154	0	0	1,969
	7878R	137	36	147	27	0	0	348
	A300-622R	837	222	894	166	0	0	2,119
	A319-131	10,488	2,783	11,194	2,078	0	0	26,543
	A320-211	5,020	1,332	5,357	994	0	0	12,703
	A320-232	9,226	2,448	9,846	1,828	0	0	23,348
	A320-271N	3,618	960	3,861	717	0	0	9,156
	A321-232	6,667	1,769	7,115	1,321	0	0	16,872
	A330-343	232	62	248	46	0	0	588
	A350-941	289	77	308	57	0	0	731
	CRJ9-ER	1,010	268	1,078	200	0	0	2,557
	DC1010	0	0	0	0	0	0	0
	DC1030	0	0	0	0	0	0	0
	EMB170	2,246	596	2,397	445	0	0	5,684
	EMB175	3,531	937	3,768	700	0	0	8,936
	EMB190	1,428	379	1,524	283	0	0	3,613
	MD11GE	109	29	116	21	0	0	275
	MD11PW	57	15	61	11	0	0	145
	MD83	0	0	0	0	0	0	0
	Subtotal	94,293	26,260	100,636	19,917	0	0	241,106
Air Taxi	BD-700-1A10	71	11	66	17	0	0	165
	BD-700-1A11	33	5	30	8	0	0	76
	CIT3	29	5	27	7	0	0	66
	CL600	815	129	754	190	0	0	1,888
	CL601	186	29	172	43	0	0	431
	CNA172	39	6	36	9	0	0	90
	CNA208	1,466	231	1,355	342	0	0	3,394
	CNA510	112	18	104	26	0	0	260
	CNA525C	90	14	83	21	0	0	209
	CNA55B	720	114	666	168	0	0	1,668
	CNA560U	118	19	109	28	0	0	274
	CNA560XL	669	106	618	156	0	0	1,549
	CNA680	611	96	565	143	0	0	1,416

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	CNA750	793	125	733	185	0	0	1,837
	DHC6	363	57	336	85	0	0	841
	EMB145	65	10	60	15	0	0	151
	EMB14L	195	31	180	45	0	0	451
	FAL900EX	174	28	161	41	0	0	403
	G650ER	39	6	36	9	0	0	90
	GASEPV	43	7	39	10	0	0	98
	GIV	156	25	144	36	0	0	361
	GV	38	6	35	9	0	0	88
	IA1125	36	6	34	8	0	0	84
	LEAR35	678	107	627	158	0	0	1,571
	MU3001	130	20	120	30	0	0	300
	Subtotal	7,670	1,211	7,090	1,791	0	0	17,761
Itinerant General Aviation	737700	24	1	24	1	0	0	51
	BD-700-1A10	125	7	124	7	0	0	263
	BD-700-1A11	34	2	34	2	0	0	73
	BEC58P	525	29	523	31	0	0	1,108
	CIT3	250	14	249	15	0	0	528
	CL600	510	28	508	30	0	0	1,077
	CL601	516	29	514	31	0	0	1,090
	CNA172	3,532	195	3,518	209	0	0	7,455
	CNA182	249	14	248	15	0	0	526
	CNA206	150	8	149	9	0	0	316
	CNA208	1,127	62	1,123	67	0	0	2,379
	CNA441	246	14	245	15	0	0	518
	CNA500	113	6	112	7	0	0	238
	CNA510	395	22	393	23	0	0	833
	CNA525C	1,383	77	1,377	82	0	0	2,918
	CNA55B	657	36	654	39	0	0	1,386
	CNA560U	515	28	513	30	0	0	1,087
	CNA560XL	633	35	631	37	0	0	1,336
	CNA680	378	21	376	22	0	0	797
	CNA750	593	33	591	35	0	0	1,253
COMSEP	657	36	655	39	0	0	1,387	
DHC6	2,317	128	2,308	137	0	0	4,890	
ECLIPSE500	87	5	86	5	0	0	183	
EMB145	46	3	46	3	0	0	97	

Category	AEDT Type	Arrivals		Departures		Circuits		Total
		Day	Night	Day	Night	Day	Night	
	FAL900EX	568	31	566	34	0	0	1,198
	G650ER	40	2	40	2	0	0	85
	GASEPF	750	41	747	44	0	0	1,582
	GASEPV	1,624	90	1,617	96	0	0	3,427
	GIIB	26	1	26	2	0	0	56
	GIV	458	25	457	27	0	0	967
	GV	268	15	267	16	0	0	565
	HS748A	34	2	34	2	0	0	72
	IA1125	204	11	203	12	0	0	431
	LEAR35	1,418	78	1,413	84	0	0	2,994
	MU3001	387	21	386	23	0	0	817
	PA28	486	27	484	29	0	0	1,025
	PA30	43	2	43	3	0	0	90
	SA350D	200	11	199	12	0	0	422
	T-38A	16	1	16	1	0	0	33
	Subtotal	21,582	1,194	21,501	1,276	0	0	45,553
Itinerant Military	CNA208	1,022	88	1,074	36	0	0	2,220
	T-38A	253	22	266	9	0	0	549
	CNA510	182	16	192	6	0	0	396
	MU3001	165	14	173	6	0	0	359
	S70	151	13	158	5	0	0	328
	B429	140	12	147	5	0	0	305
	DHC6	110	9	116	4	0	0	239
	A7D	92	8	97	3	0	0	200
	F18EF	48	4	51	2	0	0	105
	KC135R	38	3	40	1	0	0	82
	Subtotal	2,201	190	2,313	78	0	0	4,782
Local General Aviation and Military	CNA172	0	0	0	0	650	45	695
	GASEPV	0	0	0	0	153	11	163
	GASEPF	0	0	0	0	74	5	79
	Subtotal	0	0	0	0	876	61	937
	Total	125,747	28,854	131,539	23,062	876	61	310,139

3.3 Aircraft Noise and Performance Characteristics

AEDT requires the use of specific noise and performance data for each aircraft type operating at the Airport. Noise data are specified in the form of Sound Exposure Level (SEL) at a range of distances (from 200 feet to 25,000 feet) from a receiver on the ground to a particular aircraft with engines operating at a range of thrust levels. Performance data include thrust, speed and altitude profiles for takeoff and landing operations. The AEDT automatically accesses the noise and performance data for takeoff and landing operations by those aircraft types.

Within the AEDT database, aircraft departure profiles are defined by a range of trip distances identified as “stage lengths.” Higher stage lengths (longer trip distances) are associated with heavier aircraft due to the increase in fuel requirements for the flight. For example, a departure aircraft with a trip distance less than 500 Nautical Miles (nmi) would be assigned a stagelength value of one, where a departure aircraft with a trip distance of 3,000 nmi would be assigned a stagelength value of five. The noise calculations presented in this document used the standard AEDT departure profiles. **Table 9** provides the stagelength classifications by their associated trip distances. **Table 10, Table 11 Table 12, Table 13, and Table 14** show the 2027, 2032, and 2037 Modeled Departure Stagelength Usage by Aircraft Type. Forecast year 2037 only consists of an action case for informational purposes.

Table 9. Stagelengths by Trip Distance

Stagelength	Trip Distance (nmi)
1	0-500
2	501-1,000
3	1,001-1,500
4	1,501-2,500
5	2,501-3,500
6	3,501-4,500
7	4,501-5,500
8	5,501-6,500
9	6,501+

Table 10. 2027 Action Conditions Modeled Departure Stagelength Usage by Aircraft Type

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
1900D	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
717200	1%	99%	0%	0%	0%	0%	0%	0%	0%	100%
737700	37%	45%	18%	0%	0%	0%	0%	0%	0%	100%
737800	27%	38%	33%	2%	0%	0%	0%	0%	0%	100%
7378MAX	39%	34%	27%	0%	0%	0%	0%	0%	0%	100%
747400	0%	4%	0%	0%	0%	96%	0%	0%	0%	100%
757PW	74%	22%	4%	0%	0%	0%	0%	0%	0%	100%
757RR	80%	20%	0%	0%	0%	0%	0%	0%	0%	100%

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
767300	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
7673ER	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
767CF6	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
777200	54%	0%	0%	0%	0%	46%	0%	0%	0%	100%
7773ER	2%	0%	0%	0%	0%	98%	0%	0%	0%	100%
7878R	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
A300-622R	56%	44%	0%	0%	0%	0%	0%	0%	0%	100%
A319-131	7%	65%	27%	1%	0%	0%	0%	0%	0%	100%
A320-211	2%	31%	53%	14%	0%	0%	0%	0%	0%	100%
A320-232	10%	50%	40%	0%	0%	0%	0%	0%	0%	100%
A320-271N	5%	58%	34%	3%	0%	0%	0%	0%	0%	100%
A321-232	35%	56%	8%	0%	0%	0%	0%	0%	0%	100%
A330-343	1%	1%	0%	0%	0%	0%	98%	0%	0%	100%
A350-941	0%	4%	0%	0%	0%	96%	0%	0%	0%	100%
BD-700-1A10	30%	26%	35%	3%	0%	4%	2%	0%	0%	100%
BD-700-1A11	33%	26%	36%	3%	0%	2%	0%	0%	0%	100%
BEC58P	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CIT3	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CL600	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CL601	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA172	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA182	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA206	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA208	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA441	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA500	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA510	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA525C	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA55B	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA560U	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA560XL	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA680	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA750	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
COMSEP	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CRJ9-ER	4%	60%	36%	0%	0%	0%	0%	0%	0%	100%
DHC6	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
DHC830	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
ECLIPSE500	66%	34%	0%	0%	0%	0%	0%	0%	0%	100%
EMB145	61%	24%	14%	0%	0%	0%	0%	0%	0%	100%
EMB14L	82%	17%	1%	0%	0%	0%	0%	0%	0%	100%
EMB170	23%	30%	46%	0%	0%	0%	0%	0%	0%	100%
EMB175	12%	12%	76%	0%	0%	0%	0%	0%	0%	100%
EMB190	1%	32%	68%	0%	0%	0%	0%	0%	0%	100%
FAL900EX	57%	20%	19%	4%	0%	0%	0%	0%	0%	100%
G650ER	31%	15%	43%	3%	3%	4%	0%	0%	0%	100%
GASEPF	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GASEPV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GIIB	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GIV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
HS748A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
IA1125	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
LEAR35	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
MD11GE	99%	1%	1%	0%	0%	0%	0%	0%	0%	100%
MD11PW	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
MU3001	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PA28	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PA30	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
SA350D	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
T-38A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%

Table 11. 2027 No Action Conditions Modeled Departure Stagelength Usage by Aircraft Type

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
1900D	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
717200	1%	99%	0%	0%	0%	0%	0%	0%	0%	100%
737700	37%	45%	18%	0%	0%	0%	0%	0%	0%	100%
737800	27%	38%	33%	2%	0%	0%	0%	0%	0%	100%
7378MAX	39%	34%	27%	0%	0%	0%	0%	0%	0%	100%
747400	0%	4%	0%	0%	0%	96%	0%	0%	0%	100%
757PW	74%	22%	4%	0%	0%	0%	0%	0%	0%	100%
757RR	80%	20%	0%	0%	0%	0%	0%	0%	0%	100%
767300	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
7673ER	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
767CF6	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
777200	54%	0%	0%	0%	0%	46%	0%	0%	0%	100%
7773ER	2%	0%	0%	0%	0%	98%	0%	0%	0%	100%
7878R	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
A300-622R	56%	44%	0%	0%	0%	0%	0%	0%	0%	100%
A319-131	7%	65%	27%	1%	0%	0%	0%	0%	0%	100%
A320-211	2%	31%	53%	14%	0%	0%	0%	0%	0%	100%
A320-232	10%	50%	40%	0%	0%	0%	0%	0%	0%	100%
A320-271N	5%	58%	34%	3%	0%	0%	0%	0%	0%	100%
A321-232	35%	56%	8%	0%	0%	0%	0%	0%	0%	100%
A330-343	1%	1%	0%	0%	0%	0%	98%	0%	0%	100%
A350-941	0%	4%	0%	0%	0%	96%	0%	0%	0%	100%
BD-700-1A10	30%	26%	35%	3%	0%	4%	2%	0%	0%	100%
BD-700-1A11	33%	26%	36%	3%	0%	2%	0%	0%	0%	100%
BEC58P	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CIT3	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CL600	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CL601	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA172	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA182	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA206	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA208	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA441	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA500	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA510	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA525C	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA55B	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA560U	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA560XL	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA680	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA750	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
COMSEP	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CRJ9-ER	4%	60%	36%	0%	0%	0%	0%	0%	0%	100%
DHC6	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
DHC830	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
ECLIPSE500	66%	34%	0%	0%	0%	0%	0%	0%	0%	100%

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
EMB145	61%	24%	14%	0%	0%	0%	0%	0%	0%	100%
EMB14L	82%	17%	1%	0%	0%	0%	0%	0%	0%	100%
EMB170	23%	30%	46%	0%	0%	0%	0%	0%	0%	100%
EMB175	12%	12%	76%	0%	0%	0%	0%	0%	0%	100%
EMB190	1%	32%	68%	0%	0%	0%	0%	0%	0%	100%
FAL900EX	57%	20%	19%	4%	0%	0%	0%	0%	0%	100%
G650ER	31%	15%	43%	3%	3%	4%	0%	0%	0%	100%
GASEPF	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GASEPV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GIIB	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GIV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
HS748A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
IA1125	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
LEAR35	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
MD11GE	99%	1%	1%	0%	0%	0%	0%	0%	0%	100%
MD11PW	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
MU3001	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PA28	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PA30	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
SA350D	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
T-38A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%

Table 12. 2032 Action Conditions Modeled Departure Stagelength Usage by Aircraft Type

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
1900D	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
717200	1%	99%	0%	0%	0%	0%	0%	0%	0%	100%
737700	37%	45%	18%	0%	0%	0%	0%	0%	0%	100%
737800	27%	38%	33%	2%	0%	0%	0%	0%	0%	100%
7378MAX	39%	34%	27%	0%	0%	0%	0%	0%	0%	100%
757PW	74%	22%	4%	0%	0%	0%	0%	0%	0%	100%
757RR	80%	20%	0%	0%	0%	0%	0%	0%	0%	100%
767300	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
7673ER	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
777200	54%	0%	0%	0%	0%	46%	0%	0%	0%	100%

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
7773ER	2%	0%	0%	0%	0%	98%	0%	0%	0%	100%
7878R	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
A300-622R	56%	44%	0%	0%	0%	0%	0%	0%	0%	100%
A319-131	7%	65%	27%	1%	0%	0%	0%	0%	0%	100%
A320-211	2%	31%	53%	14%	0%	0%	0%	0%	0%	100%
A320-232	10%	50%	40%	0%	0%	0%	0%	0%	0%	100%
A320-271N	5%	58%	34%	3%	0%	0%	0%	0%	0%	100%
A321-232	35%	56%	8%	0%	0%	0%	0%	0%	0%	100%
A330-343	1%	1%	0%	0%	0%	0%	98%	0%	0%	100%
A350-941	0%	4%	0%	0%	0%	96%	0%	0%	0%	100%
BD-700-1A10	30%	26%	35%	3%	0%	4%	2%	0%	0%	100%
BD-700-1A11	33%	26%	36%	3%	0%	2%	0%	0%	0%	100%
BEC58P	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CIT3	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CL600	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CL601	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA172	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA182	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA206	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA208	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA441	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA500	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA510	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA525C	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA55B	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA560U	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA560XL	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA680	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA750	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
COMSEP	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CRJ9-ER	4%	60%	36%	0%	0%	0%	0%	0%	0%	100%
DHC6	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
DHC830	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
ECLIPSE500	66%	34%	0%	0%	0%	0%	0%	0%	0%	100%
EMB145	61%	24%	14%	0%	0%	0%	0%	0%	0%	100%
EMB14L	82%	17%	1%	0%	0%	0%	0%	0%	0%	100%
EMB170	23%	30%	46%	0%	0%	0%	0%	0%	0%	100%

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
EMB175	12%	12%	76%	0%	0%	0%	0%	0%	0%	100%
EMB190	1%	32%	68%	0%	0%	0%	0%	0%	0%	100%
FAL900EX	57%	20%	19%	4%	0%	0%	0%	0%	0%	100%
G650ER	31%	15%	43%	3%	3%	4%	0%	0%	0%	100%
GASEPF	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GASEPV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GIB	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GIV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
HS748A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
IA1125	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
LEAR35	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
MD11GE	99%	1%	1%	0%	0%	0%	0%	0%	0%	100%
MD11PW	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
MU3001	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PA28	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PA30	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
SA350D	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
T-38A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%

Table 13. 2032 No Action Conditions Modeled Departure Stagelength Usage by Aircraft Type

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
1900D	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
717200	1%	99%	0%	0%	0%	0%	0%	0%	0%	100%
737700	37%	45%	18%	0%	0%	0%	0%	0%	0%	100%
737800	27%	38%	33%	2%	0%	0%	0%	0%	0%	100%
7378MAX	39%	34%	27%	0%	0%	0%	0%	0%	0%	100%
757PW	74%	22%	4%	0%	0%	0%	0%	0%	0%	100%
757RR	80%	20%	0%	0%	0%	0%	0%	0%	0%	100%
767300	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
7673ER	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
777200	54%	0%	0%	0%	0%	46%	0%	0%	0%	100%
7773ER	2%	0%	0%	0%	0%	98%	0%	0%	0%	100%
7878R	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
A300-622R	56%	44%	0%	0%	0%	0%	0%	0%	0%	100%

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
A319-131	7%	65%	27%	1%	0%	0%	0%	0%	0%	100%
A320-211	2%	31%	53%	14%	0%	0%	0%	0%	0%	100%
A320-232	10%	50%	40%	0%	0%	0%	0%	0%	0%	100%
A320-271N	5%	58%	34%	3%	0%	0%	0%	0%	0%	100%
A321-232	35%	56%	8%	0%	0%	0%	0%	0%	0%	100%
A330-343	1%	1%	0%	0%	0%	0%	98%	0%	0%	100%
A350-941	0%	4%	0%	0%	0%	96%	0%	0%	0%	100%
BD-700-1A10	30%	26%	35%	3%	0%	4%	2%	0%	0%	100%
BD-700-1A11	33%	26%	36%	3%	0%	2%	0%	0%	0%	100%
BEC58P	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CIT3	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CL600	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CL601	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA172	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA182	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA206	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA208	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA441	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA500	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA510	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA525C	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA55B	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA560U	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA560XL	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA680	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA750	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
COMSEP	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CRJ9-ER	4%	60%	36%	0%	0%	0%	0%	0%	0%	100%
DHC6	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
DHC830	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
ECLIPSE500	66%	34%	0%	0%	0%	0%	0%	0%	0%	100%
EMB145	61%	24%	14%	0%	0%	0%	0%	0%	0%	100%
EMB14L	82%	17%	1%	0%	0%	0%	0%	0%	0%	100%
EMB170	23%	30%	46%	0%	0%	0%	0%	0%	0%	100%
EMB175	12%	12%	76%	0%	0%	0%	0%	0%	0%	100%
EMB190	1%	32%	68%	0%	0%	0%	0%	0%	0%	100%
FAL900EX	57%	20%	19%	4%	0%	0%	0%	0%	0%	100%

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
G650ER	31%	15%	43%	3%	3%	4%	0%	0%	0%	100%
GASEPF	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GASEPV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GIIB	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GIV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
HS748A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
IA1125	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
LEAR35	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
MD11GE	99%	1%	1%	0%	0%	0%	0%	0%	0%	100%
MD11PW	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
MU3001	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PA28	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PA30	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
SA350D	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
T-38A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%

Table 14. 2037 Action Conditions Modeled Departure Stagelength Usage by Aircraft Type

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
1900D	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
717200	1%	99%	0%	0%	0%	0%	0%	0%	0%	100%
737700	37%	45%	18%	0%	0%	0%	0%	0%	0%	100%
737800	27%	38%	33%	2%	0%	0%	0%	0%	0%	100%
7378MAX	39%	34%	27%	0%	0%	0%	0%	0%	0%	100%
757PW	74%	22%	4%	0%	0%	0%	0%	0%	0%	100%
757RR	80%	20%	0%	0%	0%	0%	0%	0%	0%	100%
767300	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
7673ER	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
777200	54%	0%	0%	0%	0%	46%	0%	0%	0%	100%
7773ER	2%	0%	0%	0%	0%	98%	0%	0%	0%	100%
7878R	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
A300-622R	56%	44%	0%	0%	0%	0%	0%	0%	0%	100%
A319-131	7%	65%	27%	1%	0%	0%	0%	0%	0%	100%
A320-211	2%	31%	53%	14%	0%	0%	0%	0%	0%	100%
A320-232	10%	50%	40%	0%	0%	0%	0%	0%	0%	100%

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
A320-271N	5%	58%	34%	3%	0%	0%	0%	0%	0%	100%
A321-232	35%	56%	8%	0%	0%	0%	0%	0%	0%	100%
A330-343	1%	1%	0%	0%	0%	0%	98%	0%	0%	100%
A350-941	0%	4%	0%	0%	0%	96%	0%	0%	0%	100%
BD-700-1A10	30%	26%	35%	3%	0%	4%	2%	0%	0%	100%
BD-700-1A11	33%	26%	36%	3%	0%	2%	0%	0%	0%	100%
BEC58P	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CIT3	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CL600	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CL601	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA172	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA182	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA206	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA208	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA441	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA500	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA510	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA525C	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA55B	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA560U	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA560XL	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA680	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CNA750	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
COMSEP	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CRJ9-ER	4%	60%	36%	0%	0%	0%	0%	0%	0%	100%
DHC6	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
DHC830	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
ECLIPSE500	66%	34%	0%	0%	0%	0%	0%	0%	0%	100%
EMB145	61%	24%	14%	0%	0%	0%	0%	0%	0%	100%
EMB14L	82%	17%	1%	0%	0%	0%	0%	0%	0%	100%
EMB170	23%	30%	46%	0%	0%	0%	0%	0%	0%	100%
EMB175	12%	12%	76%	0%	0%	0%	0%	0%	0%	100%
EMB190	1%	32%	68%	0%	0%	0%	0%	0%	0%	100%
FAL900EX	57%	20%	19%	4%	0%	0%	0%	0%	0%	100%
G650ER	31%	15%	43%	3%	3%	4%	0%	0%	0%	100%
GASEPF	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GASEPV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%

AEDT Type	Stagelength									Total
	1	2	3	4	5	6	7	8	9	
GIIB	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GIV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GV	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
HS748A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
IA1125	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
LEAR35	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
MD11GE	99%	1%	1%	0%	0%	0%	0%	0%	0%	100%
MD11PW	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
MU3001	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PA28	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PA30	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
SA350D	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
T-38A	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%

3.4 Runway Utilization

The primary factor affecting runway use at airports is weather; specifically, the wind direction and wind speed. An additional factor that may affect runway use includes the position of the facility or ramp relative to the runway.

HMMH utilized 2019 data obtained from the AUS NOMS to compile runway use tables and categorized this information by arrival, departure, or circuits, as well as day and night. In 2019, the two runways were designated as: Runway 17L/35R and Runway 17R/35L, due to a shift in magnetic heading in 2020 the Runways were renamed to the current Runway 18L/36R and Runway 18R/36L. The current magnetic headings of the Runways are used for the 2027, 2032, and 2037 modeling scenarios. HMMH separated the data into jet and non-jet categories since these categories of aircraft types may use the runways differently due to the performance characteristics of the aircraft. Runway utilization remains the same from baseline for all modeling scenarios as shown in **Table 15**.

Table 15. 2027, 2032, and 2037 Runway Utilization

Source: AUS NOMS, HMMH

Aircraft Category	Runway	Arrival		Departure	
		Day	Night	Day	Night
Jet	36R	19%	15%	19%	13%
	36L	16%	18%	16%	18%
	18R	35%	44%	27%	32%
	18L	30%	24%	39%	37%
	Total	100%	100%	100%	100%
Non-Jet	36R	33%	15%	34%	11%
	36L	4%	10%	2%	20%
	18R	7%	39%	3%	49%
	18L	56%	36%	61%	20%
	Total	100%	100%	100%	100%
All Aircraft	36R	21%	15%	21%	13%
	36L	15%	17%	15%	18%
	18R	31%	43%	23%	34%
	18L	33%	24%	41%	35%
	Total	100%	100%	100%	100%

Note: The three helipads are assumed to have equal use.

Table 16. 2027, 2032, and 2037 Runway Utilization for Fixed-Wing Aircraft (Circuits)

Aircraft Category	Runway	Day	Night
Non-Jet	35R	18%	14%
	35L	22%	18%
	17R	28%	25%
	17L	32%	43%
	Total	100%	100%

3.5 Flight Track Geometry and Use

In addition to runway usage, radar data from the AUS NOMS provided an ideal source of information for identifying where aircraft fly and how often they use specific flight corridors in the vicinity of the airport. In the development of the AUS EA, sets of prototypical flight tracks were defined for noise modeling. Known as “backbones,” these tracks follow the central tendency of more dispersed paths flown by aircraft along each major flight corridor. Additional model tracks were created to either side of the backbones to account for the

dispersion within each corridor, and traffic is distributed normally⁶ onto each track group to reflect the spreading of noise along the corridor.

Aircraft are assigned to specific modeling tracks based on historical averages determined through analysis of the radar data. Knowledge of destinations for departures from the airport or points of origin for arrivals to the airport are also considered. The standard procedure for model track development entails separating tracks by operation type, (e.g., arrival or departure), propulsion type (e.g., jet, or non-jet), and runway end. HMMH analyzed flight tracks with the same operation type, runway end, and propulsion type for similar geometry and this resulted in the final flight track bundles used to create model tracks.

Model flight tracks are labeled with a number following the designations distinguishing tracks that take different routes from the same runway end. For example, flight track A17LJ01 identifies an arrival flight track (A, as opposed to D if it were a departure) from Runway 17L (17L), the primary aircraft type, (J for jet, NJ for non-jet), and finally the number at the end of the track name differentiates it from others in its group (or bundle). As mentioned in Section 3.4, 2019 radar data utilized the old naming convention for the Runways. This is reflected in the bundling and flight track development but does not impact or change noise modeling as these flight tracks will be modeled on the current Runway name, and geographic coordinates for the 2027, 2032, and 2037 scenarios

All fixed-wing aircraft flight tracks start or end at runway ends. Helicopter tracks generally start and end at a defined helipad and thus are modeled as flights to and from the helipad. Due to the limited amount of helicopter and circuit flight track data contained in the NOMS, circuit tracks will be represented by generic pattern tracks on each runway, and helicopter tracks will be represented by north, south, east, and west straight-in and straight-out tracks from each helipad.

Table 17 presents the modeled flight track usage rates by runway end and aircraft type category, for fixed-wing arrivals and departures. There are no known changes to flight procedures expected at AUS as of February 2022, therefore the same flight track utilization will be used through all the future scenarios.

Figure 2 through **Figure 9** present the modeled flight track geometry, jet, and non-jet flight activity based on Runway end operation in both north flow (aircraft arrive from the south and depart to the north), and south flow (aircraft arrive from the north and depart to the south) conditions. These tracks were developed using calendar year 2019 data from the AUS NOMS. Underlying the modeled flight tracks are the radar tracks from the NOMS.

Table 17. Modeled Fixed-wing Flight Track Utilization

Source: AUS NOMS, HMMH

Aircraft Type	Operation Type	Runway	Bundle Name	Percent
Jet	Arrivals	17L	A17LJ01	1.2%
			A17LJ02	1.0%
			A17LJ03	40.0%
			A17LJ04	1.4%
			A17LJ05	1.8%
			A17LJ06	14.5%
			A17LJ07	19.1%
			A17LJ08	8.3%
			A17LJ09	8.2%

⁶ According to a statistical normal (Gaussian) distribution

Aircraft Type	Operation Type	Runway	Bundle Name	Percent
			A17LJ10	1.4%
			A17LJ11	2.5%
			A17LJ12	0.6%
			Total	100.0%
Non-Jet			A17LNJ01	11.7%
			A17LNJ02	8.8%
			A17LNJ03	12.5%
			A17LNJ04	7.3%
			A17LNJ05	5.3%
			A17LNJ06	15.9%
			A17LNJ07	13.1%
			A17LNJ08	10.1%
			A17LNJ09	6.1%
			A17LNJ10	6.2%
			A17LNJ11	2.8%
			Total	100.0%
Jet	Departures		D17LJ01	0.5%
			D17LJ02	9.4%
			D17LJ03	46.9%
			D17LJ04	5.5%
			D17LJ05	0.2%
			D17LJ06	3.2%
			D17LJ07	6.5%
			D17LJ08	2.8%
			D17LJ09	3.4%
			D17LJ10	9.9%
			D17LJ11	11.7%
			Total	100.0%
Non-Jet			D17LNJ01	6.8%
			D17LNJ02	10.8%
			D17LNJ03	3.6%
			D17LNJ04	2.8%
			D17LNJ05	15.6%
			D17LNJ06	11.0%
			D17LNJ07	2.2%
			D17LNJ08	8.0%
			D17LNJ09	4.2%
			D17LNJ10	5.7%

			D17LNJ11	17.2%
			D17LNJ12	12.2%
			Total	100.0%
Jet	Arrivals	17R	A17RJ01	2.3%
			A17RJ02	2.8%
			A17RJ03	3.6%
			A17RJ04	36.8%
			A17RJ05	5.1%
			A17RJ06	2.5%
			A17RJ07	30.7%
			A17RJ08	1.7%
			A17RJ09	0.7%
			A17RJ10	13.5%
			A17RJ11	0.2%
			A17RJ12	0.2%
			Total	100.0%
Non-Jet			A17RNJ01	2.8%
			A17RNJ02	31.7%
			A17RNJ03	13.0%
			A17RNJ04	7.7%
			A17RNJ05	13.5%
			A17RNJ06	31.3%
			Total	100.0%
Jet	Departures	17R	D17RJ01	0.3%
			D17RJ02	12.1%
			D17RJ03	1.0%
			D17RJ04	0.2%
			D17RJ05	3.2%
			D17RJ06	0.6%
			D17RJ07	32.7%
			D17RJ08	7.0%
			D17RJ09	8.7%
			D17RJ10	33.5%
			D17RJ11	0.7%
			Total	100.0%
Non-Jet			D17RNJ01	2.3%
			D17RNJ02	41.5%
			D17RNJ03	17.1%

Aircraft Type	Operation Type	Runway	Bundle Name	Percent
			D17RNJ04	25.9%
			D17RNJ05	10.8%
			D17RNJ06	2.4%
			Total	100.0%
Jet	Arrivals	35L	A35LJ01	27.1%
			A35LJ02	28.1%
			A35LJ03	2.6%
			A35LJ04	1.6%
			A35LJ05	1.3%
			A35LJ06	20.7%
			A35LJ07	2.0%
			A35LJ08	15.5%
			A35LJ09	0.6%
			A35LJ10	0.2%
			A35LJ11	0.3%
				Total
Non-Jet			A35LNJ01	12.6%
			A35LNJ02	6.5%
			A35LNJ03	5.0%
			A35LNJ04	29.1%
			A35LNJ05	44.0%
			A35LNJ06	2.7%
	Total	100.0%		
Jet	Departures	35L	D35LJ01	0.5%
			D35LJ02	0.4%
			D35LJ03	11.3%
			D35LJ04	0.3%
			D35LJ05	2.9%
			D35LJ06	38.5%
			D35LJ07	6.4%
			D35LJ08	39.5%
	Total	100.0%		
Non-Jet			D35LNJ01	3.5%
			D35LNJ02	41.8%
			D35LNJ03	14.2%
			D35LNJ04	36.9%
			D35LNJ05	3.5%
	Total	100.0%		

Aircraft Type	Operation Type	Runway	Bundle Name	Percent
Jet	Arrivals	35R	A35RJ01	7.9%
			A35RJ02	1.6%
			A35RJ03	1.0%
			A35RJ04	2.7%
			A35RJ05	47.1%
			A35RJ06	2.8%
			A35RJ07	2.0%
			A35RJ08	33.4%
			A35RJ09	0.6%
			A35RJ10	0.3%
			A35RJ11	0.3%
			A35RJ12	0.1%
			A35RJ13	0.1%
Total			100.0%	
Non-Jet	Arrivals	35R	A35RNJ01	2.3%
			A35RNJ02	12.0%
			A35RNJ03	7.4%
			A35RNJ04	7.1%
			A35RNJ05	4.8%
			A35RNJ06	9.7%
			A35RNJ07	12.2%
			A35RNJ08	12.8%
			A35RNJ09	7.8%
			A35RNJ10	6.7%
			A35RNJ11	17.4%
Total			100.0%	
Jet	Departures	35R	D35RJ01	0.5%
			D35RJ02	10.9%
			D35RJ03	1.2%
			D35RJ04	66.0%
			D35RJ05	1.8%
			D35RJ06	3.5%
			D35RJ07	3.2%
			D35RJ08	2.4%
			D35RJ09	0.4%
			D35RJ10	9.8%
			D35RJ11	0.2%
Total			100.0%	

Aircraft Type	Operation Type	Runway	Bundle Name	Percent
Non-Jet			D35RNJ01	5.1%
			D35RNJ02	6.6%
			D35RNJ03	6.7%
			D35RNJ04	10.4%
			D35RNJ05	5.9%
			D35RNJ06	7.4%
			D35RNJ07	4.9%
			D35RNJ08	9.8%
			D35RNJ09	11.6%
			D35RNJ10	15.4%
			D35RNJ11	6.1%
			D35RNJ12	6.9%
			D35RNJ13	3.3%
			Total	100.0%

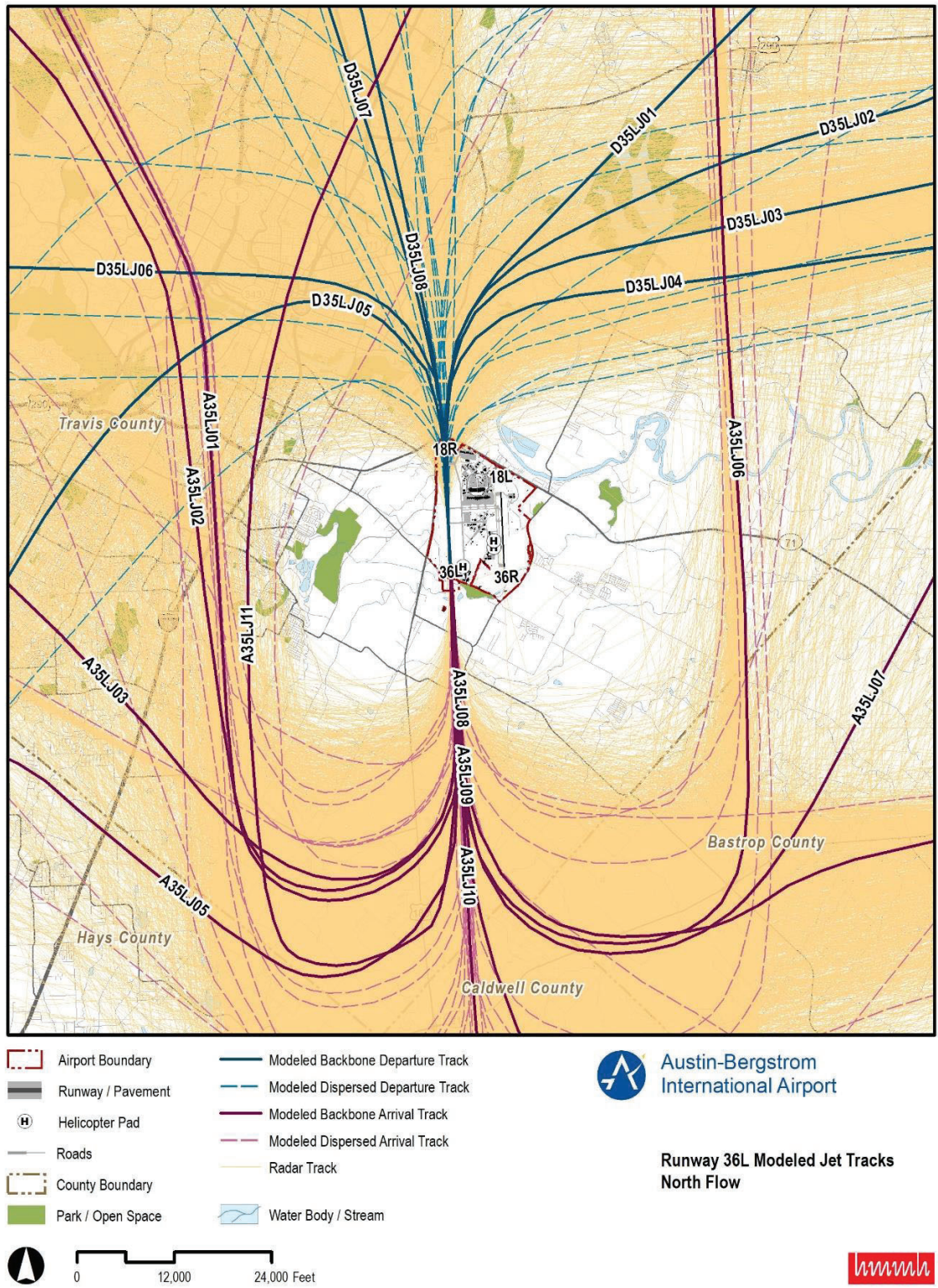


Figure 2. Runway 36L Modeled Jet Tracks, North Flow

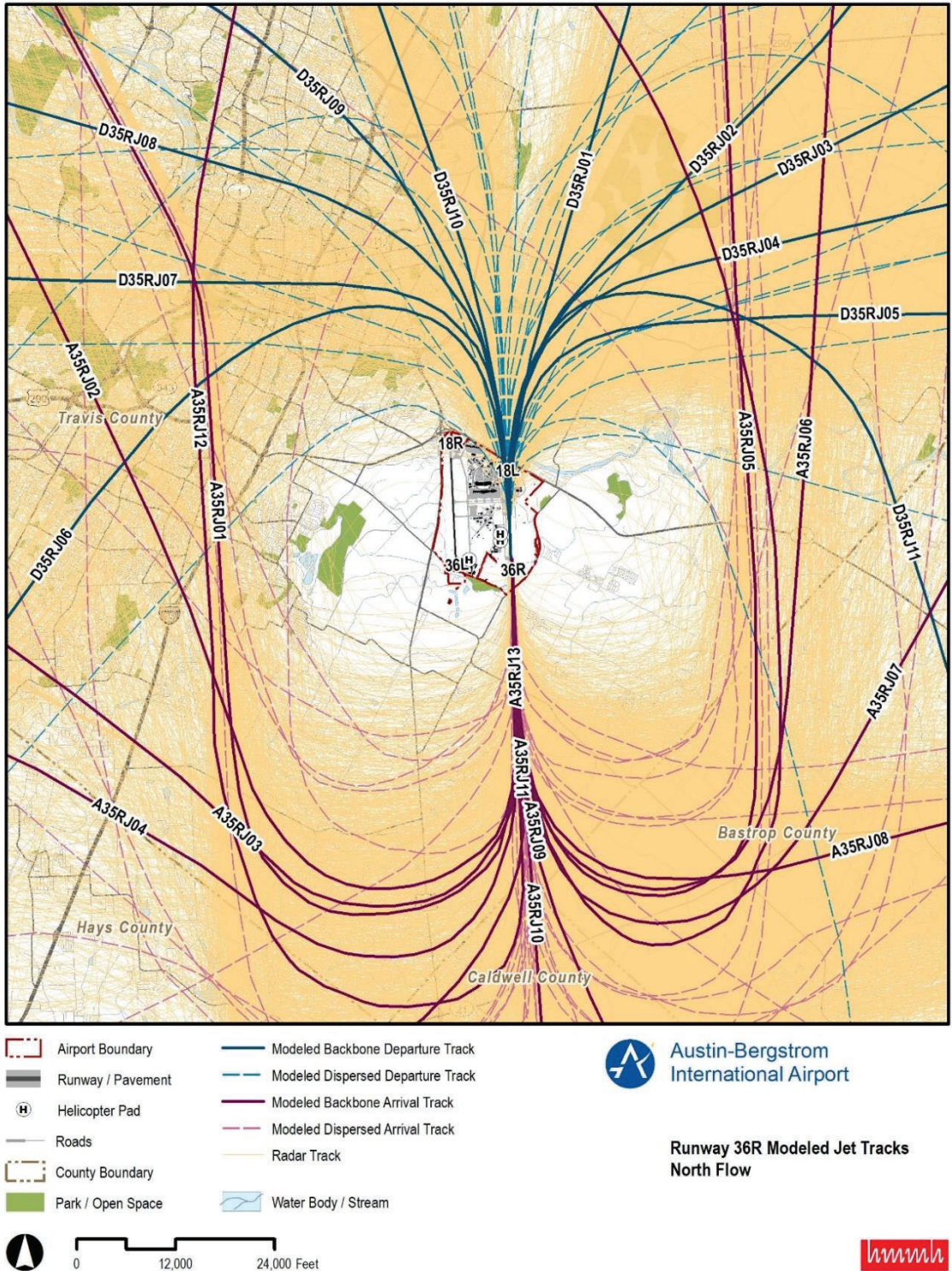


Figure 3: Runway 36R Modeled Jet Tracks, North Flow

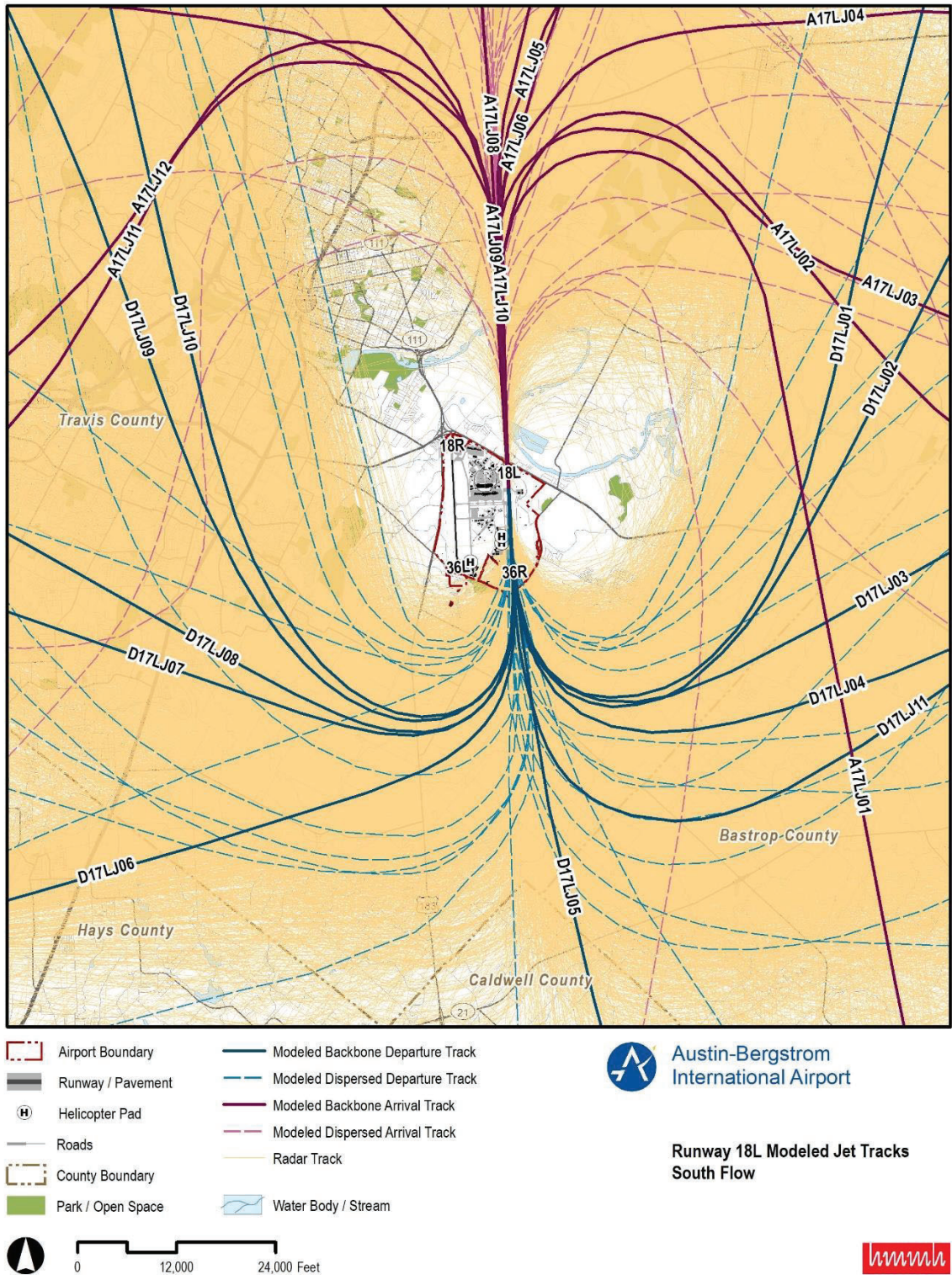


Figure 4: Runway 18L Modeled Jet Tracks, South Flow

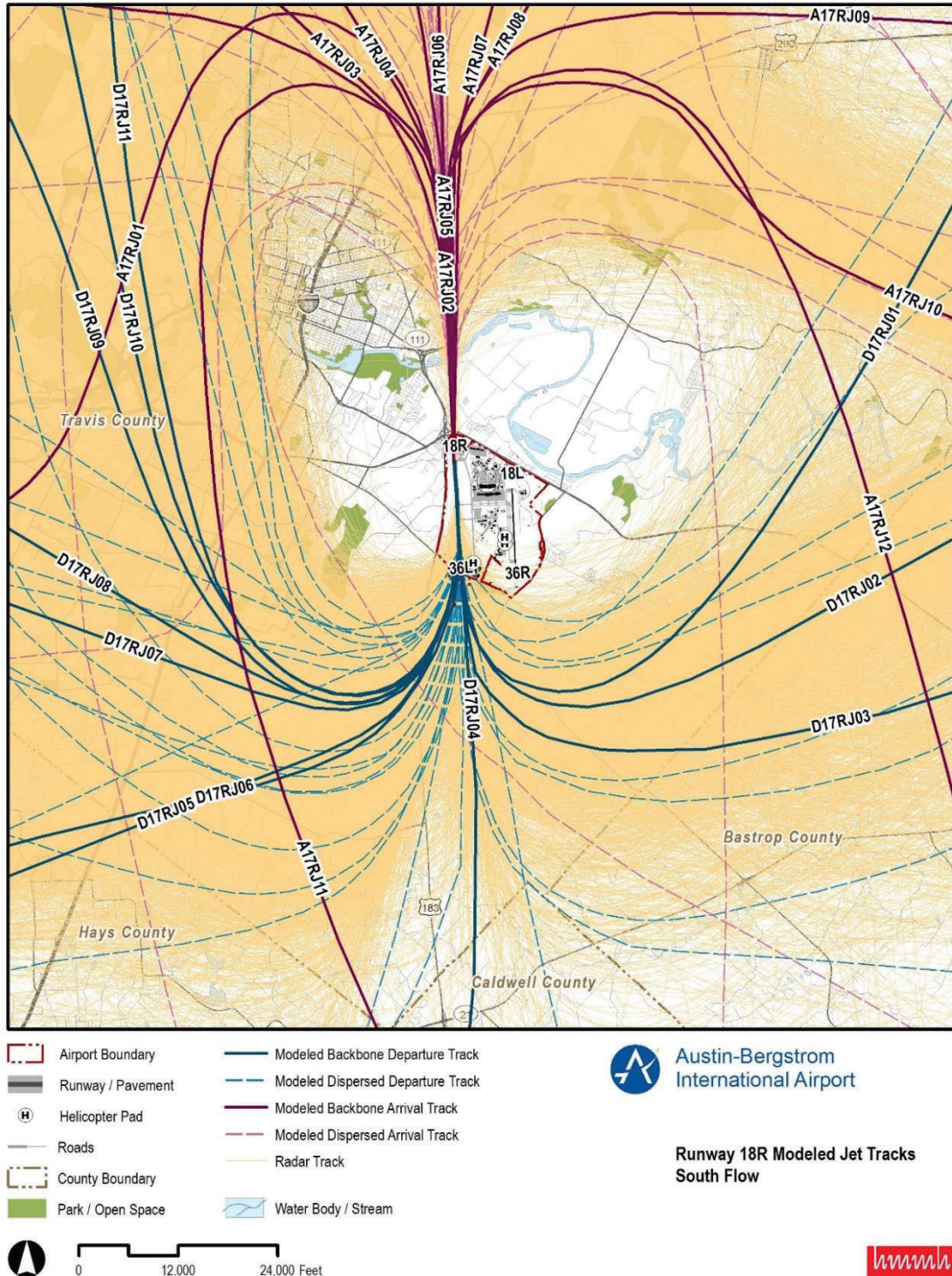


Figure 5: Runway 18R Modeled Jet Tracks, South Flow

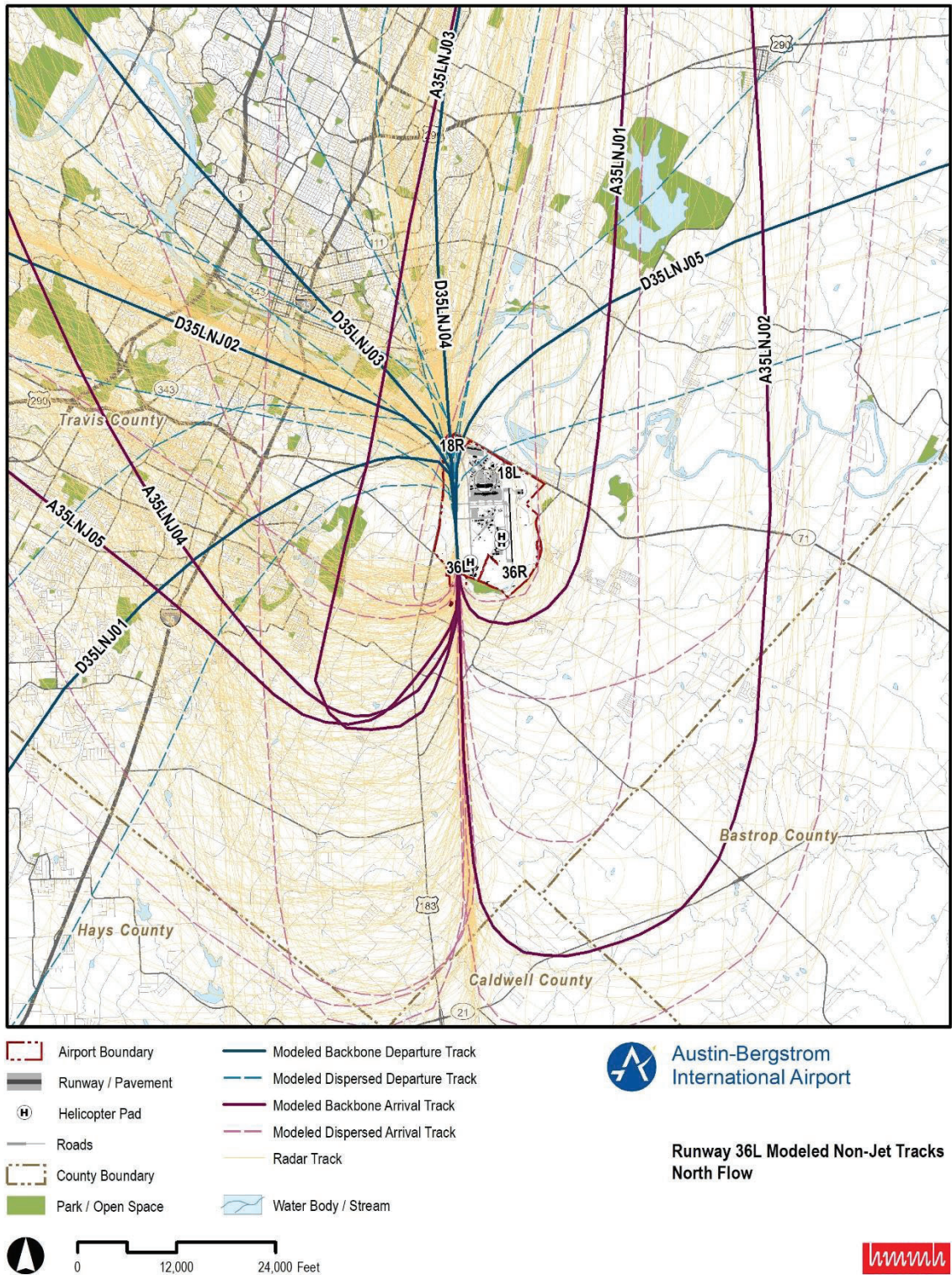


Figure 6: Runway 36L Modeled Non-Jet Tracks, North Flow

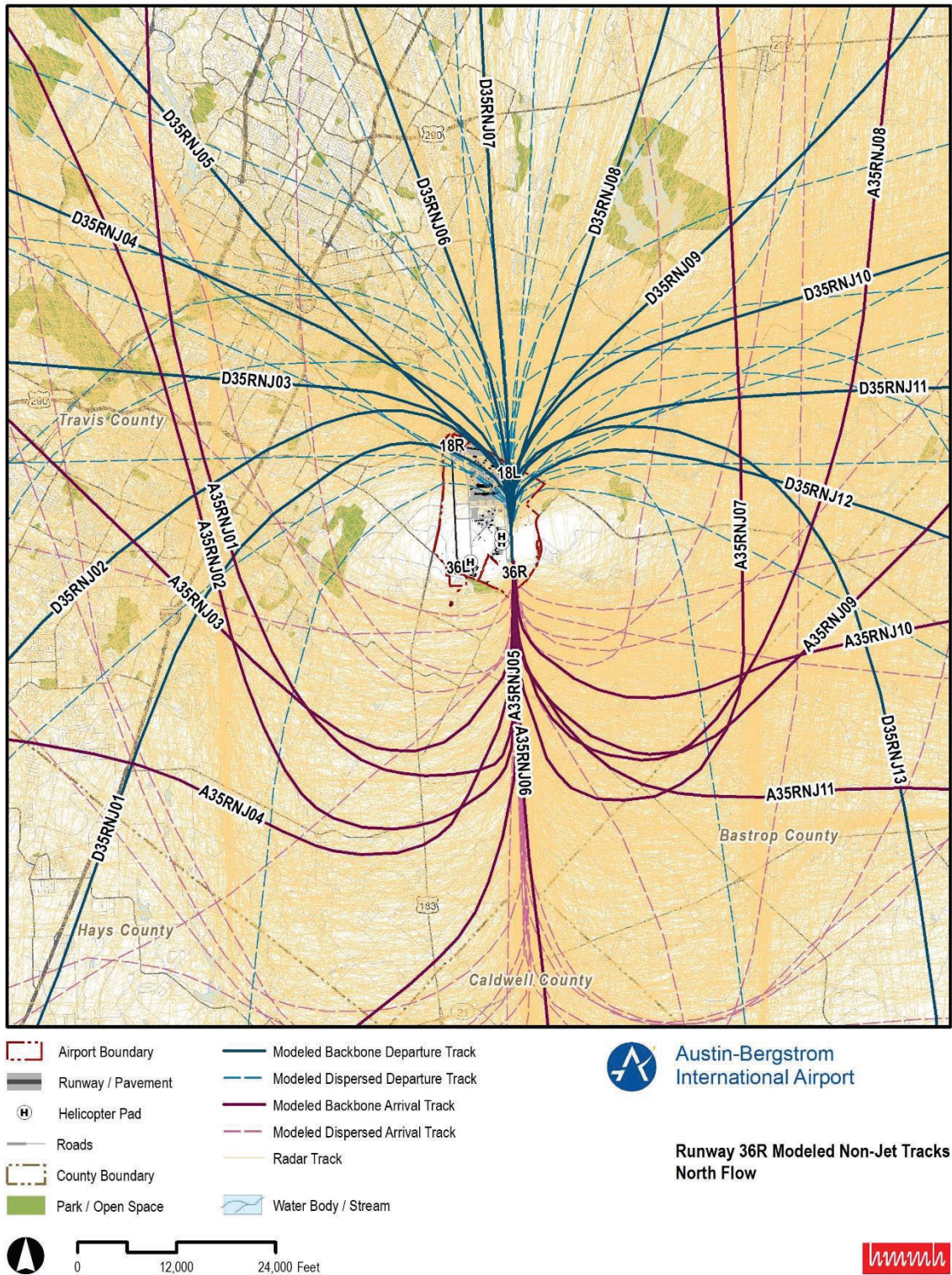


Figure 7: Runway 36R Modeled Non-Jet Tracks, North Flow

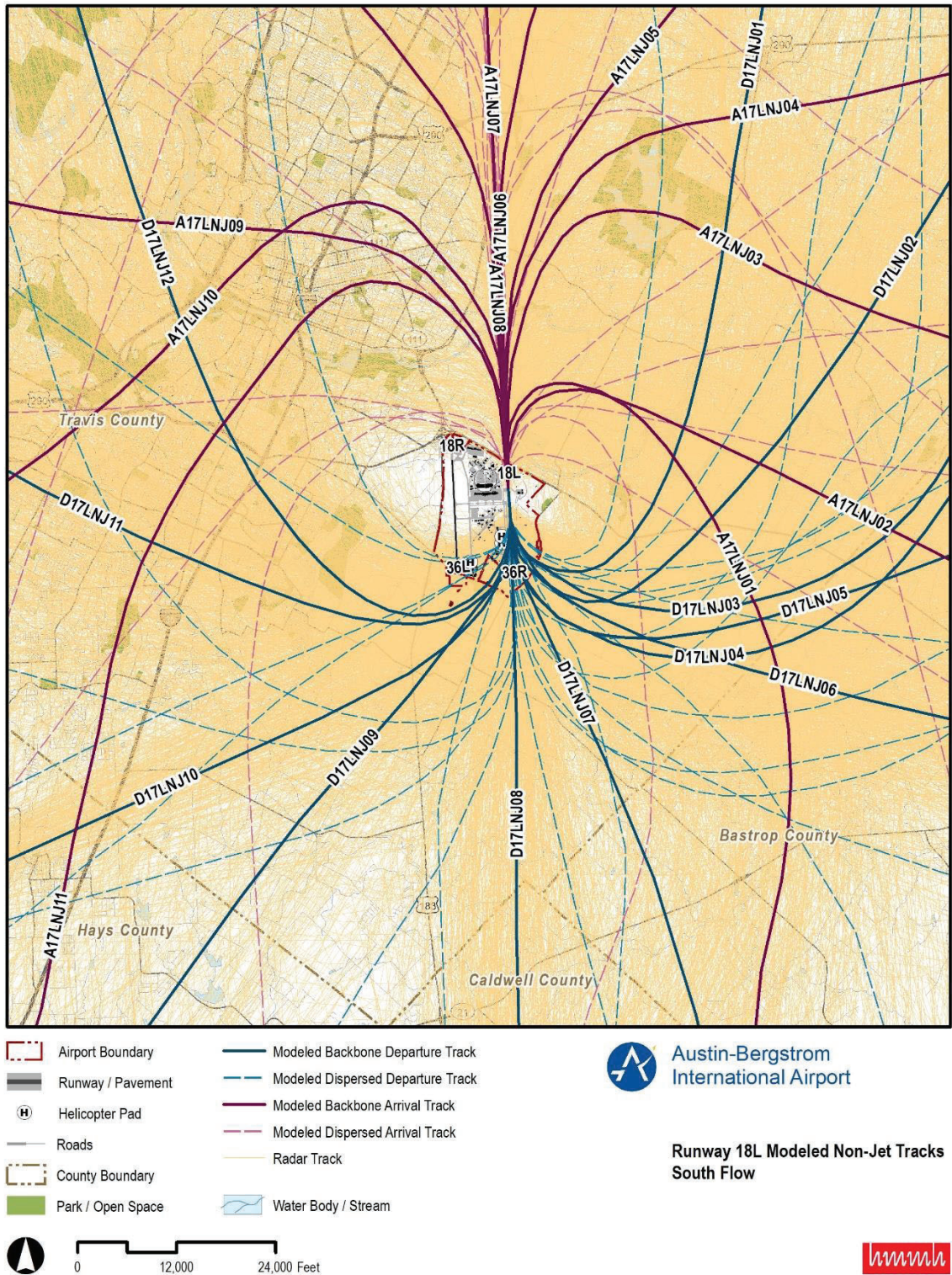


Figure 8: Runway 18L Modeled Non-Jet Tracks, South Flow

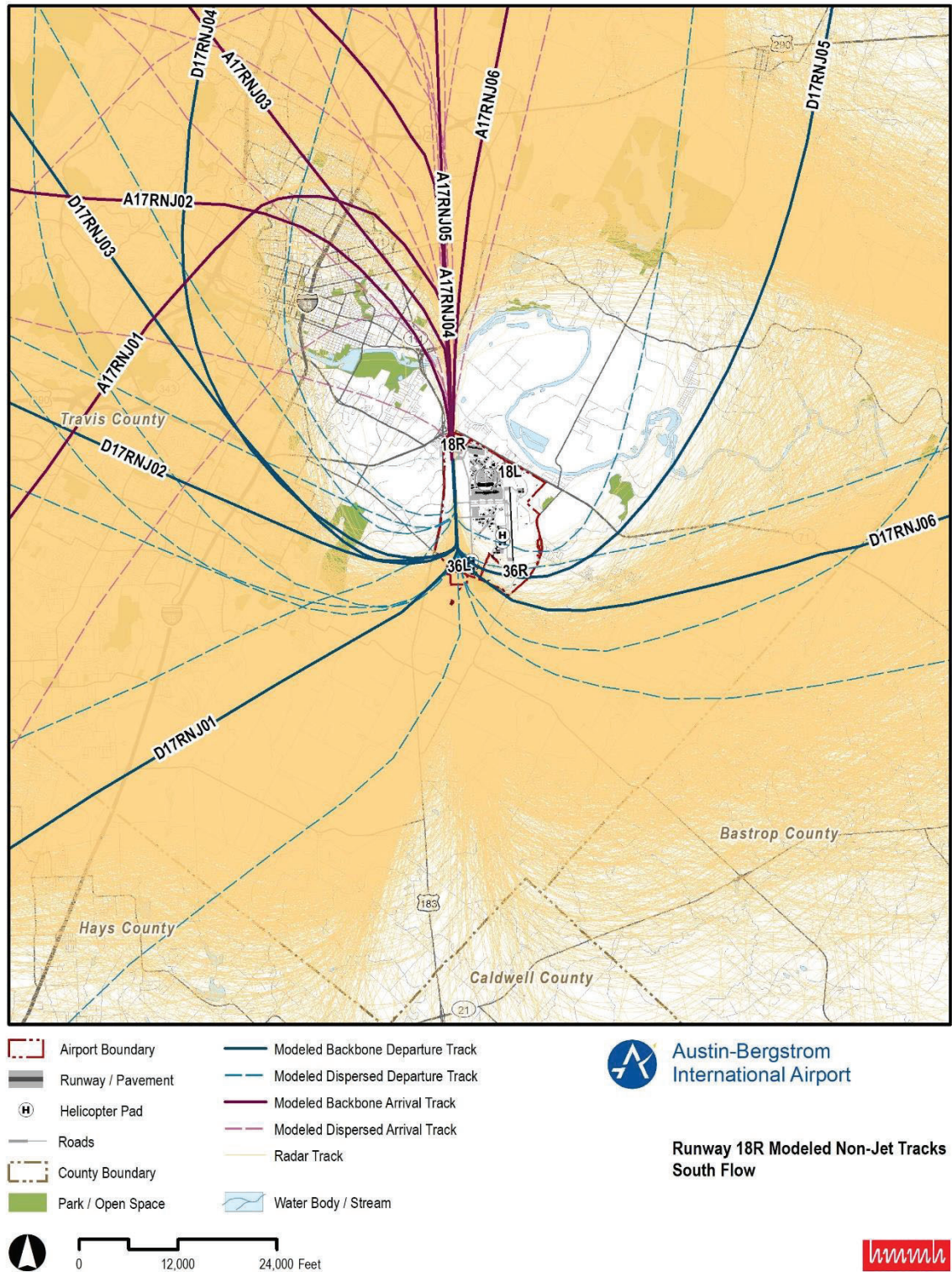


Figure 9: Runway 18R Modeled Non-Jet Tracks, South Flow

3.6 Meteorological Data

Meteorological settings within the AEDT affect its calculation of aircraft performance profiles and sound propagation. These settings include average annual temperature, barometric pressure, relative humidity, and average headwind speed. The AEDT contains standard reference climatological data for airports throughout the US.

The noise modeling will utilize the following average data for AUS from the AEDT database:

- Temperature: 68.58 F
- Station Pressure: 998.08 mbar
- Sea Level Pressure: 1016.02 mbar
- Dew point: 57.52° F
- Relative humidity: 67.93%

The headwind speed will be set to the AEDT default of 6.81 knots.

3.7 Aircraft Maintenance Run-up Activity



HMMH was provided a maintenance run-up log from ABIA staff. This log showed that 22 Run-ups were logged by ABIA operations staff in 2019. Aircraft run-ups all occur on the Maintenance Ramp located to the East of Taxiway C, South of Taxiway H, between Taxiway S and Taxiway T. This location is roughly centered between the two Runways and is centrally located South of the main terminal complex. As such, run-up activity will likely not have any influence on the 65 DNL contour. Because of this, run-ups will not be modeled for this EA.

3.8 Terrain

Terrain data describes the elevation of the ground surrounding the airport, and on airport property. The AEDT uses terrain data to adjust the ground level under the flight paths. The terrain data does not affect the aircraft's performance or noise levels but does affect the vertical distance between the aircraft and a "receiver" on the ground. This in turn affects assumptions about how noise propagates over ground. The National Elevation Dataset (NED) 1/3 arc second terrain data were obtained from the United States Geological Survey (USGS).⁷ The NED data set has a resolution of 10 meters or approximately 33 feet.

4. Noise Analysis Results

DNL contours are the primary mechanism for evaluating airport noise in this EA. A supplemental grid point analysis investigates precisely where and to what extent noise exposure changes would be expected to occur. An inventory of the acreage, population, and housing units within the various bands of noise exposure provides additional information.

4.1 DNL Contours

Noise modeling for this EA was conducted using the FAA's AEDT Version 3d. **Figures 10 through 14** present the required DNL contours of 65 dB, 70 dB, and 75 dB, and for informational purposes only, the 60 dB DNL contour is depicted as a dashed line on each figure. FAA considers a DNL of 65 dB as the threshold below which all land uses are compatible.

Figure 10 depicts the Existing Conditions noise environment, based on actual 2019 aircraft operations, and also shows the underlying land use types. As shown, The 65 DNL noise contour extends primarily north and south of the runways, along the aircraft approach and departure paths to and from Runways 18L-36R and 18R-36L. The figure also shows individual noise sensitive locations such as schools and places of worship. The FAA's guidelines for land use compatibility presented in Appendix A of 14 CFR Part 150

⁷ Data downloaded from <https://viewer.nationalmap.gov/basic/?howTo=true> in 1/3 Arc second GeoTIFF format.

state that all land uses are generally compatible with aircraft noise below 65 dB DNL. The 65 dB DNL noise contour for Runway 18R-36L extends into mostly vacant land to the north and south. A small portion to the north of Runway 18R-36L falls within single family residential mobile home land use. A small portion to the west of Runway 18R-36L encompasses a small area of possible single family and multi-family residential land use area. The 65 DNL noise contour for Runway 18L-36R extends to the north and south into commercial, industrial, recreation, and public land uses. The Proposed Action would not result in a DNL 1.5 dB increase over any noise sensitive sites, therefore, there would be no significant noise impact on the surrounding community. Therefore, no mitigation is required. However, the Airport will assess the introduction of the twenty-three additional residential housing units in the 2032 proposed action as compared to the 2019 baseline, in relation to their Noise Compatibility Program to determine whether the units qualify for noise mitigation under 14 CFR Part 150.

Figure 11 shows the 65+ DNL contours for the 2027 Action and No Action, including individual noise sensitive locations such as schools and places of worship. The 65 dB DNL noise contour for Runway 18R-36L extends into mostly vacant land to the north and south. A small portion to the north of Runway 18R-36L falls within single family residential and mobile home land use. A small portion to the west of Runway 18R-36L encompasses a small area of possible single family and multi-family residential land use area. The 65 DNL noise contour for Runway 18L-36R extends to the north and south into commercial, industrial, recreation, and public land uses.



Figure 12 shows the DNL contours for the 2027 Proposed Action. The 65 dB DNL noise contour for Runway 18R-36L extends into mostly vacant land to the north and south. A small portion to the north of Runway 18R-36L falls within single family residential mobile home land use. A small portion to the west of Runway 18R-36L encompasses a small area of possible single family and multi-family residential land use area. The 65 DNL noise contour for Runway 18L-36R extends to the north and south into commercial, industrial, recreation, and public land uses.

Figure 13 and **Figure 14** portray the DNL contours for the No-Action Alternative and Proposed Action Alternative, respectively, for 2032, representing the forecast five years beyond the target design year. The 2032 Proposed Action 65 DNL noise contour encompasses a slightly larger area compared to the No Action case. The difference in size of the noise exposure contours are a result of the expected increase in passenger aircraft operations related to the expansion. The shape of the contours are essentially the same, as runway usage, flight track geometry, and flight track usage assumptions were held constant.

Figure 13 shows the 65+ dB DNL noise contours for the 2032 No Action Alternative, including individual noise sensitive locations such as schools and places of worship. The 65 dB DNL noise contour for Runway 18R-36L extends into mostly vacant land to the north and south. A small portion to the north of Runway 18R-36L falls within mobile home land use. A small portion to the west of Runway 18R-36L encompasses a small area of single family and multi-family residential land use area. The 65 DNL noise contour for Runway 18L-36R extends to the north and south into commercial, industrial, recreation, and public land uses. No individual noise sensitive locations such as schools or houses of worship lie within the 65+ dB DNL noise contours for the 2032 No Action Alternative.

Figure 14 shows the 2032 Proposed Action DNL noise contours. The 65 dB DNL noise contour for Runway 18R-36L extends into mostly vacant land to the north and south. A small portion to the north of Runway 18R-36L falls within mobile home land use. A small portion to the west of Runway 18R-36L encompasses a small area of single family and multi-family residential land use area. The 65 DNL noise contour for Runway 18L-36R extends to the north and south into commercial, industrial, recreation, and public land uses. No individual noise sensitive locations such as schools or houses of worship lie within the 65+ dB DNL noise contours for the 2032 Proposed Action.

Figure 15 shows the 2037 Proposed Action DNL noise contours for informational purposes only.

Figure 10. Existing Conditions (2019) DNL Contours

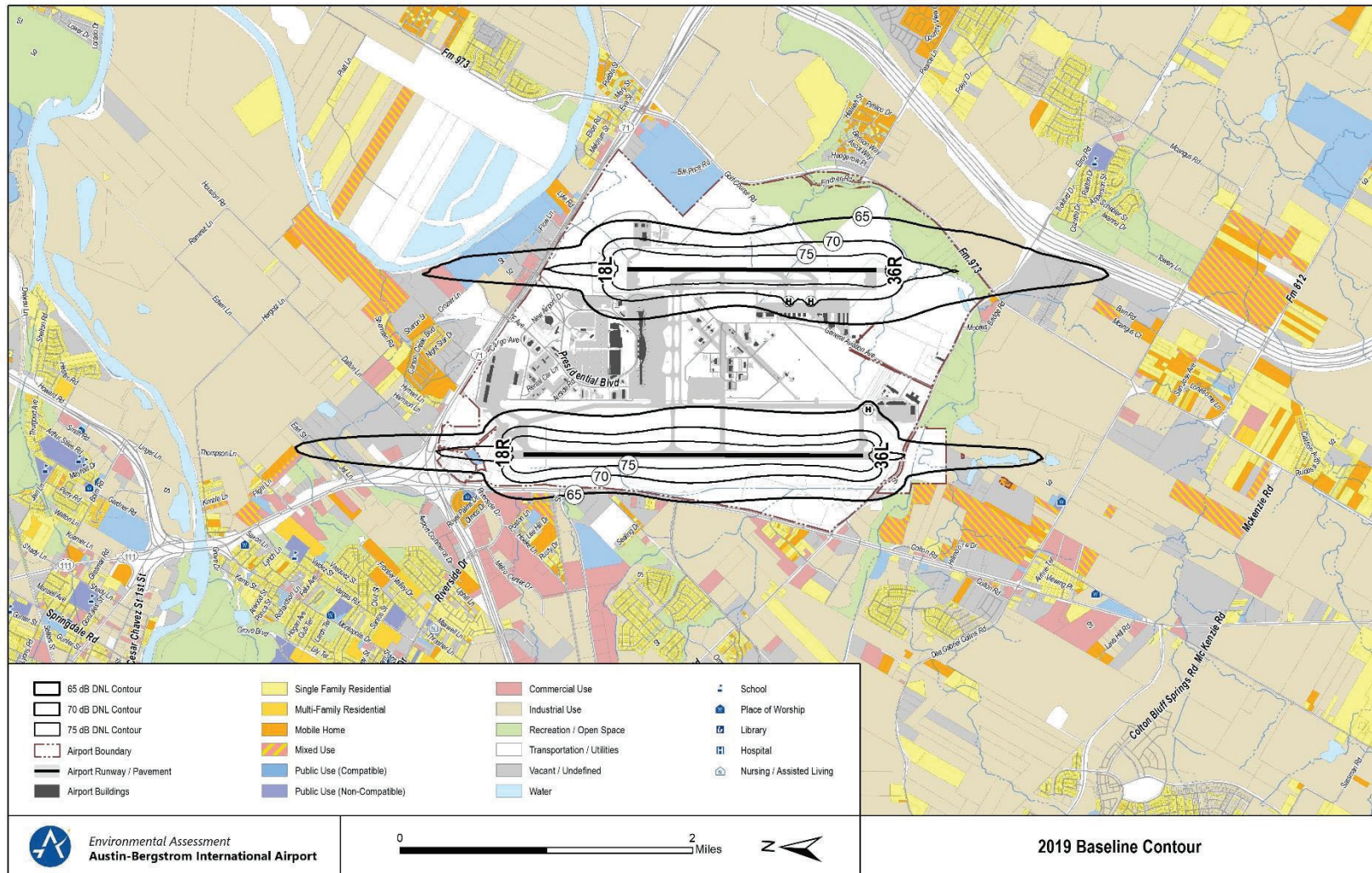


Figure 11. 2027 No-Action Alternative DNL Contours

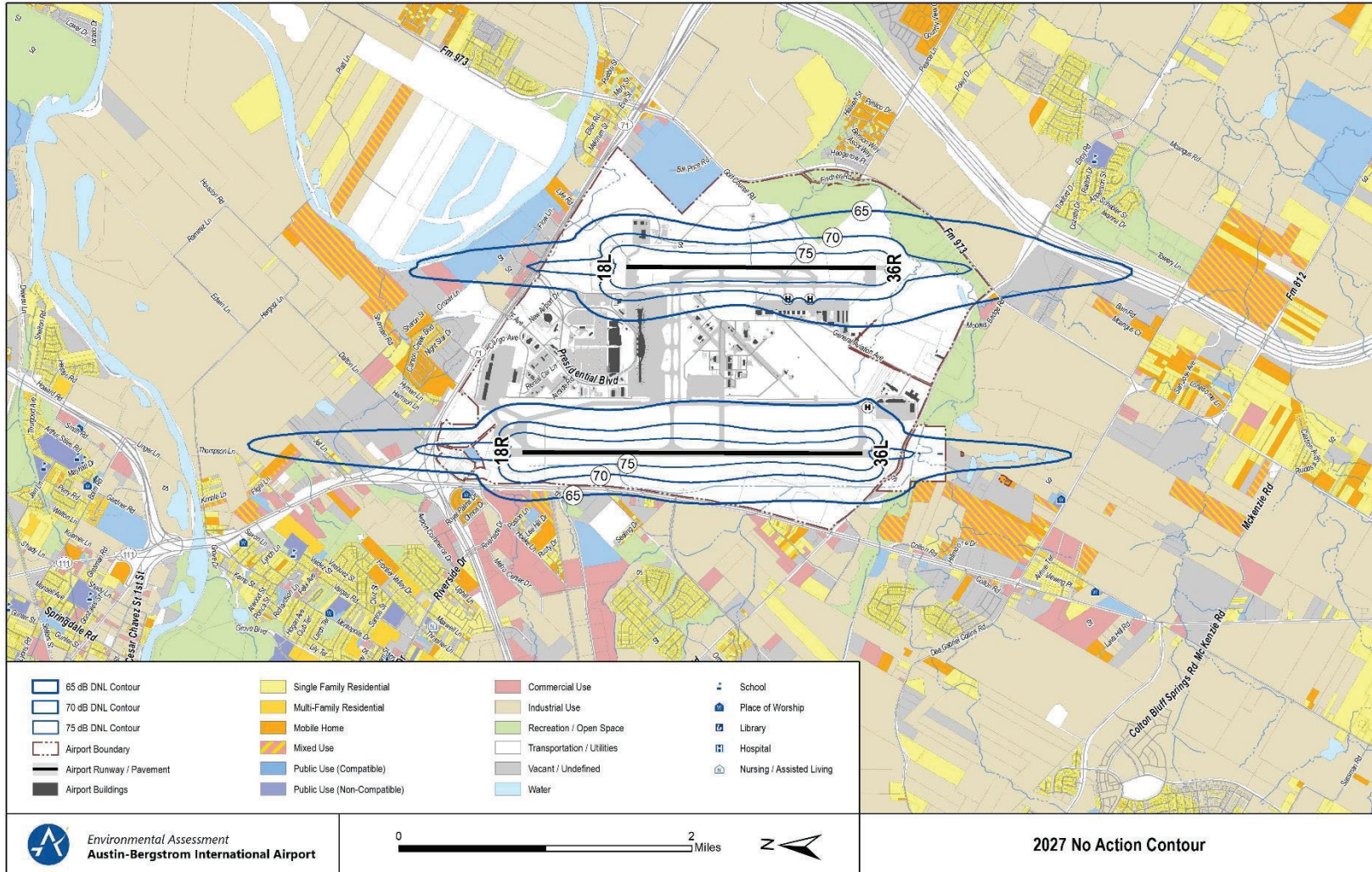


Figure 12. 2027 Proposed Action DNL Contours

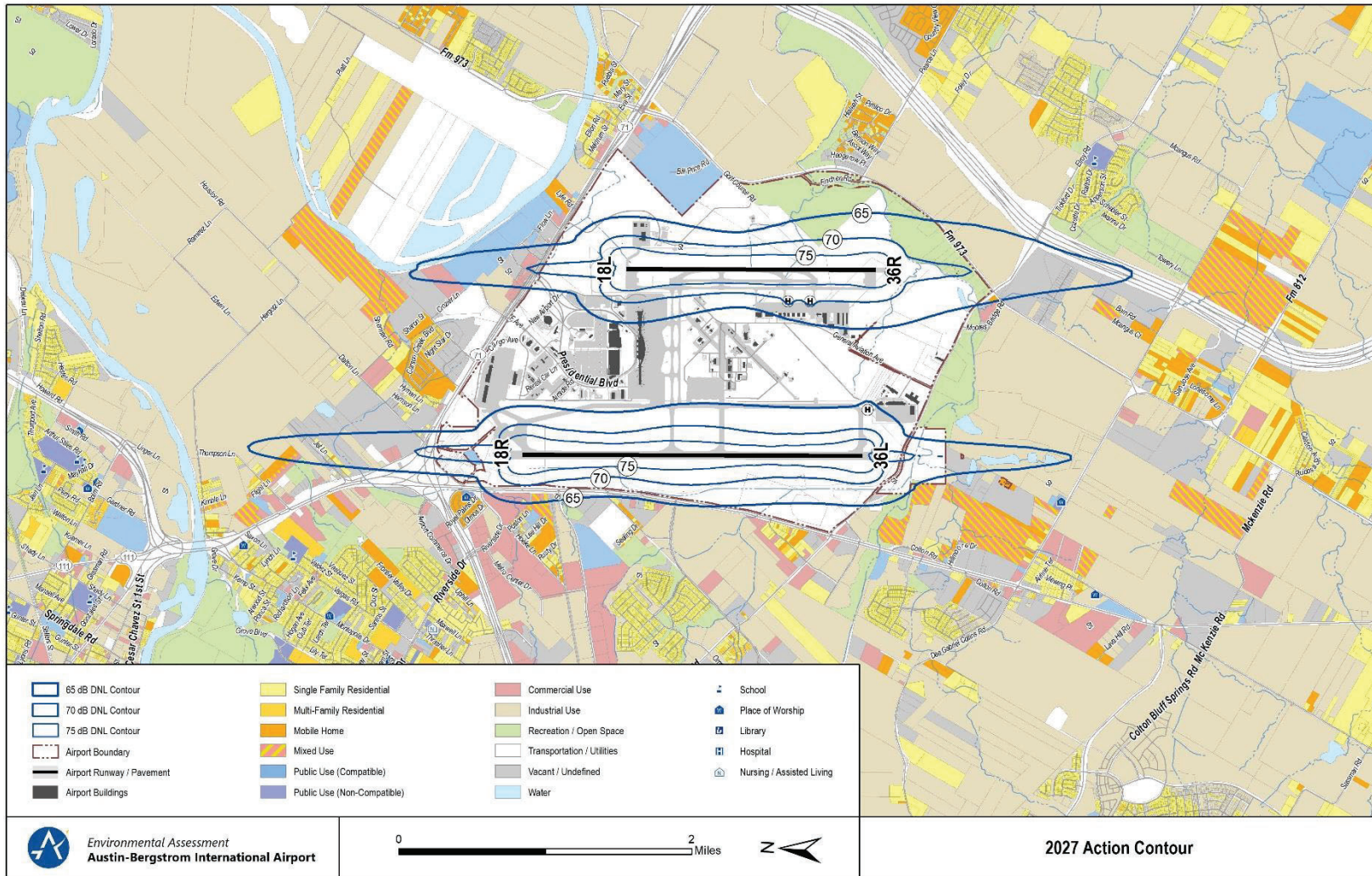


Figure 13. 2032 No-Action Alternative DNL Contours

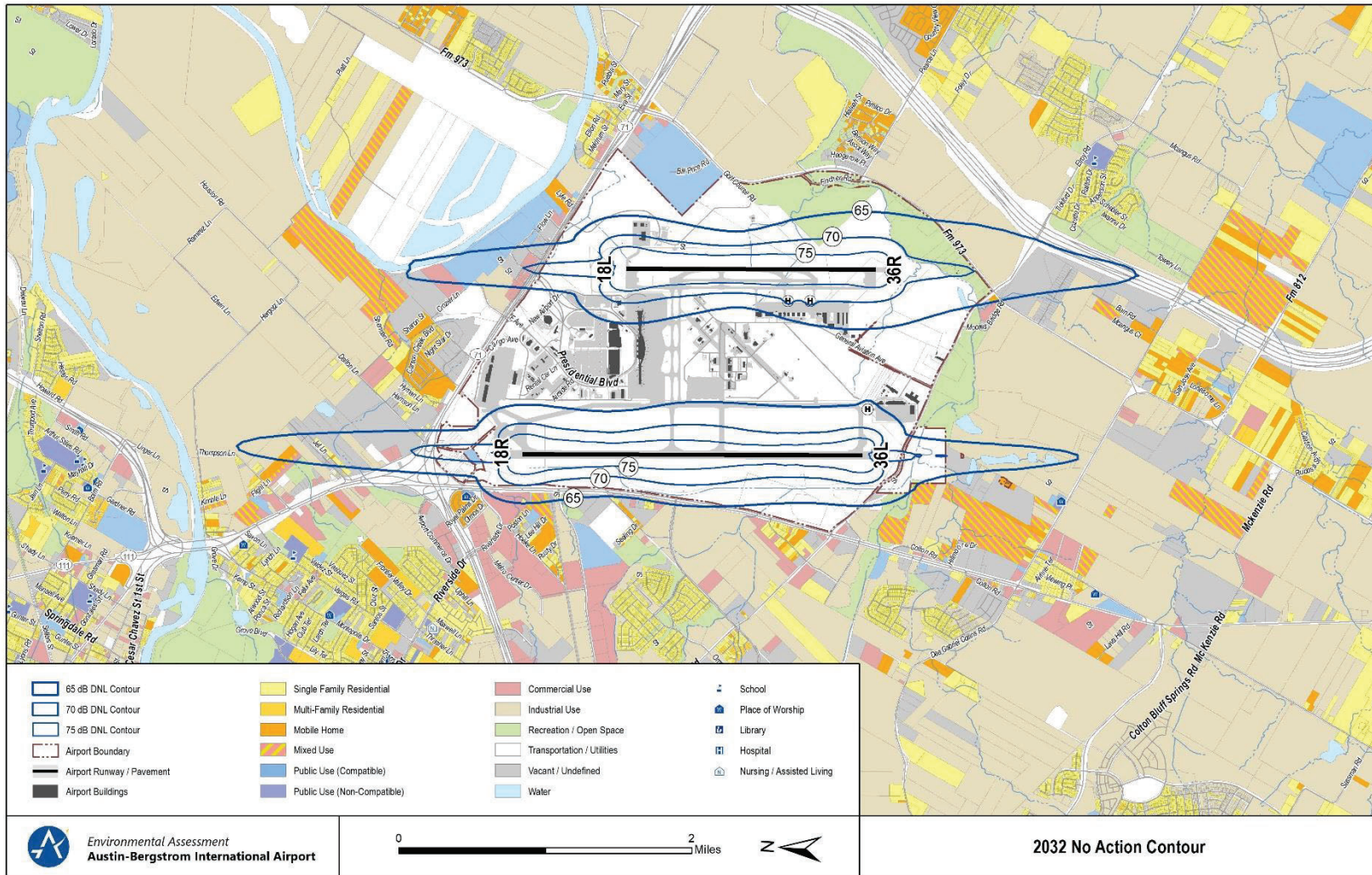


Figure 14. 2032 Proposed Action DNL Contours

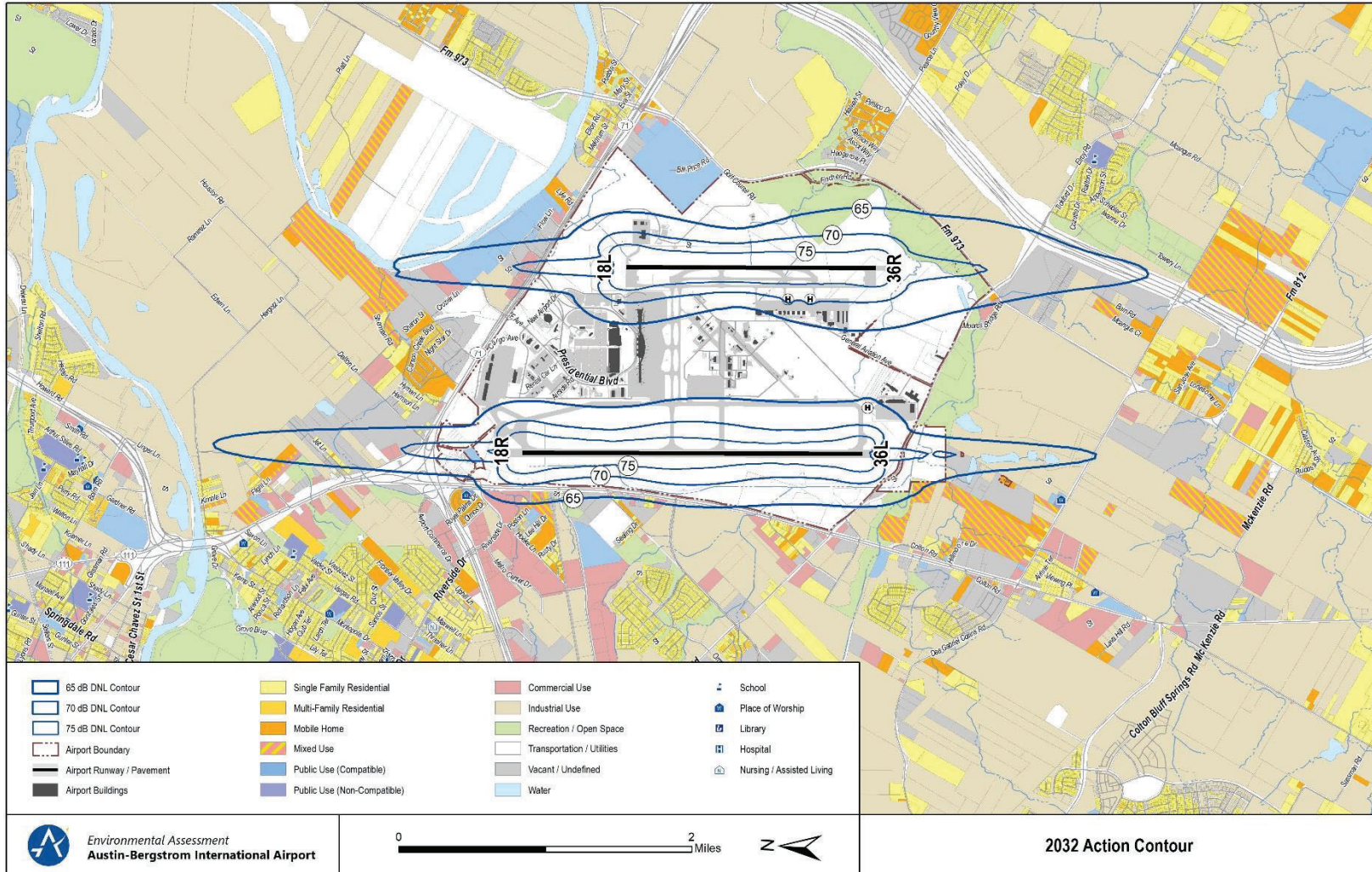


Figure 15. 2037 Proposed Action DNL Contours

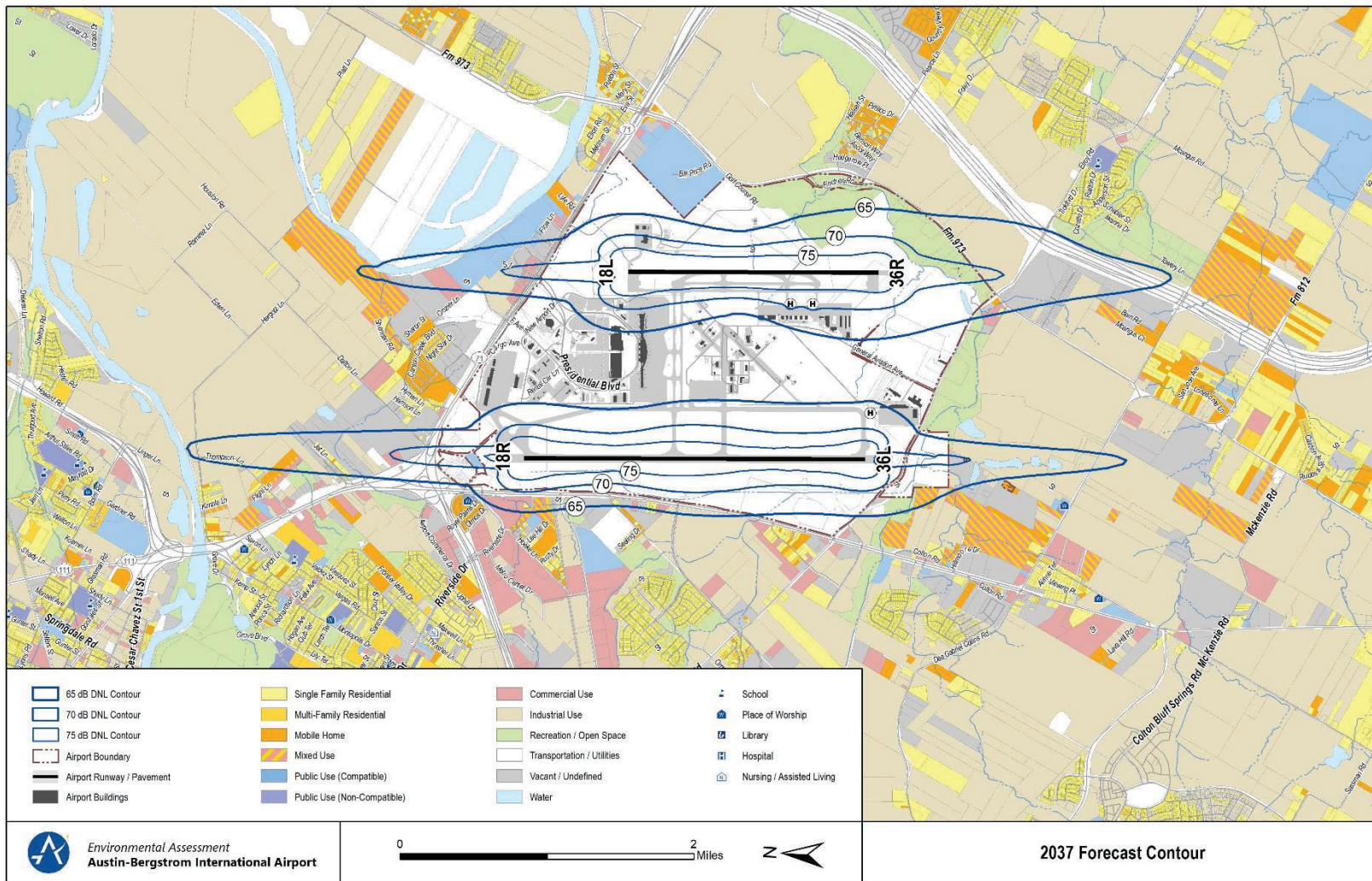


Figure 16. 2019 Existing Conditions DNL Contours w/ Inset

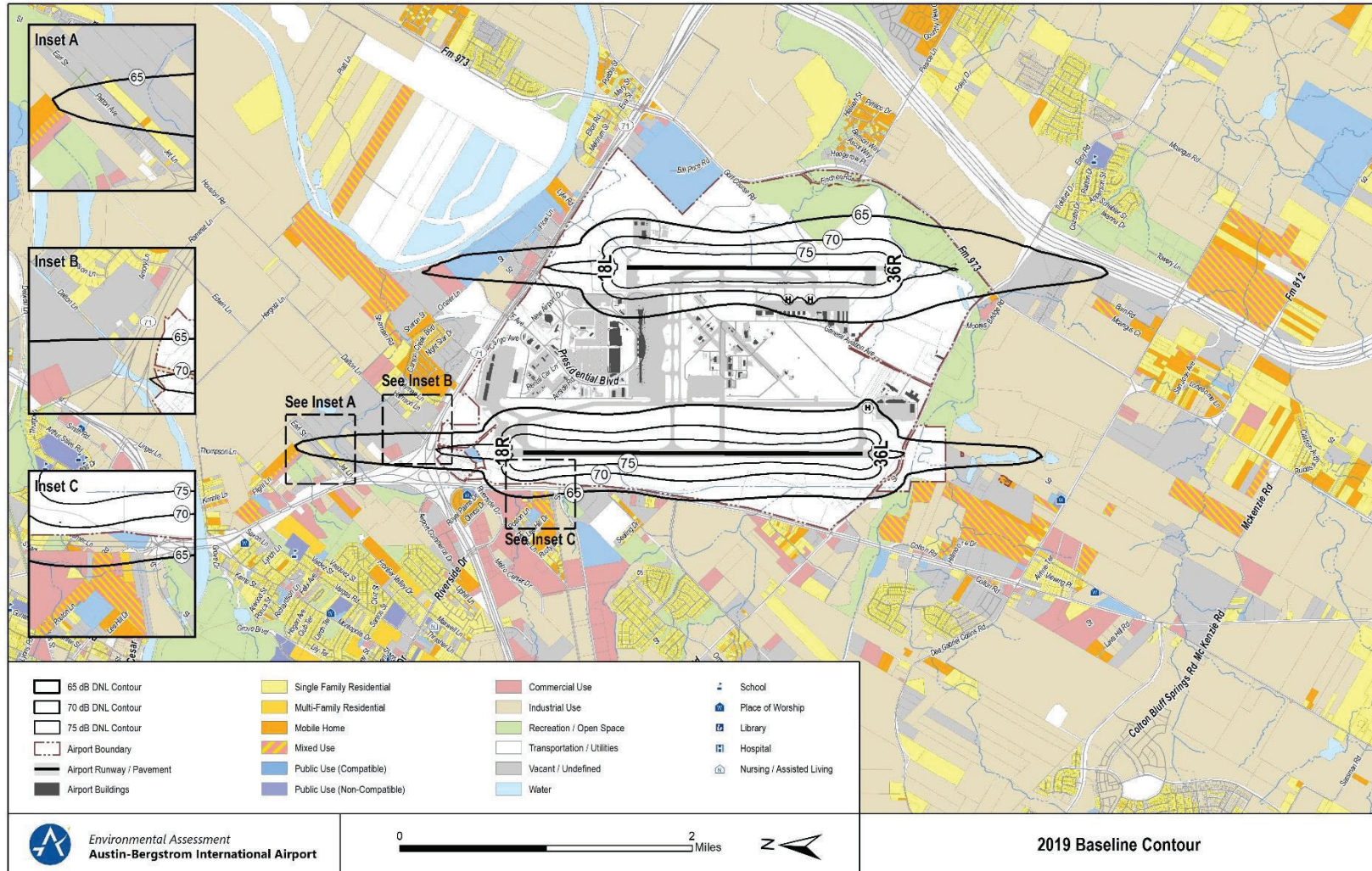


Figure 17. 2027 No Action DNL Contours w/ Inset

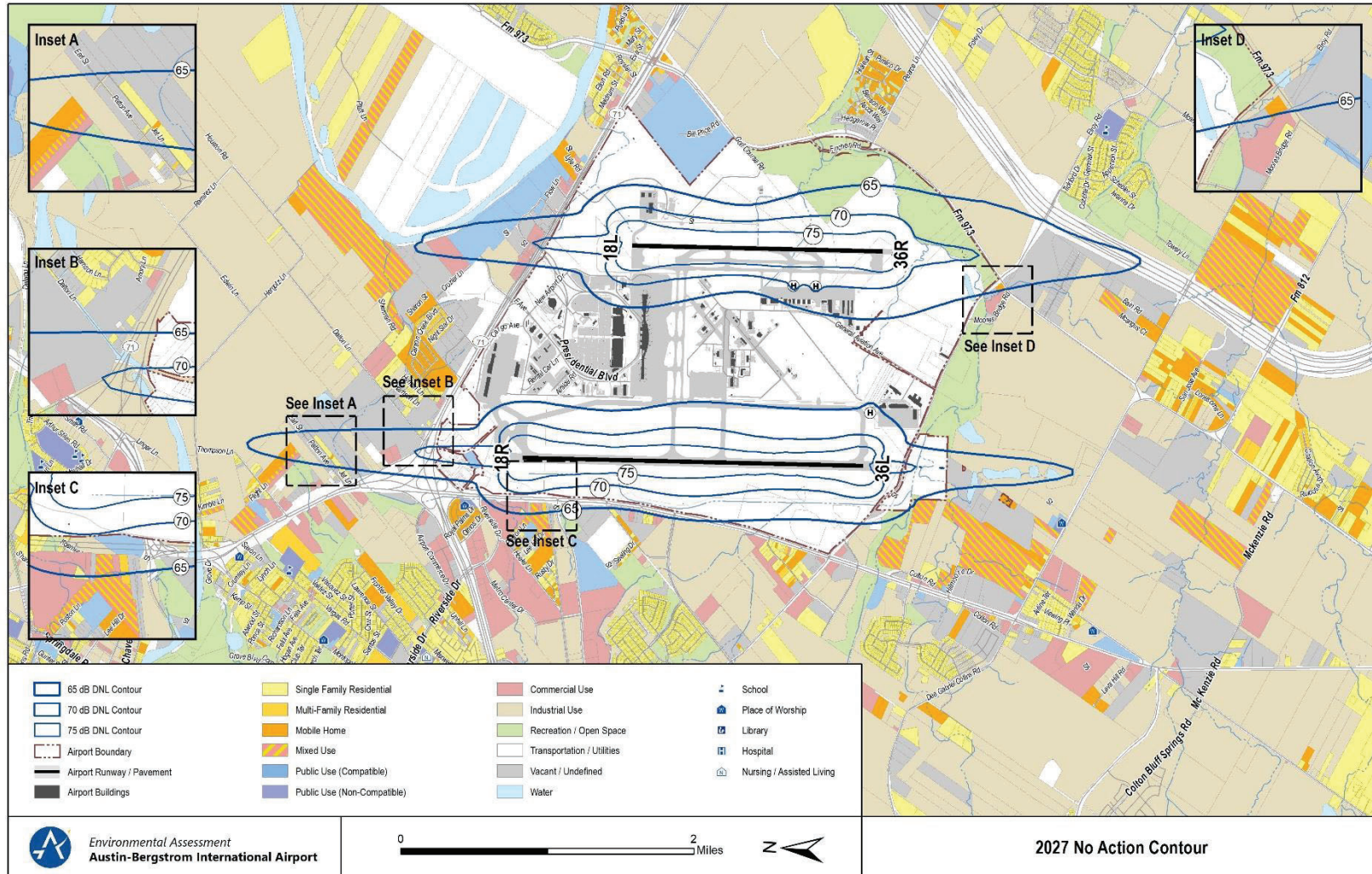


Figure 18. 2027 Proposed Action DNL Contours w/ Inset

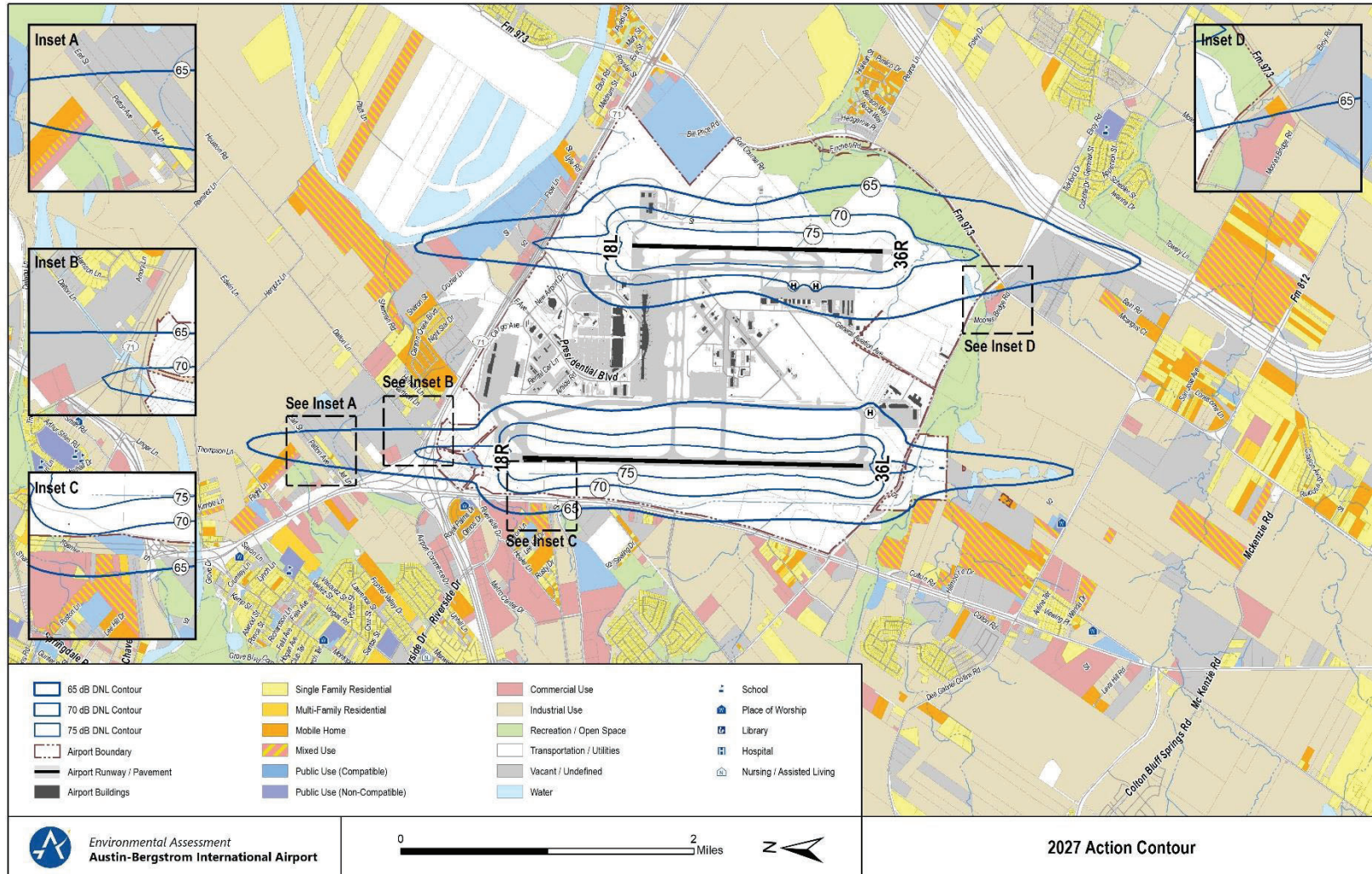


Figure 19. 2032 No Action DNL Contours w/ Inset

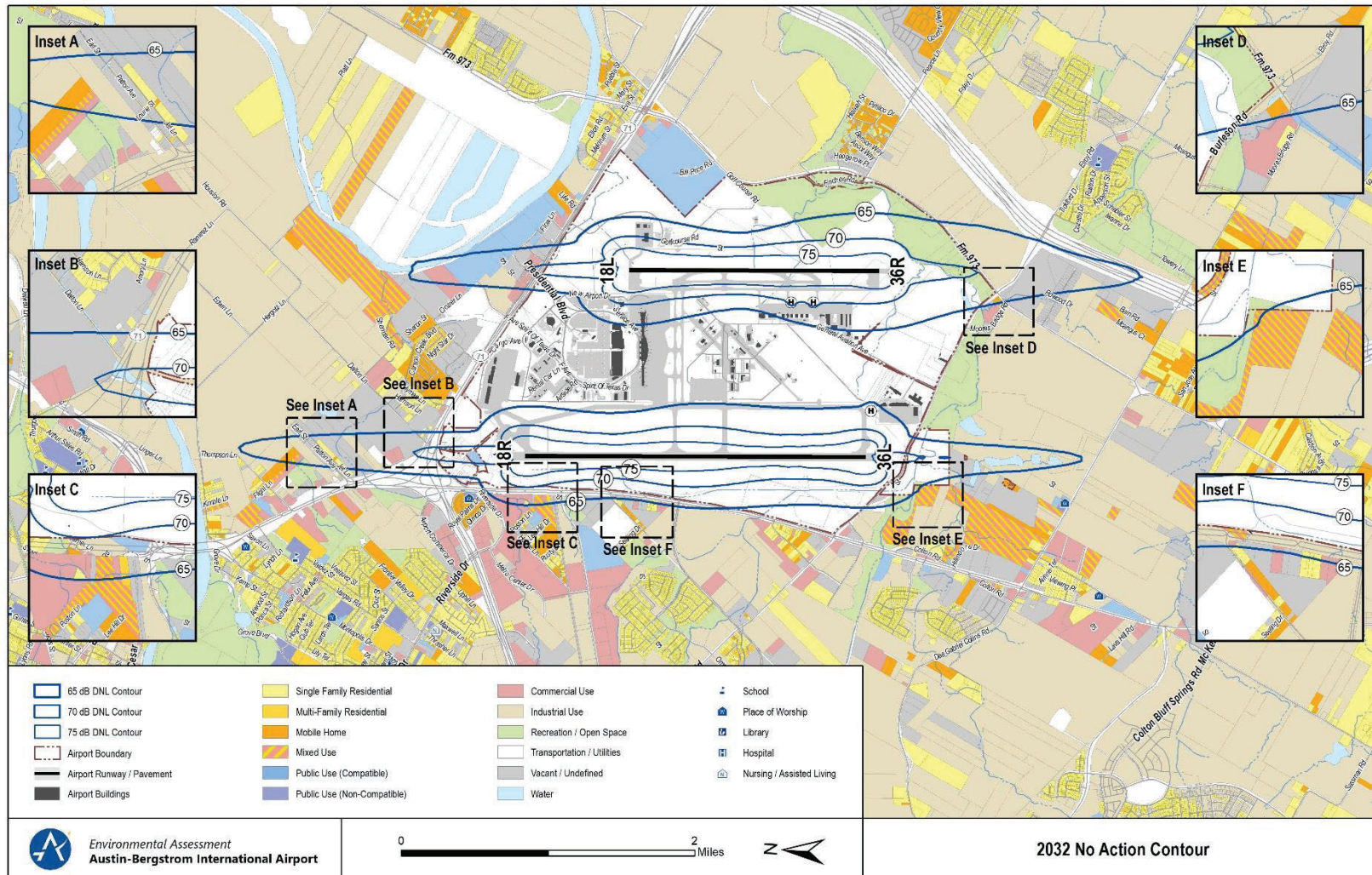
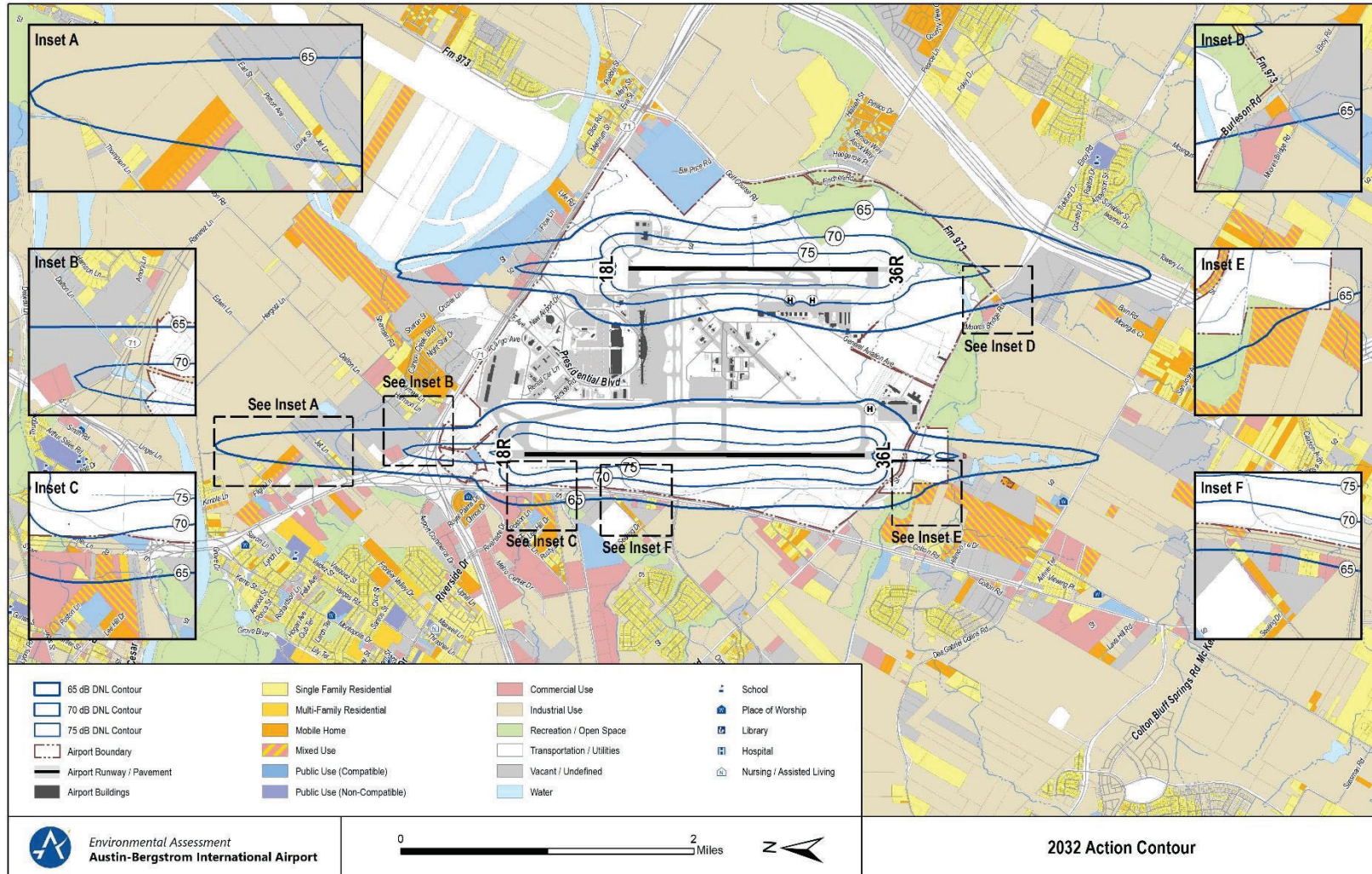


Figure 20. 2032 Proposed Action DNL Contours w/ Inset



4.2 Grid Point Analysis

The focus of the grid point analysis is to compare the No-Action and Proposed Action Alternatives, using FAA’s thresholds of significance. **Table 18** defines the significance threshold for changes in noise in accordance with FAA Order 1050.1F. When an action (compared to the No-Action alternative for the same timeframe) would cause noise-sensitive areas to have a DNL greater than or equal to 65 dB and experience a noise increase of at least 1.5 dB, the impact is considered significant. **Table 18** also lists FAA-defined reportable changes of noise levels.

Table 18. FAA Thresholds for Significant or Reportable Changes in Noise

Source: FAA Order 1050.1F Desk Reference, Chapter 11

	65 DNL or Greater	Greater than or equal to 60 DNL but less than 65 DNL	Greater than or equal to 45 DNL but less than 60 DNL
Minimum Change in DNL with Alternative	1.5 dB	3.0 dB	5.0 dB
Level of Impact	Significant	Reportable	Reportable



To identify any regions meeting the FAA criteria for significant or reportable changes in noise because of the Proposed Action, HMMH compared the underlying noise exposure grids that inform the contours. **Figure 21** and **Figure 22** present the No-Action to Proposed Action contour comparisons again, with grid differences color-coded according to the criteria listed in **Table 18**. There are no grid points with significant impacts between the no-action to proposed action contours in 2027 or 2032.

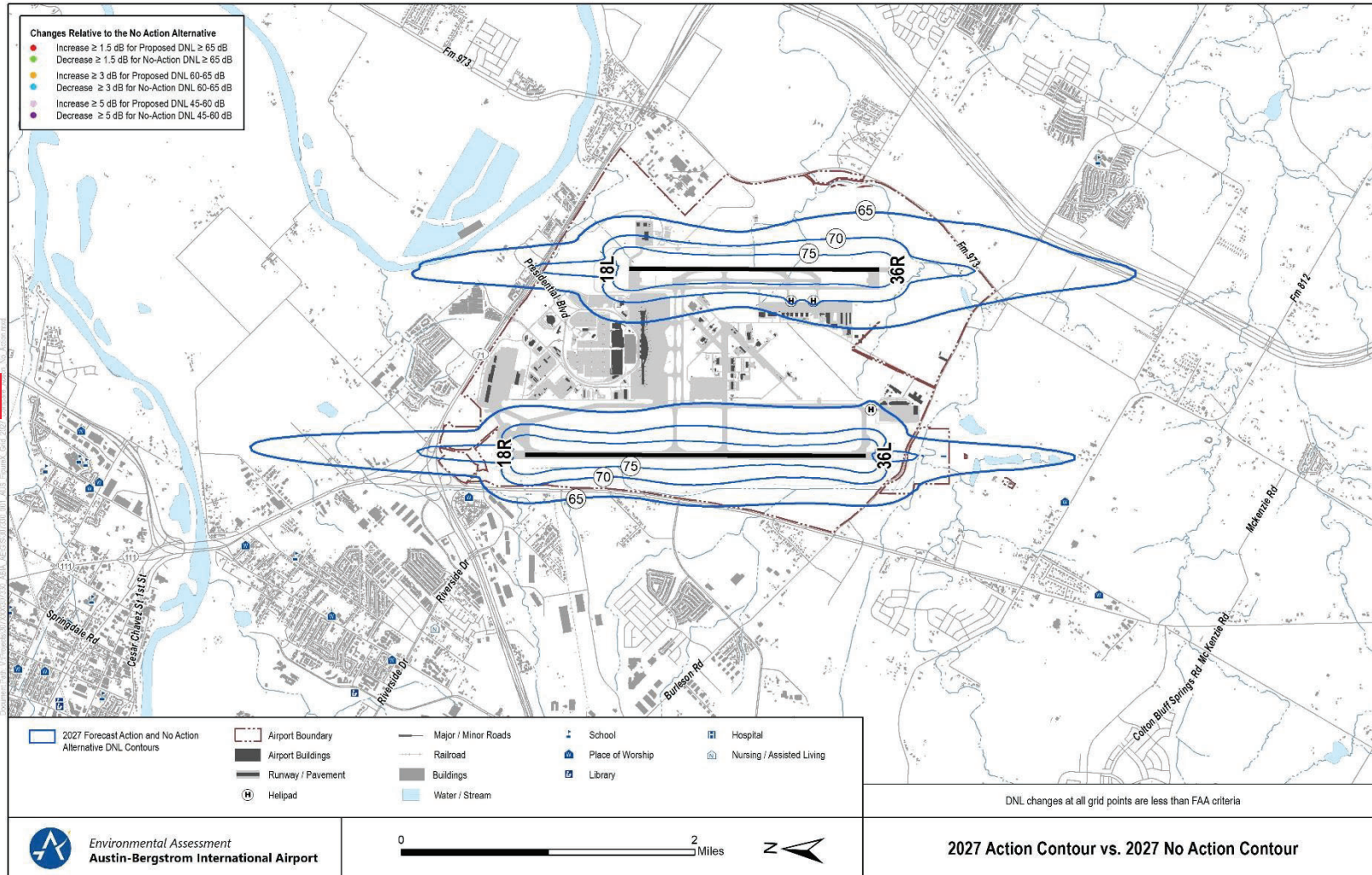


Figure 21. Grid Point Differences Between Proposed Action and No Action for Forecast Year 2027

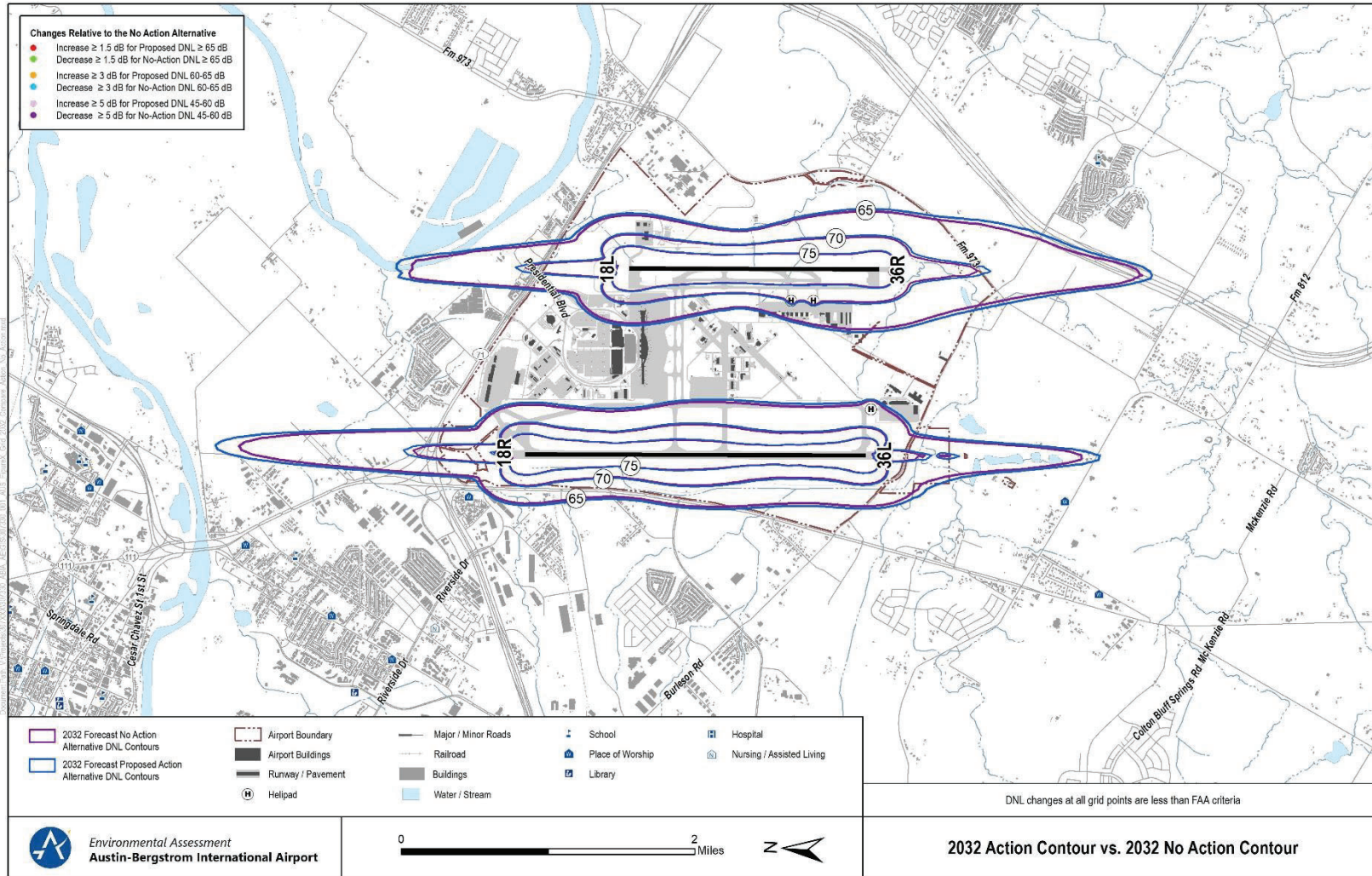


Figure 22. Grid Point Differences Between Proposed Action and No Action for Forecast Year 2032

4.3 Population Inventory

For each of the five sets of DNL contours prepared for this EA, HMMH prepared an inventory of housing units and population⁸ in the residential land use areas exposed to 65 dB DNL or higher. In order to estimate the number of people residing within the noise contours, existing parcel boundary land use maps were overlaid on 2020 US Census TIGER file maps that depict the smallest census enumeration unit. "Populated Area" data polygons were then created by combining census blocks with the residential land use, concentrating population and housing unit values into the residential portion of the census block where people actually live. For example, in some areas the population is concentrated along the road rather than over several square miles of open or undeveloped land. Using Geographic Information Systems (GIS) tools, the noise contours were intersected with the residential census data. The resultant wholly or partially encompassed residential census areas were then identified for each DNL contour interval; the proportion of total residential area was calculated to estimate the residential population and housing unit counts ascribed to that DNL interval. **Figure 16** through **Figure 20** show all DNL contour scenarios with insets that show areas of residential land uses that fall within the contours.



Table 19 presents the estimated population, housing, and land area within the given DNL contour intervals. None of the five scenarios would include residential land use at 70 dB DNL or greater. **Table 19** shows a comparison of noise exposure for the modeled scenarios.

A total of 90 residents and 19 housing units would be within the 65+ dB DNL noise contours in 2027, which is an increase of 60 residents and 12 housing units compared to 2019 conditions. The total area of the 65+ DNL noise contours under the 2027 No Action Alternative is 3,083.85 acres, which is an increase of 428.12 acres. No individual noise sensitive locations such as schools or house of worship would be within the 65+ dB DNL noise contours for the 2027 No Action Alternative.

A total of 100 residents and 21 housing units would be within the 65+ dB DNL 2032 No Action noise contours as a result of no action, which is an increase of 10 residents and 2 housing unit compared to the 2027 No Action Alternative. The total area of the 65+ DNL noise contours under the 2032 No Action Alternative is 3,162.81 acres, which is an increase of 78.96 acres compared to the 2027 No Action Alternative. No individual noise sensitive locations such as schools or house of worship would be within the 65+ dB DNL noise contours for the 2027 No Action Alternative.

A total of 126 residents and 30 housing units would be within the 65+ dB DNL noise contours in 2032 as a result of the Proposed Action, which is an increase of 26 residents and 9 housing units compared to the 2032 No Action Alternative. The total area for the 2032 Proposed Action DNL noise contours is 3,434.57 acres, which is 271.76 acres greater than the area for the 2027 No Action Alternative DNL noise contours. As with the 2032 No Action Alternative, no individual noise sensitive locations such as schools or houses of worship lie within the 65+ dB DNL noise contours for the 2032 Proposed Action.

There were no identified non-residential noise sensitive sites or places of worship, in the 65+ dB DNL interval for all five scenarios.

As noted in the introduction to this document, this noise analysis focused exclusively on airport-related noise sources. The Proposed Action is not expected to change non-airport noise sources such as commercial activity, highway traffic, or noise from local roadways. However, ambient noise levels from those sources do contribute to the overall acoustic environment. Residential locations within the aircraft noise 60 DNL or 65 DNL contours that are also in close proximity to busy streets or highways could experience actual DNL values higher than depicted on the contour map.

⁸ Population estimates are based on 2020 U. S. census data.

Table 19. Comparison of Noise Exposure

Sources: HMMH analysis, 2022

Noise Exposure Interval	Existing Conditions (2019)	Design Year (2027)			5-Year Forecast (2032)		
		No-Action Alternative	Proposed Action Alternative	increase (or decrease)	No-Action Alternative	Proposed Action Alternative	increase (or decrease)
Population Inventory							
70 DNL or greater	0	0	0	-	0	0	-
65-70 DNL	30	90	90	0	100	126	26
Housing Units Inventory							
70 DNL or greater	0	0	0	-	0	0	-
65-70 DNL	7	19	19	0	21	30	9
Acreage Inventory							
75 DNL or greater	520.21	543.29	543.29	0	555.98	587.21	31.23
70-75 DNL	561.56	654.33	654.33	0	671.62	731.79	60.17
65-70 DNL	1,573.96	1,886.23	1,886.23	0	1,935.21	2,115.57	180.36
total 65 DNL or greater	2,655.73	3,083.85	3,083.85	0	3,162.81	3,434.57	271.76
Note: acreage estimation includes airport land							



5. Air Quality Analysis

This section presents and discusses the potential air quality impacts from the Proposed Action associated with (1) the construction and demolition activities of the projects, and (2) additional aircraft and associated auxiliary operations along with other direct and indirect emissions associated with operation of the Proposed Action. For this analysis, the inventory of air pollutant emissions associated with each of those items to the General Conformity *de minimis* thresholds for significance is the basis for evaluating the potential for significant impacts for NEPA compliance with the CAA.

5.1 Affected Environment

5.1.1 National Ambient Air Quality Standards

Under the National Environmental Policy Act (NEPA), federal agencies must consider the impact their actions will have on the environment compared to a no-action alternative. According to FAA NEPA implementing guidance (FAA Order 1050.1F and Desk Reference, and FAA Order 5050.4B), impacts to air quality must be considered as part of the environmental analysis under NEPA. Potential effects of the proposed action are evaluated against the National Ambient Air Quality Standards (NAAQS), as promulgated by the EPA under the Federal Clean Air Act (CAA).

The EPA currently regulates six criteria pollutants: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM), and lead (Pb). Particulate matter is divided into two particle size categories: coarse particles with a diameter less than 10 micrometers (PM₁₀) and fine particles with a diameter of less than 2.5 micrometers (PM_{2.5}). The NAAQS are expressed in terms of pollutant concentration measured (or averaged) over a defined period of time and are two-tiered. The first tier (the “primary standard”) is intended to protect public health; the second tier (the “secondary standard”) is intended to protect public welfare and prevent further degradation of the environment.

Table 20 shows the primary and secondary NAAQS for the criteria pollutants. Section 176(c) of the CAA states that federal agencies cannot engage, support, or provide financial assistance for licensing, permitting, or approving any project that could cause or contribute to the severity and/or number of violations of the NAAQS, or could inhibit the expeditious attainment of these standards.

The standards in **Table 20** apply to the concentration of a pollutant in outdoor ambient air. If the air quality in a geographic area is equal to or better than the national standard, the EPA will typically designate the region as an “attainment area.” An area where air quality does not meet the national standard is typically designated by the EPA as a “non-attainment area.” Once the air quality in a non-attainment area improves to the point where it meets the standards and the additional requirements outlined in the CAA, the EPA can re-designate the area to attainment upon approval of a Maintenance Plan, and these areas are then referred to as “maintenance areas.” Each state is required to prepare a State Implementation Plan (SIP) that outlines measures that regions within the state will implement to attain the applicable air quality standard in non-attainment areas for applicable criteria air pollutant, and to maintain compliance with the applicable air quality standard in maintenance areas. The status and severity of pollutant concentrations in a particular area will impact the types of measures a state must take to reach attainment with the NAAQS. The EPA must review and approve each state’s SIP to ensure the proposed measures are sufficient to either attain or maintain compliance with the NAAQS within a set period of time.

The Clean Air Act Amendments (CAAA) of 1990 require states to make recommendations to the EPA regarding the attainment status of all areas within their borders when the EPA finalizes an update to any NAAQS. Under its CAAA authority, the EPA further classifies non-attainment areas for some pollutants – such as ozone – based on the severity of the NAAQS violation as marginal, moderate, serious, severe, and extreme. To further improve the nation’s air quality, the EPA lowered the ozone standard in 2015 to 0.070 parts per million (ppm).



Table 20. National Ambient Air Quality Standards

Source: U.S. EPA NAAQS <https://www.epa.gov/criteria-air-pollutants/naqs-table> as accessed on January, 2022

Pollutant	Averaging Time	Primary Standards	Secondary Standards
CO	Eight-hour	9 parts per million (ppm)	None
	One-hour	35 ppm	
Pb	Rolling Three-Month Average	0.15 micrograms (µg) /cubic meter of air (m ³)	Same as Primary
NO ₂	Annual Arithmetic Mean	0.053 ppm (100 µg/m ³)	Same as Primary
	One-hour	0.100 ppm ^{Note 2}	None
O ₃	Eight-hour (2015 standard) ^{Note 4}	0.070 ppm	Same as Primary
PM _{2.5}	Annual Arithmetic Mean	12 µg/m ³ ^{Note 1}	15 µg/m ³
	24-hour	35 µg/m ³	Same as Primary
PM ₁₀	24-Hour	150 µg/m ³ ^{Note 1}	Same as Primary
SO ₂	One-hour	75 parts per billion (ppb) ^{Note 3}	None
	Three-hour	None	0.5 ppm

Table Notes:

1. For PM₁₀, the 24-hour standard not to be exceeded more than once per year on average over three years. For PM_{2.5}, the 24-hour standard is attained when 98% of the daily concentrations, averaged over three years, are equal to or are less than the standard.
2. To attain this standard, the three-year average of the 98th percentile of the daily maximum one-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).
3. Final rule signed June 2, 2010. To attain this standard, the three-year average of the 99th percentile of the daily maximum one-hour average at each monitor within an area must not exceed 75 ppb.
4. EPA updated the NAAQS for O₃ to strengthen the primary eight-hour standard to 0.07 ppm on October 1, 2015. An area will meet the standard if the fourth-highest maximum daily eight-hour ozone concentration per year, averaged over three years is equal to or less than 70 ppb.



5.1.2 Attainment Status

Air quality in the Austin area (i.e., Travis County) is designated by EPA Greenbook as being in attainment for all criteria pollutants⁹. Since the area is designated as attainment with the current EPA air quality standards, the General Conformity Rule does not apply. Under NEPA, a project’s impact on air quality is assessed by evaluating whether it would cause a new violation of a NAAQS or contribute to a new violation in a manner that would increase the frequency or severity of a new violation¹⁰. For this analysis, the net change in air emissions was still compared to the applicable U.S. EPA *de minimis* levels for determining significant impacts¹¹ under NEPA.

5.1.3 General Conformity Rule

The General Conformity Rule defines a federal action as any activity engaged in by a department, agency, or instrumentality of the federal government, or any activity that a department, agency, or instrumentality of the federal government supports in any way, provides financial assistance for, licenses, permits, or approves. General Conformity is defined as demonstrating that a project or action conforms to the SIP’s purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. Federally funded and approved actions at airports are subject to the U.S. EPA’s

⁹ https://www3.epa.gov/airquality/greenbook/anayo_tx.html

¹⁰ https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/1-air-quality.pdf

¹¹ emissions below the *de minimis* levels are considered not significant

general conformity regulations. The General Conformity Rule¹² applies to all federal actions except for certain highway and transit programs which must comply with the Transportation Conformity Plans.¹³

The General Conformity Rule includes annual emissions thresholds for nonattainment and maintenance areas that trigger the need for a General Conformity determination and defines projects that are typically excluded from General Conformity requirements. Since the General Conformity Rule applies to federally funded projects in EPA-designated non-attainment and maintenance areas, the General Conformity requirements *do not* apply to projects at Austin¹⁴.

5.2 Environmental Consequences of Proposed Action

Potential air quality impacts associated with construction and demolition of the Proposed Action are discussed in this section. After construction, the Proposed Action would induce additional aircraft operations compared to the No Build which as well as additional passenger trips, parking facilities and new Central Utility Plant. Therefore, both direct (i.e. additional aircraft operation emissions and combustion boiler emissions) and indirect (i.e. additional vehicle trips and parking structure) were also inventoried and evaluated.

5.2.1 Methodology

The methods used to calculate emissions of carbon monoxide (CO), volatile organic compounds (VOCs), oxides of nitrogen (NOX), sulfur oxides (SOX), particulate matter less than 10 microns (PM10), greenhouse gases (GHG) and fine particulate matter (PM2.5) from construction and demolition-related sources along with operational impacts of air pollutant emissions at AUS are documented in this section. The emissions analysis was conducted to develop emissions inventories pursuant to the National Environmental Policy Act of 1969 (NEPA), as well as to determine whether emissions associated with the Proposed Action would exceed applicable *de minimis* thresholds as documented in the U.S. Environmental Protection Agency's (EPA's) general conformity regulations to determine significance.

Estimates of construction and demolition-related emissions were developed for the Proposed Action using standard industry methodologies and techniques. Construction activities associated with the Proposed Action are anticipated to begin in 2022 and be completed in 2030.

Airport operational emissions inventories were developed for the existing (2019), future years (2027 and 2032) for those activities associated with the Proposed Action where additional emission are expected over the No Build. Both direct and indirect operational emissions were inventoried and compared to appropriate *de minimis* thresholds for determining significant impacts.

5.2.2 Construction Demolition and Construction Activities

Pollutant emissions resulting from construction and demolition activities associated with Proposed Action were estimated using standard industry methodologies and techniques. Construction and demolition emissions were not estimated for the No Action Alternative, because no demolition or construction activity would be associated with the No Action Alternative.

The demolition and construction associated with the Proposed Action would result in short-term changes in air emissions from sources such as exhaust from nonroad construction equipment such as:

- haul trucks,
- site clearing, and
- grading.

On-road vehicles include those associated with:

¹² Revisions to the General Conformity Rule are codified under 40 CFR Parts 51 and 93, Subpart W, Revisions to the General Conformity Regulations, Final Rule (April 2010).

¹³ 40 CFR Part 93, Subpart A

¹⁴ Austin is located in an EPA designated attainment area for all pollutants

transport and delivery of supplies,
materials and equipment to and from the site, and
construction worker trips.

Additionally, fugitive dust emissions sources include:

site preparation,
land clearing,
material handling,
equipment movement on unpaved roads and
evaporative emissions from the application of asphalt paving.

Demolition and construction activities associated with the Proposed Action are expected to begin in the fourth quarter of 2022 and be completed in the second quarter of 2030. **Table 21** presents the primary components of the Proposed Action, including estimated activity costs, area estimates (square feet) and anticipated start and end dates of construction. These costs and area estimates were used for deriving construction activity emission estimates with the Airport Cooperative Research Board’s (ACRP) Airport Construction Emissions Inventory Tool (ACEIT)¹⁵. Construction emission analyses generally require a detail construction schedule such as the type of equipment, the amount of time of operation of such equipment, estimates of construction material and trips, employee activity, etc. This detailed construction data was not available for this analysis for each activity. To address this, the ACRP ACEIT model was used to estimate construction emissions.



Table 21. Proposed Action Construction and Demolition Activities

Source: AUS, December 2021

Project Action Component	Estimated Project Costs (\$)	Area (Square Feet)	Construction Start	Construction End
New Taxiway H and J	113.6M	890,300	2024: QTR 1	2026: QTR 2
New RON Apron	15.0M	1,789,000	2024: QTR 1	2026: QTR 2
Concourse B Apron	85.0M	1,943,000	2024: QTR 1	2026: QTR 2
Concourse B Taxiway Connections	28.5M	652,000	2024: QTR 1	2026: QTR 2
Runway 18R-36L Rapid Exit Taxiways	20.7M	400,500	2026: QTR 3	2028: QTR 3
New Taxiway D	73.0M	1,410,200	2026: QTR 3	2028: QTR 3
Demolition of Airfield Pavement	28.4M	464,000	2026: QTR 3	2028: QTR 3
New Airfield Pavement	19.9M	385,000	2026: QTR 3	2028: QTR 3
New Concourse B and Loading Bridges	423.7M	342,000	2023: QTR 3	2026: QTR 2
Connector to Concourse B	444.0M	52,000	2024: QTR 2	2025: QTR 4
New Expanded Arrival Departure Hall	423.7M	342,000	2027: QTR 3	2030: QTR 2
Pedestrian Bridge to CONRAC Parking	3.2M	36,000	2029: QTR 3	2030: QTR 2
Demolition of South Buildings	0.7M	406,000	2022: QTR 4	2023: QTR 2
Demolition of Existing Parking Garage	105.9M	414,000	2024: QTR 1	2024: QTR 3
Demolition of Existing Terminal	5.0M	46,000	2022: QTR 4	2023: QTR 2
Demolition of Existing Roadway	8.0M	190,000	2025: QTR 2	2026: QTR 2
Upgrade Existing Access Roadway Network	9.0M	173,000	2025: QTR 2	2027: QTR 3

¹⁵ ACRP, 2014 <https://crp.trb.org/acrp0267/acrp-report-102-guidance-for-estimating-airport-construction-emissions/>

New Terminal Curbside Roadway	209.9M	177,000	2028: QTR 2	2030: QTR 2
New Emma Browning Road	15.0M	106,000	2023: QTR 1	2025: QTR 1
New Employee Parking Lot	24.6M	1,225,000	2025: QTR 1	2026: QTR 2
New Hydrant Fueling System	3.0M	10 new tanks	2025: QTR 2	2026: QTR 1
New Catering Facility	20.0M	25,500	2025: QTR 2	2026: QTR 1
New Central Utility Plant	65.0M	72,000	2024: QTR 2	2026: QTR 1
Site Infrastructure	200M	-	2024: QTR 3	2025: QTR 4
West Concourse Gate Expansion	85.2M	33,000	2022: QTR 2	2024: QTR 2

The ACRP ACEIT model was used to estimate the construction schedule of equipment for each project component based on the project dimensions and project costs for each activity. The model has the ability to generate construction schedules for a variety of standard airport construction projects including the associated activity types and the equipment used for this project.

ACEIT can also produce emission factors for nonroad and on-road construction equipment, as well as for fugitive emission sources using EPA and industry standard models and methodologies. *However, the current version of ACEIT includes an older version of the U.S EPA's Motor Vehicle Emission Simulator (MOVES) emission model, MOVES2010a and NONROADs, which have both been updated over the years.* For this analysis, the current version of MOVES (Version MOVES3.0.2) which includes the latest version of the NONROAD model was used to develop on-road and nonroad emission factors. These emission factors were applied to estimates of vehicle miles traveled (VMT) and construction equipment (hours, horsepower, load factor), respectively, as generated in ACEIT for each construction activity and year. Emission factors generated in NONROAD assume the phasing of Tier 1, Tier 2, Tier 3, and Tier 4 engines over time based on EPA regulations¹⁶. ACEIT and MOVES3 calculations for construction and demolition are presented in **Appendix A**.



Off-Road Construction Equipment

Off-road equipment emission factors for each construction year were estimated using the EPA NONROADs within MOVES3 representative of equipment used in Travis County¹⁷ for both criteria pollutants/precursors and greenhouse gases. Emission factors in grams per horsepower (hp-hr) for each off-road equipment type were applied to the equipment size (in hp), load factor, and anticipated activity levels (in hours per year) of expected equipment use as generated in the construction equipment inventory by ACEIT. The annual emissions for off-road construction equipment were computed using the following equation:

$$\text{Off-road Vehicle Construction emissions (tons per year)} = \text{emission factor (grams per hp-hr)} \times \text{size (hp)} \times \text{load factor} \times \text{hours per year} \times (1 \text{ pound}/453.6 \text{ grams}) \times (1 \text{ ton}/2000 \text{ pounds})$$

On-Road Construction Passenger/Truck Delivery Vehicles

Vehicle miles traveled (VMT) data for each on-road employee trip and truck delivery vehicles were derived from round trip distances and the number of employee hours from the activity specific construction schedule. It is assumed that all on-road equipment will use gasoline for passenger vehicles and diesel fuel for truck deliveries. Emission factors in grams per mile (g/mile) for each on-road vehicle type were applied to the anticipated VMT. Similar to the offroad equipment, the MOVES3 model vehicle data representative of vehicles used in Travis County for both criteria pollutants/precursors and greenhouse gases was used to estimate emissions factors in grams per mile.

¹⁶ Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b (PDF) (177 pp, 15.4 MB, EPA-420-R-18-009, July 2018)

¹⁷ Construction emissions used in MOVES3 assumed a blend of Tier 1, Tier 2, Tier 3, and Tier 4 for Davidson County based on EPA phasing ratios of older equipment in future years and does not reflect the primary use of either Tier 1 thru 4 engines. MOVES emission factors are specific to Travis County as generated within MOVES for each year.

The annual emissions for on-road construction equipment and passenger/delivery vehicles were computed for each year using the following equation:

$$\text{On-road construction vehicles emissions (tons per year)} = \text{emission factor (g/mile)} \times \text{annual vehicle miles traveled (VMT)} \times (1 \text{ pound}/453.6 \text{ grams}) \times (1 \text{ ton}/2000 \text{ pounds})$$

Fugitive Dust Emissions

Fugitive dust emissions from site preparation, land clearing, equipment movement on unpaved areas, material handling, along with evaporative emissions from asphalt paving activities, were calculated using EPA emission factors and included in the total construction emissions. ACEIT default assumptions were used for each activity to estimate fugitive PM and VOC emissions.

5.2.3 Summary of Construction-Related Emissions

Construction-related emissions of criteria pollutants during the construction period 2022 to 2030 under the Proposed Action are summarized in **Table 22**. For this analysis, GHG emissions associated with the Proposed Action were prepared for disclosure purposes as carbon dioxide equivalent (CO_{2e}) in metric tons per year relevant to their global warming potential.¹⁸



Table 22. Construction Emission Inventory - Proposed Action

Source: HMMH, 2022, Based on ACEIT, MOVES3.0.2 results using construction information provided by AUS, December 2021

Year	Relevant Criteria Pollutant Emissions (tons per year)						
	CO	VOC ^{Note 1}	NO ₂ ^{Note 1}	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e} ^{Note 2}
2022	8.1	0.4	3.5	0.015	0.28	0.23	4,613
2023	31.7	2.1	11.4	0.060	1.17	0.83	17,907
2024	57.9	2.8	17.7	0.132	3.17	1.20	32,940
2025	55.4	2.5	9.8	0.114	3.75	0.51	20,702
2026	35.5	0.9	4.2	0.058	1.57	0.22	8,654
2027	20.8	0.8	2.4	0.039	1.12	0.12	7,061
2028	28.7	0.9	1.9	0.038	0.79	0.09	6,955
2029	22.7	0.6	1.2	0.022	0.28	0.05	4,051
2030	7.2	0.2	0.7	0.009	0.15	0.03	1,870

Notes:
 1. Following standard industry practice, ozone was evaluated by evaluating emissions of VOC and NO_x, which are precursors in the formation of ozone.
 2. CO_{2e} emissions are in metric tons per year equivalent relevant to their GWP.

5.2.4 Direct and Indirect Operational Emissions

Both direct and indirect operational emissions were evaluated for the Proposed Action. Direct emissions included additional aircraft operational activities and new Central Utility Plant combustion emissions, while indirect emissions included emissions associated with ground access vehicles and parking trips associated with the Proposed Action. Operational emissions were estimated for the Proposed Action for 2027 and 2032 and the net change in emissions from the Proposed Action compared to the No Action were compared to the EPA *de minimis* thresholds for significance.

¹⁸ Global warming potentials are based on the latest Intergovernmental Panel on Climate Change (IPCC), *Fifth Assessment Report (AR5)*, November 2014.

5.2.5 Aircraft Operational Activities

As discussed above, implementation of the Proposed Action would increase the number of aircraft operations and related equipment compared to the No Action alternatives, therefore aircraft operational emissions were estimated for the 2027 and 2032 for each Alternative. It should be noted that for 2027, the Proposed Action are similar and due to the No Action ground loading operations and being able to meet the TAF. The AEDT emission estimates for both the No Action and the Proposed Action cases were estimated for 2027 and 2032 using the same set of model inputs and forecast operations that were used for the noise calculations, as documented in the noise section of this memorandum. More specific, the 2032 No Action includes constrained forecast operations and AEDT default taxi times, AEDT default GSE equipment and AEDT default APU times (26 minutes). The 2032 Proposed Action assumes unconstrained forecast operations, slight changes in taxi times between the No Build and Build Action and default GSE equipment and default APU times (26 minutes). The aircraft operational emissions include emissions from the ground support equipment and auxiliary power units associated with the Proposed Action and No Action. Aircraft operations estimated for this analysis includes emissions below the default 3,000 mixing height and include:

- Start up
- Taxi Out
- Climb below the mixing height
- Descend below the mixing height
- Taxi In
- Ground Service Equipment (GSE) landing and take off (LTO); and
- Auxiliary Power Units (APU)

Table 23 provides the existing 2019 and the forecast No Action and Proposed Action operational emissions for 2027 and 2032 as calculated by the AEDT. The net change in emissions is provided in bold.



Table 23. Operational Emissions Inventory of the Forecast No Action and Proposed Action Cases

Source: HMMH, 2022

Aircraft Operations Case	Relevant Criteria Pollutant Emissions (tons per year) ^{Note 2}					
	CO	VOC ^{Note 1}	NO ₂ ^{Note 1}	SO ₂	PM ₁₀	PM _{2.5}
2019 Existing	965.1	145.373.5	732.2	67.7	11.0	10.9
2027 No Action	1,056.9	159.6	915.1	84.2	13.1	13.0
2027 Proposed Action	1,056.9	159.6	915.1	84.2	13.1	13.0
2027 Net Change (Proposed Action – No Action)	0	0	0	0	0	0
2032 No Action ^{Note 4}	1,097.7	166.6	956.3	87.6	13.4	13.4
2032 Proposed Action	1,184.4	178.1	1,062.2	96.7	14.8	14.7
2032 Net Change (Proposed Action – No Action)	+86.6	+11.5	+105.9	+9.1	+1.4	+1.4
Notes: 1. Following standard industry practice, ozone was evaluated by evaluating emissions of VOC and NO _x , which are precursors in the formation of ozone. 2. Operational emissions denote emissions associated with aircraft operations only. 3. The Proposed Action for 2032 assumed unconstrained operations, adjusted taxi times from the AEDT default to reflect a more realistic scenario based on forecast operations along with default GSE and APU operation. 4. The Proposed No Action for 2032 assumes constrained operations, default taxi times, default GSE and default APU.						



5.2.6 New Central Utility Plant Operations

The existing Central Utility Plant (CUP) will be phased out of service as the proposed projects come online. The existing CUP has two 12.25 million British thermal units (BTU) boilers that service the existing Barbara Jordan Terminal which is approximately 1,000,000 square feet. The Proposed Action will add an additional 1,500,000 square feet (sq ft) of conditioned space to be served by the future projects. The future CUP will operate five natural gas fired 12.25 million BTU to support 2,500,000 square feet of conditioned space initially. The new boilers are expected to come on-line in 2027 or soon thereafter, therefore, net change in operational emissions for 2027 was carried forward and would be representative of the net changes for the opening 2032 year to determine the total net emission change from the Proposed Action once all the projects are completed. Boiler emissions were estimated based on annual and estimated fuel usage and permitted emission factors for each boiler and are presented in **Appendix A**. The net change in operational boiler emissions are presented in bold below in

Table 24.

Table 24. Operational Emissions Inventory of the Central Utility Plant

Source: AUS, January 2022

Boiler Utility Operations Case	Relevant Criteria Pollutant Emissions (tons per year) ^{Note 2}					
	CO	VOC ^{Note 1}	NO ₂ ^{Note 1}	SO ₂	PM ₁₀	PM _{2.5}
2027 No Action	0.8208	0.0537	0.4886	.0059	0.0743	0.0743

Boiler Utility Operations Case	Relevant Criteria Pollutant Emissions (tons per year) ^{Note 2}					
	CO	VOC ^{Note 1}	NO ₂ ^{Note 1}	SO ₂	PM ₁₀	PM _{2.5}
2027 Proposed Action	2.0521	0.1344	1.2215	0.0147	.1857	.1857
2027 Net Change in Boiler Operational Emissions (No Action-Proposed Action)	+1.23	+0.08	+0.73	+0.009	+0.11	+0.11
2032 No Action	0.8208	0.0537	0.4886	.0059	0.0743	0.0743
2032 Proposed Action	2.0521	0.1344	1.2215	0.0147	.1857	.1857
2032 Net Change in Boiler Operational Emissions	+1.23	+0.08	+0.73	+0.009	+0.11	+0.11
Notes: 1. Following standard industry practice, ozone was evaluated by evaluating emissions of VOC and NO _x , which are precursors in the formation of ozone. 2. CUP Operational emissions denote emissions associated with the existing and new boilers.						



The new boilers will require an air quality permit with the Texas Commission on Environmental Quality (TCEQ) under the Permits by Rule (PBR) 106.4 in order to construct and operate the boilers.

5.2.7 Additional Ground Access Vehicles and Parking Areas

The Proposed Action will generate additional aircraft operations which will also result in an increase in passengers and vehicle trips to the airport above the No Action alternative. The additional vehicle trips accessing the airport are expected to occur after implementation of the Projects (i.e. after 2030), therefore additional vehicle trips above the No Action were estimated for the 2032 conditions and included both moving and idling emissions as they enter and leave the airport. In addition to vehicle trips from passengers, vehicle emissions associated with the new parking facilities were also estimated.

Vehicle miles traveled were estimated for the roadway network based on the roadway segment and expected passenger daily trips along each link for the 2032 conditions entering and leaving the airport from Route 71 along Presidential Boulevard. The MOVES3 emission model was used to estimate pollutant specific emission factors for each segment based on expected vehicle speeds of 30 miles per hour and average idling time of 5 minutes per hour for each vehicle. The net change (i.e. Proposed Action minus the No Action) in emissions were estimated for the ground access vehicles accessing the airport, therefore emissions associated with the additional traffic were estimated for 2032 while the 2032 No Action assumes no change to the existing traffic.

The Proposed Action Alternative also includes emissions associated with vehicles using the new parking area which is not expected to fully come on-line until sometime between 2027 and 2030. Emissions for the new parking area were estimated for 2032 using MOVES3 emissions factors while the 2032 No Action assumes no change to the existing parking facilities. Similar to the GAV, only the net change in vehicle emissions were estimated for the new parking area for 2032 while the 2032 No Action assumes no change to the existing parking. **Appendix A** includes the emission calculations for the GAV and new parking areas.

The new parking area will total approximately 3,150 additional spaces and will initially be utilized for construction activities and transition to employee surface parking by 2030. **Table 25** and **Table 26** summarizes the operational emissions along the roadways and from the parking garages, respectively, under the No Action and Proposed Action Alternative for 2032.

Table 25. Operational Emissions Inventory of the Additional Ground Access Vehicles

Source; HMMH and AUS, 2022

Ground Access Vehicles	Relevant Criteria Pollutant Emissions (tons per year) ^{Note 2}					
	CO	VOC ^{Note 1}	NO ₂ ^{Note 1}	SO ₂	PM ₁₀	PM _{2.5}
2032 No Action	N/C	N/C	N/C	N/C	N/C	N/C
2032 Proposed Action ^{Note3}	8.17	0.04	0.04	0.006	0.005	0.005
2032 Net Change (Proposed Action – No Action)	+8.17	+0.04	+0.04	+0.006	+0.005	+0.005
Notes: 1. Following standard industry practice, ozone was evaluated by evaluating emissions of VOC and NO _x , which are precursors in the formation of ozone. 2. Operational emissions denote emissions associated with additional ground vehicles passenger trips generated by the Proposed Action compared to the No Action. N/C denotes d No Action remains unchanged. 3. Proposed Action emissions represent additional ground access vehicle trips compared to the No Action.						



Table 26. Operational Emissions Inventory of the Additional Parking Areas

Source; HMMH and AUS, 2022

Parking Area Case	Relevant Criteria Pollutant Emissions (tons per year) ^{Note 2}					
	CO	VOC ^{Note 1}	NO ₂ ^{Note 1}	SO ₂	PM ₁₀	PM _{2.5}
2032 No Action	N/C	N/C	N/C	N/C	N/C	N/C
2032 Proposed Action ^{Note3}	2.66	0.011	0.012	0.002	0.002	0.001
2032 Net Change (Proposed Action – No Action)	+2.66	+0.011	+0.012	+0.002	+0.002	+0.001
Notes: 1. Following standard industry practice, ozone was evaluated by evaluating emissions of VOC and NO _x , which are precursors in the formation of ozone. 2. Operational emissions denote emissions associated with vehicles utilizing the new parking areas by the Proposed Action compared to the No Action. N/C denotes d No Action remains unchanged. 3. Proposed Action emissions represent additional vehicle associated with the new parking areas compared to the No Action.						

5.2.8 Significance Thresholds

Austin Bergstrom International Airport is located in Travis County, which is designated as attainment with the NAAQS by EPA for all criteria pollutants, therefore the General Conformity Rule does not apply. However, the emissions associated with the Proposed Action for both Construction and Operations are compared to the General Conformity *de minimis* levels for attainment/maintenance areas for determining significant impacts¹⁹.

Table 27 presents the total emissions associated with demolition and construction of the Proposed Action for each year of the construction period (2022 through 2030) compared with the appropriate *de minimis* thresholds. As the table shows, the total emissions for each construction year would be below established *de minimis* thresholds for all pollutants and would not result in a significant air quality impact. It should be noted that the CUP facility will come on-line in 2027 and therefore the CUP emissions were included in the 2027 construction and demolition emissions in **Table 27** for comparison to *de minimis* threshold.

¹⁹ emissions below the *de minimis* levels are considered not significant and have minimal emissions increase

Table 27. Total Construction and Demolition Emissions Compared to De Minimis Thresholds

Source: HMMH, 2021

Year	Relevant Criteria Pollutant Emissions (tons per year)					
	CO	VOC	NO ₂	SO ₂	PM ₁₀	PM _{2.5}
2022						
<i>Total Emissions of Construction and Demolition</i>	8.1	0.4	3.5	0.015	0.28	0.23
EPA De Minimis Threshold	100	100	100	100	100	100
<i>Emissions below de minimis thresholds?</i>	Yes	Yes	Yes	Yes	Yes	Yes
2023						
<i>Total Emissions of Construction and Demolition</i>	31.7	2.1	11.4	0.060	1.17	0.83
EPA De Minimis Threshold	100	100	100	100	100	100
<i>Emissions below de minimis thresholds?</i>	Yes	Yes	Yes	Yes	Yes	Yes
2024						
<i>Total Emissions of Construction and Demolition</i>	57.9	2.8	17.7	0.132	3.17	1.20
EPA De Minimis Threshold	100	100	100	100	100	100
<i>Emissions below de minimis thresholds?</i>	Yes	Yes	Yes	Yes	Yes	Yes
2025						
<i>Total Emissions of Construction and Demolition</i>	55.4	2.5	9.8	0.114	3.75	0.51
EPA De Minimis Threshold	100	100	100	100	100	100
<i>Emissions below de minimis thresholds?</i>	Yes	Yes	Yes	Yes	Yes	Yes
2026						
<i>Total Emissions of Construction and Demolition</i>	35.5	0.9	4.2	0.058	1.57	0.22
EPA De Minimis Threshold	100	100	100	100	100	100
<i>Emissions below de minimis thresholds?</i>	Yes	Yes	Yes	Yes	Yes	Yes
2027¹						
<i>Total Emissions of Construction and Demolition and Boiler Operations</i>	22.0	0.9	3.1	0.048	1.23	0.23
EPA De Minimis Threshold	100	100	100	100	100	100
<i>Emissions below de minimis thresholds?</i>	Yes	Yes	Yes	Yes	Yes	Yes
2028						
<i>Total Emissions of Construction and Demolition</i>	28.7	0.9	1.9	0.038	0.79	0.09
EPA De Minimis Threshold	100	100	100	100	100	100
<i>Emissions below de minimis thresholds?</i>	Yes	Yes	Yes	Yes	Yes	Yes
2029						
<i>Total Emissions of Construction and Demolition</i>	22.7	0.6	1.2	0.022	0.28	0.05
EPA De Minimis Threshold	100	100	100	100	100	100



Year	Relevant Criteria Pollutant Emissions (tons per year)					
	CO	VOC	NO ₂	SO ₂	PM ₁₀	PM _{2.5}
Emissions below de minimis thresholds?	Yes	Yes	Yes	Yes	Yes	Yes
2030						
Total Emissions of Construction and Demolition	7.2	0.2	0.67	0.009	0.15	0.03
EPA De Minimis Threshold	100	100	100	100	100	100
Emissions below de minimis thresholds?	Yes	Yes	Yes	Yes	Yes	Yes

Notes: 1. 2027 emissions includes both construction/demolition and the CUP emissions which will be on-line that year for comparison to de minimis thresholds

Table 28 presents the net change in operational emissions (aircraft, new boilers, ground access vehicles, and new parking facilities) from the implementation of the Proposed Action compared to the No Action and compares those emissions changes to the appropriate *de minimis* thresholds for significance determination for 2027 and 2032. It should be noted that the net operational emissions for 2027 also includes the construction/demolition emissions for 2027 which will be occurring when the new CUP boilers come on-line. As the table shows, the net change would be below established *de minimis* thresholds for all pollutants for 2027 and 2032 except NO_x for 2032 which is slightly above the *de minimis* threshold of 100 tpy (at 106.7 tpy) of which the aviation net operational emissions constitute 105.9 tpy of the total. It should be noted that the aircraft operations assumptions used in AEDT for the Proposed Action are conservative and do not include PCA or ground power, revised taxi times, and other low emission projects that will be undertaken at the airport to reduce fossil fuel usage and reduce air emissions. As discussed above, since the airport is located in an EPA designated attainment area for all pollutants, General Conformity does not apply. It should also be noted that the airport measures were included in the Austin Eight-Hour O₃ Flex plan that was developed approximately 10 years ago and is listed on the TCEQ website. This is voluntary initiative for the Austin MSA and includes the airport.2021 Furthermore, 106 ton per year net emission increase is a fraction of the 2016 Travis County NO_x emissions were estimate of 13,048 tons per year assuming conservative assumptions as stated above.



Table 28. Net Operational Emission Changes Compared to De Minimis Thresholds

Source: HMMH, 2022

Year	Relevant Criteria Pollutant Emissions (tons per year)					
	CO	VOC	NO ₂	SO ₂	PM ₁₀	PM _{2.5}
2027 Net Change in Aircraft Operational Emissions of the Proposed Action	No Change	No Change	No Change	No Change	No Change	No Change
Net Change in New Utility Boiler Emissions	+1.23	+0.08	+0.73	+0.009	+0.11	+0.11
Construction and Demolition	20.8	0.8	2.4	0.039	1.12	0.12
Total Aircraft, CUP, and Construction/demolition Net Emissions (TPY) ¹	+22.0	+0.88	+3.13	+0.048	+1.23	+0.23
EPA De Minimis Threshold	100	100	100	100	100	100
Emissions below de minimis thresholds?	Yes	Yes	Yes	Yes	Yes	Yes

²⁰ [Austin-Round Rock: Latest Ozone Planning Activities - Texas Commission on Environmental Quality - www.tceq.texas.gov](http://www.tceq.texas.gov)

²¹ [Austin-Round Rock and the State Implementation Plan - Texas Commission on Environmental Quality - www.tceq.texas.gov](http://www.tceq.texas.gov)

Year	Relevant Criteria Pollutant Emissions (tons per year)					
	CO	VOC	NO ₂	SO ₂	PM ₁₀	PM _{2.5}
2032 Net Change in Aircraft Operational Emissions of the Proposed Action	+86.7	+11.5	+105.9	+9.1	+1.4	+1.4
Net Change in New Utility Boiler Emissions	+1.23	+0.08	+0.73	+0.009	+0.11	+0.11
Net Change in Ground Access Vehicle Emissions	+8.20	+0.04	+0.04	+0.006	+0.005	+0.005
Net Change in Parking Area Emissions	+2.66	+0.011	+0.012	+0.002	+0.002	+0.001
Total Aircraft and Utility Boiler Net Emissions (TPY)	+98.9	+11.6	+106.7	+9.1	+1.5	+1.5
EPA De Minimis Threshold	100	100	100	100	100	100
Emissions below de minimis thresholds?	Yes	Yes	No	Yes	Yes	Yes

Notes: 1. 2027 emissions includes operational emissions and construction/demolition activity emissions for 2027 for comparison to the de minimis thresholds.



5.2.9 No Action Alternative

The No-Action Alternative assumes that the proposed action is not implemented, and air quality would remain unchanged for 2027 and 2032. Therefore, no additional air quality impacts would occur as a result of the No-Action case.

5.2.10 Mitigation

As indicated above, impacts to air quality with the implementation of the Proposed Action would not be significant for most pollutants except NO_x (which is slightly above 100 tpy), when compared to the No Action. AUS is committed to mitigation measures that were not included in the analysis which will further reduce emissions for 2032. These measures will be further developed by AUS.

5.3 Climate

Climate change is a global phenomenon that can have local impacts.²² Scientific measurements show that Earth’s climate is warming, with concurrent impacts including warmer air temperatures, increased sea level rise, increased storm activity, and an increased intensity in precipitation events. Increasing concentrations of greenhouse gas (GHG) emissions in the atmosphere affect global climate.^{23,24} GHG emissions result from anthropogenic sources, including the combustion of fossil fuels. GHGs include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and fluorinated gases.²⁵ CO₂ is the most important anthropogenic GHG because it is a long-lived gas that remains in the atmosphere for up to 100 years.

²² As explained by the EPA, “greenhouse gases, once emitted, become well mixed in the atmosphere, meaning U.S. emissions can affect not only the U.S. population and environment but other regions of the world as well; likewise, emissions in other countries can affect the United States.” U.S. Environmental Protection Agency, Climate Change Division, Office of Atmospheric Programs, *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act 2-3*, 2009, <https://www.epa.gov/ghgemissions/technical-support-document-endangerment-and-cause-or-contribute-findings-greenhouse> (accessed September 28, 2018).

²³ Intergovernmental Panel on Climate Change, *Fifth Assessment Report*, 2014, <https://www.ipcc.ch/report/ar5/syr/9> (accessed September 28, 2018).

²⁴ U.S. Global Change Research Program, *Global Climate Change Impacts in the United States*, 2009, <http://www.globalchange.gov/what-we-do/assessment/previous-assessments/global-climate-change-impacts-in-the-us-2009> (accessed September 28, 2018).

²⁵ U.S. Environmental Protection Agency, Overview of Greenhouse Gases, <http://www3.epa.gov/climatechange/ghgemissions/gases.html> (accessed February 10, 2022).

5.3.1 Regulatory Framework

The impact of proposed projects on climate change is a growing concern. Greenhouse gases (GHGs) are those that trap heat in the earth's atmosphere; these include water (H₂O) vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and O₃. Research has shown that there is a direct link between fuel combustion and GHG emissions. Therefore, sources that require fuel or power at an airport are the primary sources that would generate GHGs. Aircraft are probably the most often cited air pollutant source, but they produce the same types of emissions as cars. Per *Aviation and Emissions: A Primer*, "Aircraft jet engines, like many other vehicle engines, produce CO₂, H₂O vapor, N₂O, CO, oxides of sulfur, unburned or partially combusted hydrocarbons or VOCs, particulates, and other trace compounds."²⁶

Per FAA Order 1050.1F, the discussion of potential climate impacts should be documented in a separate section of the NEPA document, distinct from air quality²⁷. Where the proposed action or alternative(s) would result in an increase in greenhouse gases (GHG) emissions, the emissions should be assessed either qualitatively or quantitatively.

Researchers developed the Global Warming Potential (GWP) as a way to compare the global warming impacts of different gases, by converting each gas amount to a carbon dioxide equivalent (CO₂E). GWPs provide a common unit of measure, which allows for consistency when estimating emissions of these different gases. CO₂ has a GWP of one because it is the gas used as the reference point. CH₄ does not last as long in the atmosphere as CO₂; however, it absorbs much more energy. Therefore, one ton of CH₄ has 28 times more heat capturing potential than one ton of CO₂. The amount of CH₄ emissions would be multiplied by 28 to determine its CO₂E value. NO_x lasts in the atmosphere far longer than CO₂. The amount of nitrous oxides emissions would be multiplied by 298 to determine its CO₂E value.

Based on the President's recent Executive Order²⁸, the project impacts on greenhouse gas (GHG) emissions and climate change should be documented in the Environmental Assessment (EA). Although no federal standards have been set for GHG emissions, it is well established that GHG emissions can affect climate. Based on guidance from the FAA Order 1050.1F Desk Reference, state and local policies and programs that address climate change are discussed in this section. The guidance recommends consideration of: (1) the potential effects of a proposed action or its alternatives on climate change as indicated by its GHG emissions; (2) the implications of climate change for the environmental effects of a proposed action or alternatives.

5.3.2 Affected Environment

Greenhouse gases (GHG) are gases that trap heat in the earth's atmosphere. Both naturally occurring and man-made GHGs primarily include water vapor, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Activities that require fuel or power are the primary stationary sources of GHGs at airports. Aircraft and ground access vehicles, which are not under the control of an airport, typically generate more GHG emissions than airport-controlled sources.

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contribution, the Government Accountability Office (GAO) reports that "domestic aviation contributes about three percent of total carbon dioxide emissions, according to EPA data," compared with other industrial sources, including the remainder of the transportation sector (20%) and power generation (41%). The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly three percent of all anthropogenic GHG emissions globally.¹⁹ Climate change due to GHG emissions is a global phenomenon; therefore, the affected environment is the global climate.

²⁶ 14 FAA, January 2005, *Aviation and Emissions A Primer*. What emissions come from aviation?

²⁷ https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/3-climate.pdf

²⁸ Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis." January 20, 2021.

5.3.3 Analysis Methodology

For this analysis, GHG emissions associated with the Proposed Action were prepared for carbon dioxide, methane, and nitrous oxide and presented as carbon dioxide equivalent (CO₂e) in metric tons per year relevant to their global warming potential. The carbon dioxide equivalent is estimated by taking the mass equivalent of each pollutant (TPY) and multiplying by the global warming potential equivalent (GWP) of each pollutant and adding them together. For example, the GWP of CO₂ is 1, CH₄ is 28 GWP, and N₂O is 265 GWP, according to the IPCC Fifth Assessment Report²⁹.

The methodology and assumptions for the GHG analysis are consistent with the air quality analysis discussed in Section 1.2.2 and 2.2.4. GHG emissions associated with the construction and demolition activities as well as the increase in GHG emissions due to operational changes of the Proposed Action were qualitatively evaluated.

5.3.4 Environmental Consequences of Proposed Action Alternative

Table 29 presents the annual greenhouse gas emissions for demolition and construction activities while **Table 30** presents the GHG operational emissions associated with the 2019 existing and future Proposed Action and No Action for 2027 and 2032.



There are no defined significance thresholds for aviation GHG emissions, nor has FAA identified any factors to consider in making a significance determination for GHG emissions.

In summary, while there are no significance thresholds established for climate impacts, GHGs associated with the Proposed Action have been calculated in accordance with the latest FAA guidelines (1050.1F) for climate impacts in a NEPA document³⁰ and included in the emission spreadsheets in Appendix A.

Table 29. GHG Emissions Associated with Construction and Demolition for the Proposed Action

Source: HMMH 2022

Year	Greenhouse Gases (metric tons/year)			CO ₂ e (metric tons/year) ^{Note 2}
	CO ₂	CH ₄	N ₂ O	
Construction^{Note 1}				
2022	4,611	0.021	0.004	4,613
2023	17,900	0.083	0.017	17,907
2024	32,928	0.144	0.030	32,940
2025	20,689	0.143	0.032	20,702
2026	8,653	0.019	0.002	8,654
2027	7,055	0.051	0.013	7,061
2028	6,947	0.071	0.019	6,955
2029	4,046	0.057	0.014	4,051
2030	1,868	0.018	0.005	1,870

Notes: 1. Construction emissions derived from ACEIT and EPA MOVES3.
 2. Emissions are reported as metric tons of carbon dioxide equivalents to present a normalized unit of greenhouse gas emissions based on the global warming potential of each gas. CO₂e is a combination of CO₂ emissions with the CO₂-equivalent emissions of other greenhouse gases.

²⁹ <https://www.ipcc.ch/assessment-report/ar5/>

³⁰ 1050.1F Desk Reference, https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faa_nepa_order/desk_ref/media/3-climate.pdf

Table 30. GHG Emissions Associated with Operations for the Proposed Action

Source: HMMH 2022

Year	Activity	Aircraft Fuel Usage (tons)	Greenhouse Gases (metric tons/year)			CO ₂ e (metric tons/year) ^{Note 2}
			CO ₂	CH ₄	N ₂ O	
2019	Existing Conditions ^{Note1}	54,370	171,537	N/A	N/A	155,616
2027	Aircraft No Action ^{Note1}	67,596	213,262	N/A	N/A	193,468
	Aircraft Proposed Action ^{Note1}	67,596	213,262	N/A	N/A	193,468
2032	Aircraft No Action ^{Note1}	70,338	221,197	N/A	N/A	200,666
	Aircraft Proposed Action ^{Note1}	77,940	245,906	N/A	N/A	223,082
	Net Change in CUP GHGs	N/a	1596	0.06	0.04	1,608
	Net Change in GAV GHGs	N/a	915	0.52	1.41	917
	Net Change in Additional Parking GHGs	N/a	259	0.005	0.002	260

Notes: 1. GHG emissions are derived by AEDT for each condition.
 2. Emissions are reported as metric tons of carbon dioxide equivalents to present a normalized unit of greenhouse gas emissions based on the global warming potential of each gas. CO₂e is a combination of CO₂ emissions with the CO₂-equivalent emissions of other greenhouse gases.
N/A Not applicable, AEDT does not estimate CH₄ and N₂O emissions. N/A under the aircraft fuel usage does not apply to operational source

5.3.5 Environmental Consequences of No Action Alternative

The No-Action Alternative assumes that the proposed action is not implemented, and air quality would remain unchanged for 2027. Therefore, no additional air quality impacts would occur as a result of the No-Action case. For 2032, the No Action assumes hard stands are in place to address additional aircraft activity due to the constrained gates at the terminal to account for additional APU and GPU activity

6. Aircraft Noise Terminology

Noise is a complex physical quantity. The properties, measurement, and presentation of noise involve specialized terminology that can be difficult to understand. To provide a basic reference on these technical issues, this section introduces fundamentals of noise terminology, the effects of noise on human activity, and noise propagation.

6.1 Introduction to Noise Terminology

Analyses of potential impacts from changes in aircraft noise levels rely largely on a measure of cumulative noise exposure over an entire calendar year, expressed in terms of a metric called the Day-Night Average Sound Level (DNL). However, DNL does not provide an adequate description of noise for many purposes. A variety of measures, which are further described in subsequent sub-sections, are available to address essentially any issue of concern, including:



- Sound Pressure Level, SPL, and the Decibel, dB
- A-Weighted Decibel, dBA
- Maximum A-Weighted Sound Level, L_{max}
- Time Above, TA
- Sound Exposure Level, SEL
- Equivalent A-Weighted Sound Level, L_{eq}
- Day-Night Average Sound Level, DNL

6.1.1 Sound Pressure Level, SPL, and the Decibel, dB

All sounds come from a sound source – a musical instrument, a voice speaking, an airplane passing overhead. It takes energy to produce sound. The sound energy produced by any sound source travels through the air in sound waves – tiny, quick oscillations of pressure just above and just below atmospheric pressure. The ear senses these pressure variations and – with much processing in our brain – translates them into “sound.”

Our ears are sensitive to a wide range of sound pressures. The loudest sounds that we can hear without pain contain about one million times more energy than the quietest sounds we can detect. To allow us to perceive sound over this very wide range, our ear/brain “auditory system” compresses our response in a complex manner, represented by a term called sound pressure level (SPL), which we express in units called decibels (dB).

Mathematically, SPL is a logarithmic quantity based on the ratio of two sound pressures, the numerator being the pressure of the sound source of interest (P_{source}), and the denominator being a reference pressure ($P_{reference}$)³¹

$$\text{Sound Pressure Level (SPL)} = 20 * \text{Log} \left(\frac{P_{source}}{P_{reference}} \right) \text{dB}$$

The logarithmic conversion of sound pressure to SPL means that the quietest sound that we can hear (the reference pressure) has a sound pressure level of about 0 dB, while the loudest sounds

³¹ The reference pressure is approximately the quietest sound that a healthy young adult can hear.

that we hear without pain have sound pressure levels of about 120 dB. Most sounds in our day-to-day environment have sound pressure levels from about 40 to 100 dB³².

Because decibels are logarithmic quantities, we cannot use common arithmetic to combine them. For example, if two sound sources each produce 100 dB operating individually, when they operate simultaneously, they produce 103 dB -- not the 200 dB we might expect. Increasing to four equal sources operating simultaneously will add another three decibels of noise, resulting in a total SPL of 106 dB. For every doubling of the number of equal sources, the SPL goes up another three decibels.

If one noise source is much louder than another is, the louder source "masks" the quieter one and the two sources together produce virtually the same SPL as the louder source alone. For example, a 100 dB and 80 dB sources produce approximately 100 dB of noise when operating together.

Two useful "rules of thumb" related to SPL are worth noting: (1) humans generally perceive a six to 10 dB increase in SPL to be about a doubling of loudness,³³ and (2) changes in SPL of less than about three decibels for a particular sound are not readily detectable outside of a laboratory environment.



6.1.2 A-Weighted Decibel

An important characteristic of sound is its frequency, or "pitch." This is the per-second oscillation rate of the sound pressure variation at our ear, expressed in units known as Hertz (Hz).

When analyzing the total noise of any source, acousticians often break the noise into frequency components (or bands) to consider the "low," "medium," and "high" frequency components. This breakdown is important for two reasons:

- Our ear is better equipped to hear mid and high frequencies and is least sensitive to lower frequencies. Thus, we find mid- and high-frequency noise more annoying.
- Engineering solutions to noise problems differ with frequency content. Low-frequency noise is generally harder to control.

The normal frequency range of hearing for most people extends from a low of about 20 Hz to a high of about 10,000 to 15,000 Hz. Most people respond to sound most readily when the predominant frequency is in the range of normal conversation – typically around 1,000 to 2,000 Hz. The acoustical community has defined several "filters," which approximate this sensitivity of our ear and thus, help us to judge the relative loudness of various sounds made up of many different frequencies.

The so-called "A" filter ("A weighting") generally does the best job of matching human response to most environmental noise sources, including natural sounds and sound from common transportation sources. "A-weighted decibels" are abbreviated "dBA." Because of the correlation with our hearing, the U. S. Environmental Protection Agency (EPA) and nearly every other federal and state agency have adopted A-weighted decibels as the metric for use in

³² The logarithmic ratio used in its calculation means that SPL changes relatively quickly at low sound pressures and more slowly at high pressures. This relationship matches human detection of changes in pressure. We are much more sensitive to changes in level when the SPL is low (for example, hearing a baby crying in a distant bedroom), than we are to changes in level when the SPL is high (for example, when listening to highly amplified music).

³³ A "10 dB per doubling" rule of thumb is the most often used approximation.

describing environmental and transportation noise. **Figure 23** depicts A-weighting adjustments to sound from approximately 20 Hz to 10,000 Hz.

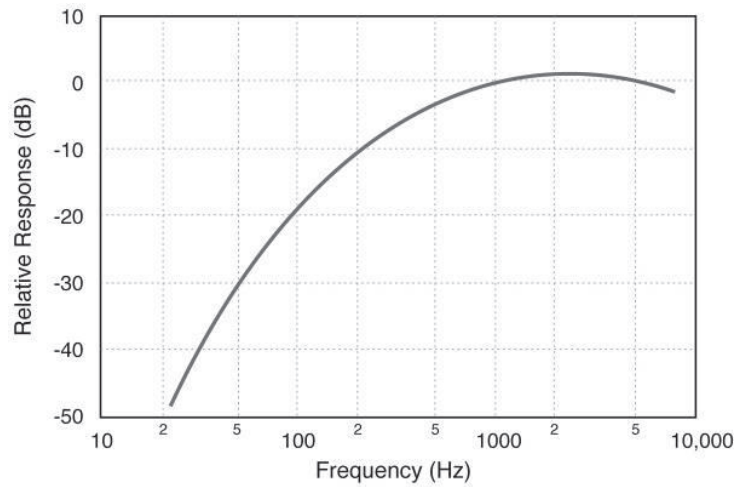


Figure 23. A-Weighting Frequency Response

Source: Extract from Harris, Cyril M., Editor, "Handbook of Acoustical Measurements and Control," McGraw-Hill, Inc., 1991, pg. 5.13; HMMH

As the figure shows, A-weighting significantly de-emphasizes noise content at lower and higher frequencies where we do not hear as well, and has little effect, or is nearly "flat," in for mid-range frequencies between 1,000 and 5,000 Hz. All sound pressure levels presented in this document are A-weighted unless otherwise specified.

Figure 24 depicts representative A-weighted sound levels for a variety of common sounds.



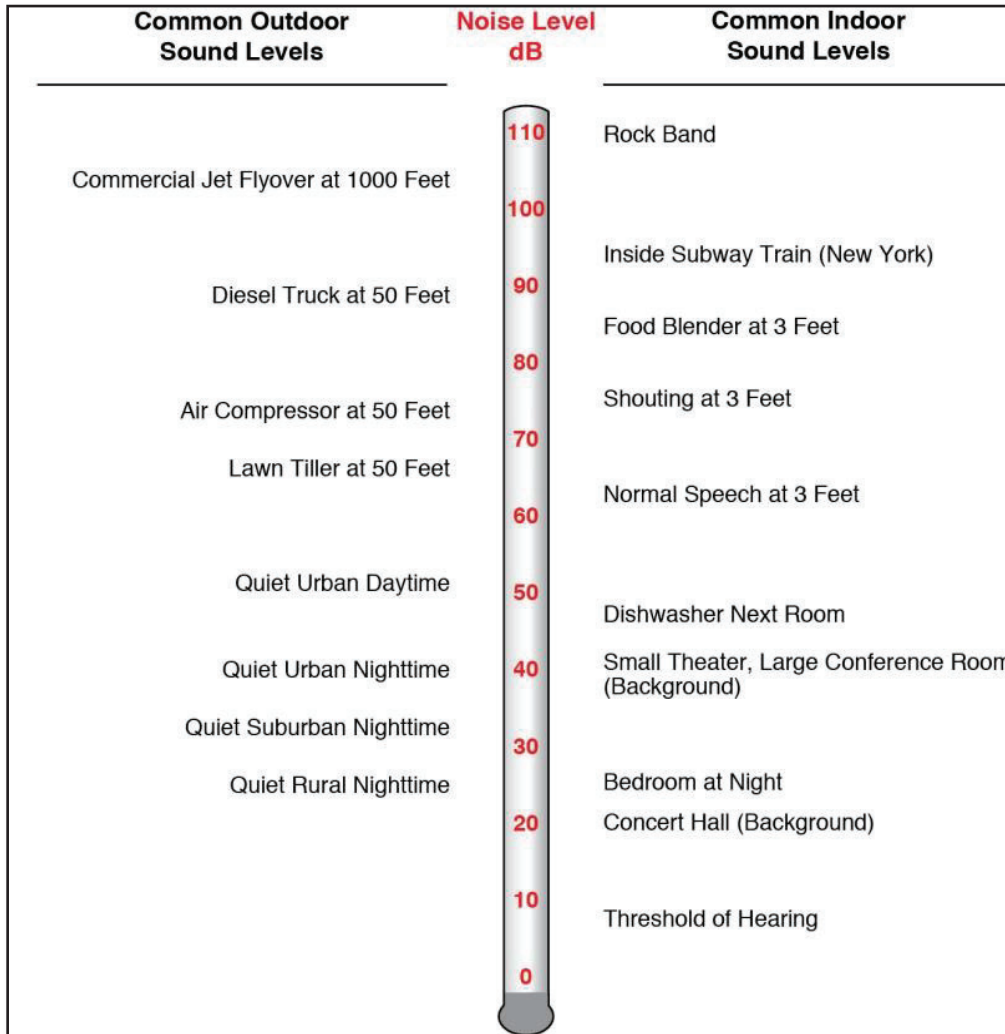


Figure 24. A-Weighted Sound Levels for Common Sounds

Source: HMMH

6.1.3 Maximum A-Weighted Sound Level, L_{max}

An additional dimension to environmental noise is that A-weighted levels vary with time. For example, the sound level increases as a car or aircraft approaches, then falls and blends into the background as the aircraft recedes into the distance. The background or “ambient” level continues to vary in the absence of a distinctive source, for example due to birds chirping, insects buzzing, leaves rustling, etc. It is often convenient to describe a particular noise "event" (such as a vehicle passing by, a dog barking, etc.) by its maximum sound level, abbreviated as L_{max} .

Figure 25 depicts this general concept, for a hypothetical noise event with an L_{max} of approximately 102 dB.

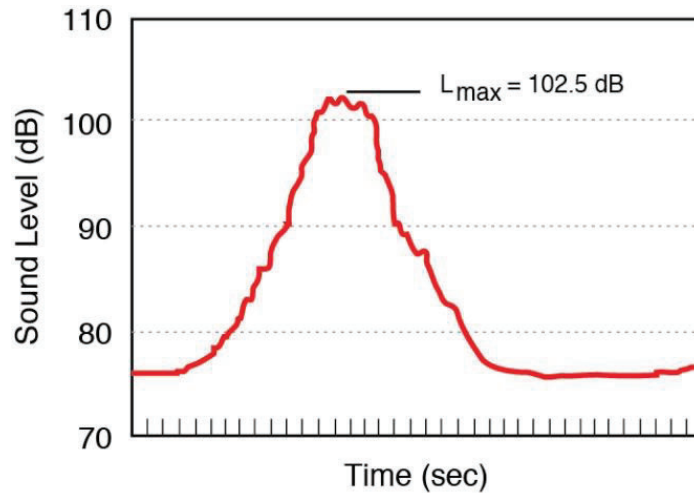


Figure 25. Variation in A-Weighted Sound Level over Time and Maximum Noise Level

Source: HMMH



While the maximum level is easy to understand, it suffers from a serious drawback when used to describe the relative “noisiness” of an event such as an aircraft flyover; i.e., it describes only one dimension of the event and provides no information on the event’s overall, or cumulative, noise exposure. In fact, two events with identical maximum levels may produce very different total exposures. One may be of very short duration, while the other may continue for an extended period and be judged much more annoying. The next section introduces a measure that accounts for this concept of a noise “dose,” or the cumulative exposure associated with an individual “noise event” such as an aircraft flyover.

6.1.4 Sound Exposure Level, SEL

The most commonly used measure of cumulative noise exposure for an individual noise event, such as an aircraft flyover, is the Sound Exposure Level, or SEL. SEL is a summation of the A-weighted sound energy over the entire duration of a noise event. SEL expresses the accumulated energy in terms of the one-second-long steady-state sound level that would contain the same amount of energy as the actual time-varying level.

SEL provides a basis for comparing noise events that generally match our impression of their overall “noisiness,” including the effects of both duration and level. The higher the SEL, the more annoying a noise event is likely to be. In simple terms, SEL “compresses” the energy for the noise event into a single second. **Figure 26** depicts this compression, for the same hypothetical event shown in **Figure 25**. Note that the SEL is higher than the L_{max} .

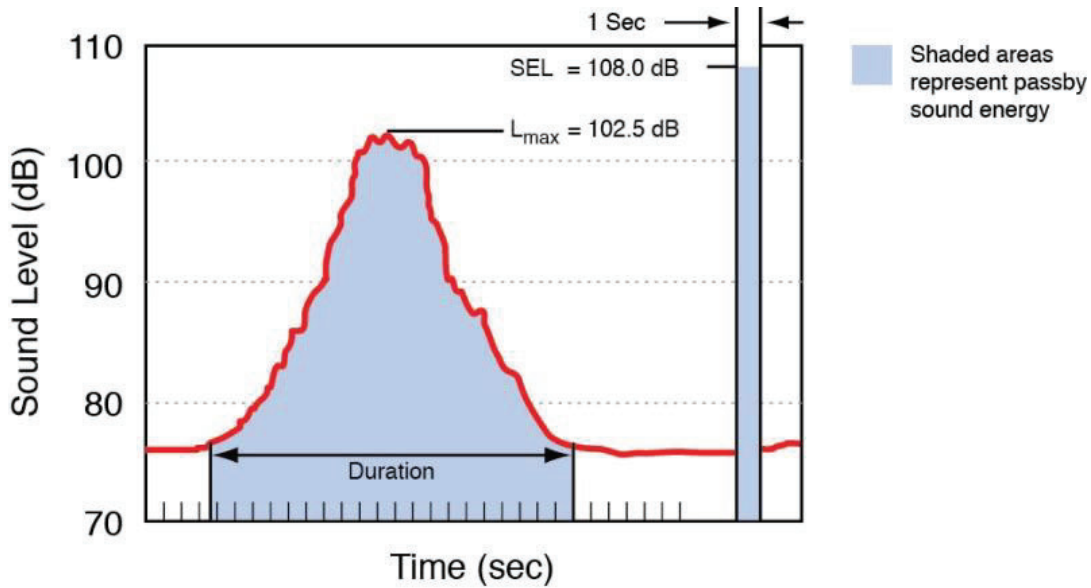


Figure 26. Graphical Depiction of Sound Exposure Level

Source: HMMH

The “compression” of energy into one second means that a given noise event’s SEL will almost always be a higher value than its L_{max} . For most aircraft flyovers, SEL is roughly five to 12 dB higher than L_{max} . Adjustment for duration means that relatively slow and quiet propeller aircraft can have the same or higher SEL than faster, louder jets, which produce shorter duration events.

6.1.5 Equivalent A-Weighted Sound Level, L_{eq}

The Equivalent Sound Level, abbreviated L_{eq} , is a measure of the exposure resulting from the accumulation of sound levels over a particular period of interest; e.g., one hour, an eight-hour school day, nighttime, or a full 24-hour day. L_{eq} plots for consecutive hours can help illustrate how the noise dose rises and falls over a day or how a few loud aircraft significantly affect some hours.

L_{eq} may be thought of as the constant sound level over the period of interest that would contain as much sound energy as the actual varying level. It is a way of assigning a single number to a time-varying sound level. **Figure 27** illustrates this concept for the same hypothetical event shown in **Figure 25** and **Figure 26**. Note that the L_{eq} is lower than either the L_{max} or SEL.



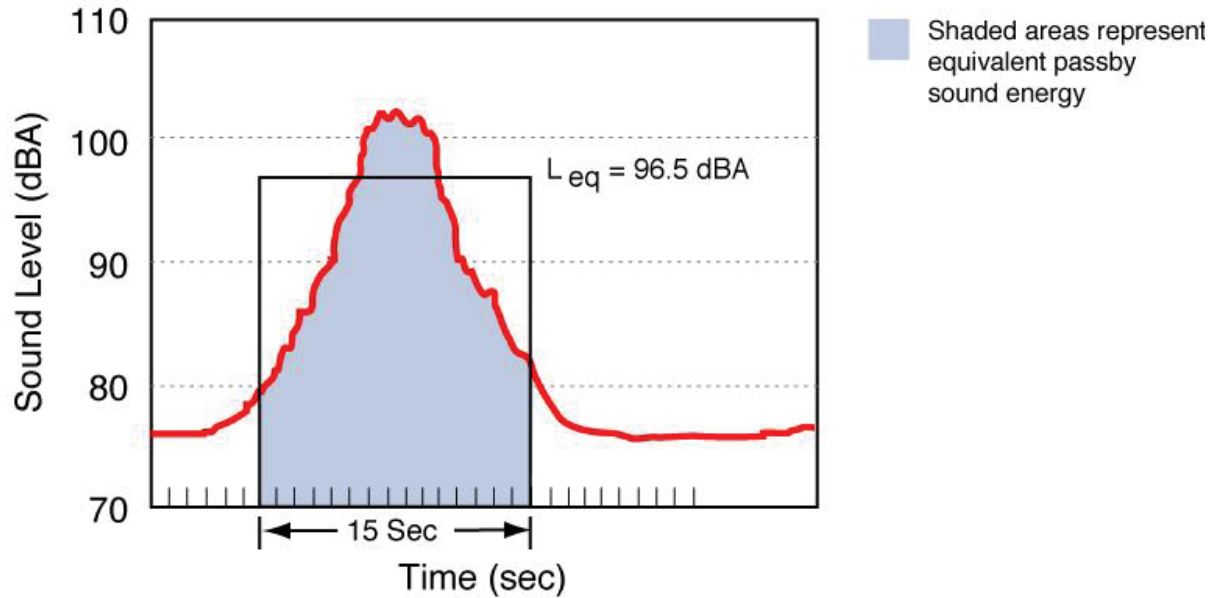


Figure 27. Example of a 15-Second Equivalent Sound Level

Source: HMMH

6.1.6 Day-Night Average Sound Level, DNL or L_{dn}

The FAA requires that airports use a measure of noise exposure that is slightly more complicated than L_{eq} to describe cumulative noise exposure – the Day-Night Average Sound Level, DNL.

The U.S. EPA identified DNL as the most appropriate means of evaluating airport noise based on the following considerations³⁴.

- The measure should be applicable to the evaluation of pervasive long-term noise in various defined areas and under various conditions over long periods.
- The measure should correlate well with known effects of the noise environment and on individuals and the public.
- The measure should be simple, practical, and accurate. In principal, it should be useful for planning as well as for enforcement or monitoring purposes.
- The required measurement equipment, with standard characteristics, should be commercially available.
- The measure should be closely related to existing methods currently in use.
- The single measure of noise at a given location should be predictable, within an acceptable tolerance, from knowledge of the physical events producing the noise.
- The measure should lend itself to small, simple monitors, which can be left unattended in public areas for long periods.

Most federal agencies dealing with noise have formally adopted DNL. The Federal Interagency Committee on Noise (FICON) reaffirmed the appropriateness of DNL in 1992. The FICON

³⁴ "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," U. S. EPA Report No. 550/9-74-004, March 1974.

summary report stated: “There are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric.”

In 2015, the FAA began a multi-year effort to update the scientific evidence on the relationship between aircraft noise exposure and its effects on communities around airports.³⁵ This was the most comprehensive study using a single noise survey ever undertaken in the United States, polling communities surrounding 20 airports nationwide. The FAA Reauthorization Act of 2018 under Section 188 and 173, required FAA to complete the evaluation of alternative metrics to the DNL standard within one year. The Section 188 and 173 Report to Congress was delivered on April 14, 2020³⁶ and concluded that while no single noise metric can cover all situations, DNL provides the most comprehensive way to consider the range of factors influencing exposure to aircraft noise. In addition, use of supplemental metrics is both encouraged and supported to further disclose and aid in the public understanding of community noise impacts. The full study supporting these reports was released in January 2021. If changes are warranted in the use of DNL, which DNL level to assess or the use of supplemental metrics, FAA will propose revised policy and related guidance and regulations, subject to interagency coordination, as well as public review and comment.



In simple terms, DNL is the 24-hour L_{eq} with one adjustment; all noises occurring at night (defined as 10 p.m. through 7 a.m.) are increased by 10 dB, to reflect the added intrusiveness of nighttime noise events when background noise levels decrease. In calculating aircraft exposure, this 10 dB increase is mathematically identical to counting each nighttime aircraft noise event ten times.

DNL can be measured or estimated. Measurements are practical only for obtaining DNL values for limited numbers of points, and, in the absence of a permanently installed monitoring system, only for relatively short periods. Most airport noise studies use computer-generated DNL estimates depicted as equal-exposure noise contours (much as topographic maps have contours of equal elevation).

The annual DNL is mathematically identical to the DNL for the average annual day; i.e., a day on which the number of operations is equal to the annual total divided by 365 (366 in a leap year). **Figure 28** graphically depicts the manner in which the nighttime adjustment applies in calculating DNL. **Figure 29** presents representative outdoor DNL values measured at various U.S. locations.

³⁵ Federal Aviation Administration. Press Release – FAA To Re-Evaluate Method for Measuring Effects of Aircraft Noise. https://www.faa.gov/news/press_releases/news_story.cfm?newsId=18774

³⁶ Federal Aviation Administration. Report to Congress on an evaluation of alternative noise metrics. https://www.faa.gov/about/plans_reports/congress/media/Day-Night_Average_Sound_Levels_COMPLETED_report_w_letters.pdf

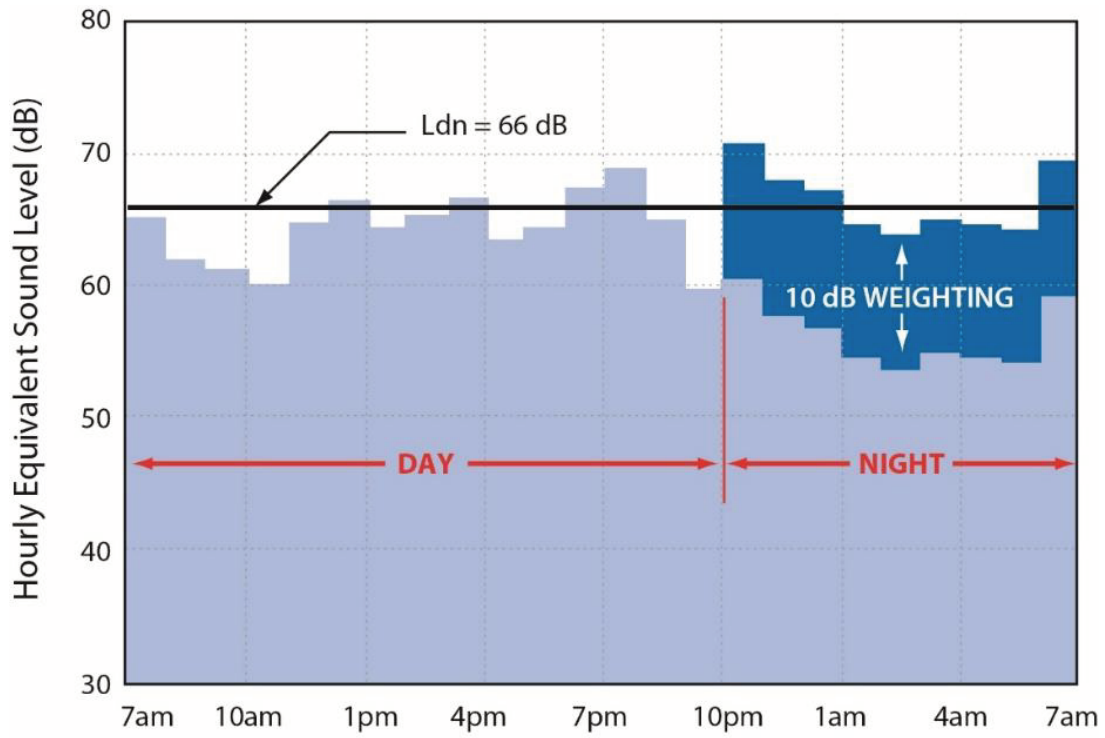


Figure 28. Example of a Day-Night Average Sound Level Calculation
Source: HMMH

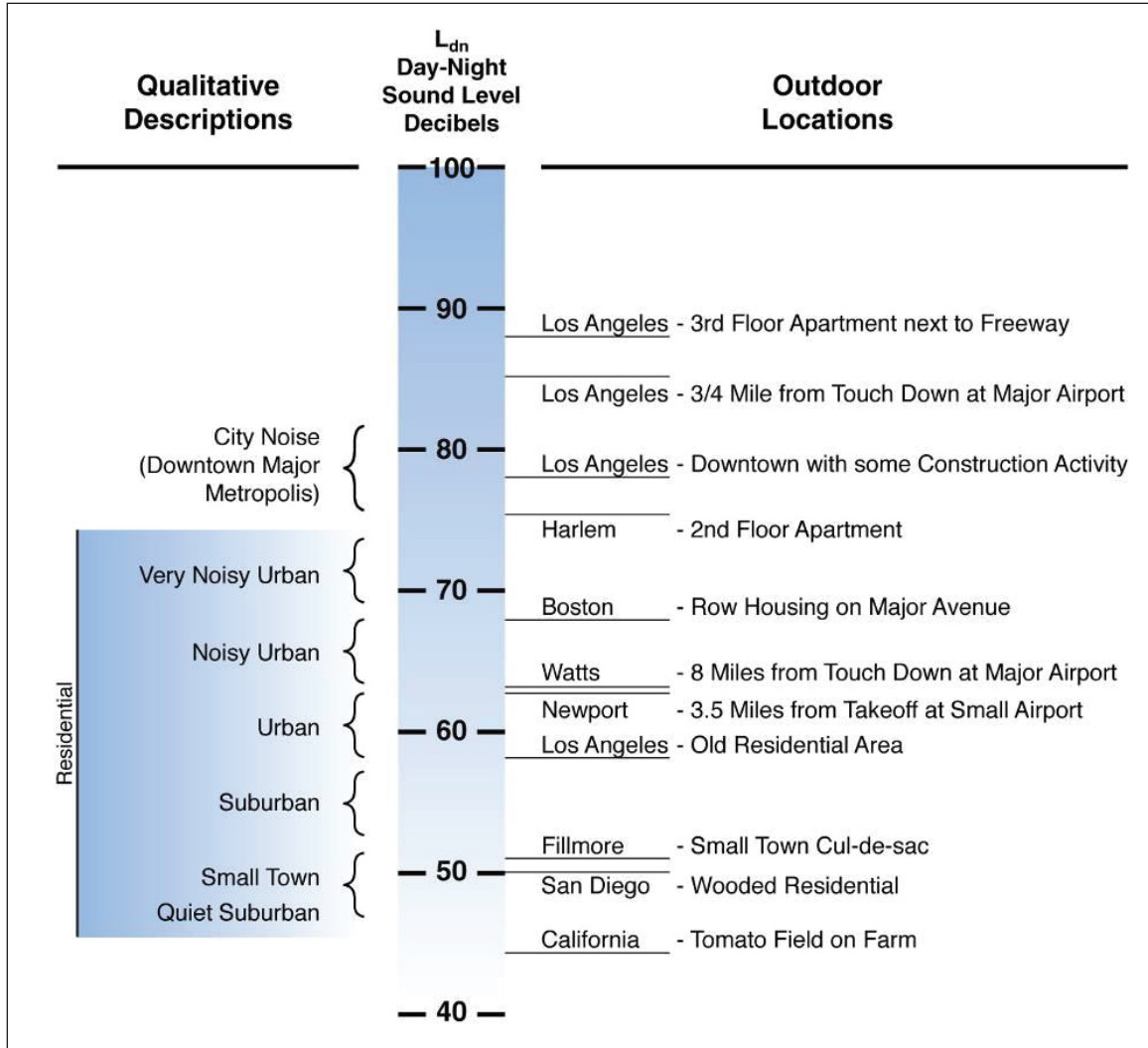


Figure 29. Examples of Measured Day-Night Average Sound Levels, DNL
 Source: U.S. Environmental Protection Agency, "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," March 1974, p.14.

6.2 Aircraft Noise Effects on Human Activity

Aircraft noise can be an annoyance and a nuisance. It can interfere with conversation and listening to television, disrupt classroom activities in schools, and disrupt sleep. Relating these effects to specific noise metrics helps in the understanding of how and why people react to their environment.

6.2.1 Speech Interference

One potential effect of aircraft noise is its tendency to "mask" speech, making it difficult to carry on a normal conversation. The sound level of speech decreases as the distance between a talker and listener increases. As the background sound level increases, it becomes harder to hear speech.

Figure 30 presents typical distances between talker and listener for satisfactory outdoor conversations, in the presence of different steady A-weighted background noise levels for raised, normal, and relaxed voice effort. As the background level increases, the talker must raise his/her voice, or the individuals must get closer together to continue talking.

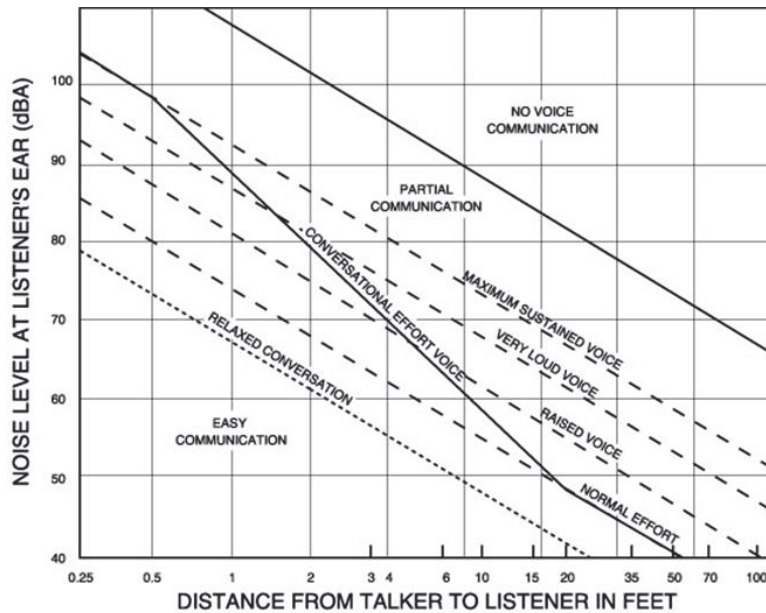


Figure 30. Outdoor Speech Intelligibility

Source: U.S. EPA, "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," March 1974, p.D-5.

Satisfactory conversation does not always require hearing every word; 95% intelligibility is acceptable for many conversations. In relaxed conversation, however, we have higher expectations of hearing speech and generally require closer to 100% intelligibility. Any combination of talker-listener distances and background noise that falls below the bottom line in the figure (which roughly represents the upper boundary of 100% intelligibility) represents an ideal environment for outdoor speech communication. Indoor communication is generally acceptable in this region as well.

One implication of the relationships in **Figure 30** is that for typical communication distances of three or four feet, acceptable outdoor conversations can be carried on in a normal voice as long as the background noise outdoors is less than about 65 dB. If the noise exceeds this level, as might occur when an aircraft passes overhead, intelligibility would be lost unless vocal effort were increased or communication distance were decreased.

Indoors, typical distances, voice levels, and intelligibility expectations generally require a background level less than 45 dB. With windows partly open, housing generally provides about 10 to 15 dB of interior-to-exterior noise level reduction. Thus, if the outdoor sound level is 60 dB or less, there is a reasonable chance that the resulting indoor sound level will afford acceptable interior conversation. With windows closed, 24 dB of attenuation is typical.



6.2.2 Sleep Interference

Research on sleep disruption from noise has led to widely varying observations. In part, this is because (1) sleep can be disturbed without awakening, (2) the deeper the sleep the more noise it takes to cause arousal, (3) the tendency to awaken increases with age, and other factors.

Figure 31 shows a summary of findings on the topic.

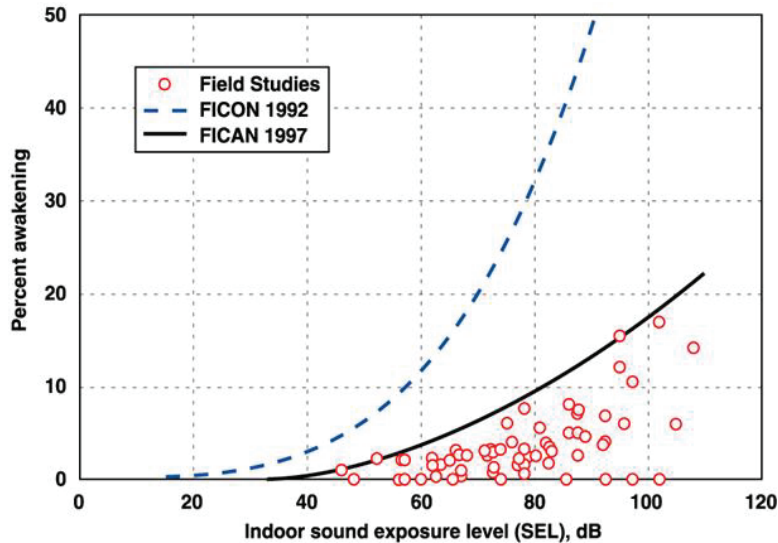


Figure 31. Sleep Interference

Source: Federal Interagency Committee on Aircraft Noise (FICAN), “Effects of Aviation Noise on Awakenings from Sleep,” June 1997, pg. 6

Figure 31 uses indoor SEL as the measure of noise exposure; current research supports the use of this metric in assessing sleep disruption. An indoor SEL of 80 dBA results in a maximum of 10% awakening.³⁷

6.2.3 Community Annoyance

Numerous psychoacoustic surveys provide substantial evidence that individual reactions to noise vary widely with noise exposure level. Since the early 1970s, researchers have determined (and subsequently confirmed) that aggregate community response is generally predictable and relates reasonably well to cumulative noise exposure such as DNL. **Figure 32** depicts the widely recognized relationship between environmental noise and the percentage of people “highly annoyed,” with annoyance being the key indicator of community response usually cited in this body of research. Separate work by the EPA showed that overall community reaction to a noise environment was also correlated with DNL. **Figure 33** depicts this relationship.

As noted above in the discussion of DNL, the full report on the FAA’s recent research, polling communities surrounding 20 airports nationwide, was released in January 2021. At the time of

³⁷ The awakening data presented in Figure A-9 apply only to individual noise events. The American National Standards Institute (ANSI) has published a standard that provides a method for estimating the number of people awakened at least once from a full night of noise events: ANSI/ASA S12.9-2008 / Part 6, “Quantities and Procedures for Description and Measurement of Environmental Sound – Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes.” This method can use the information on single events computed by a program such as the FAA’s AEDT, to compute awakenings.



this reporting, the public review and comment period on that research had ended but FAA had not yet issued new guidance.

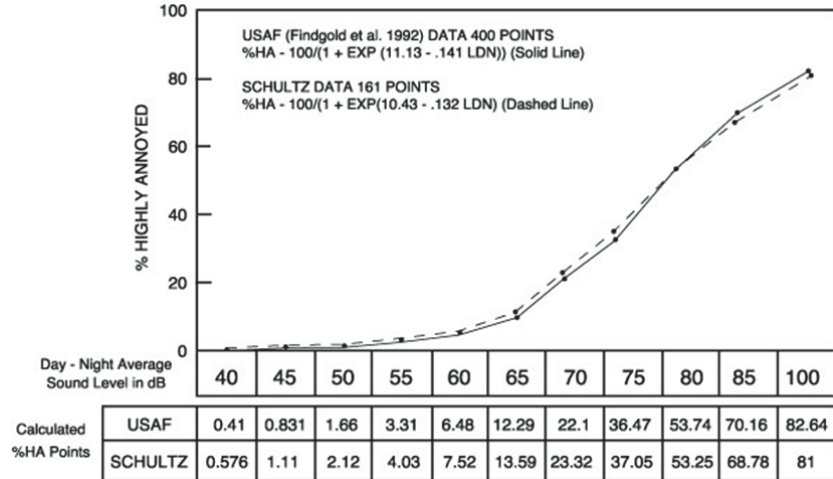


Figure 32. Percentage of People Highly Annoyed

Source: FICON, "Federal Agency Review of Selected Airport Noise Analysis Issues," September 1992

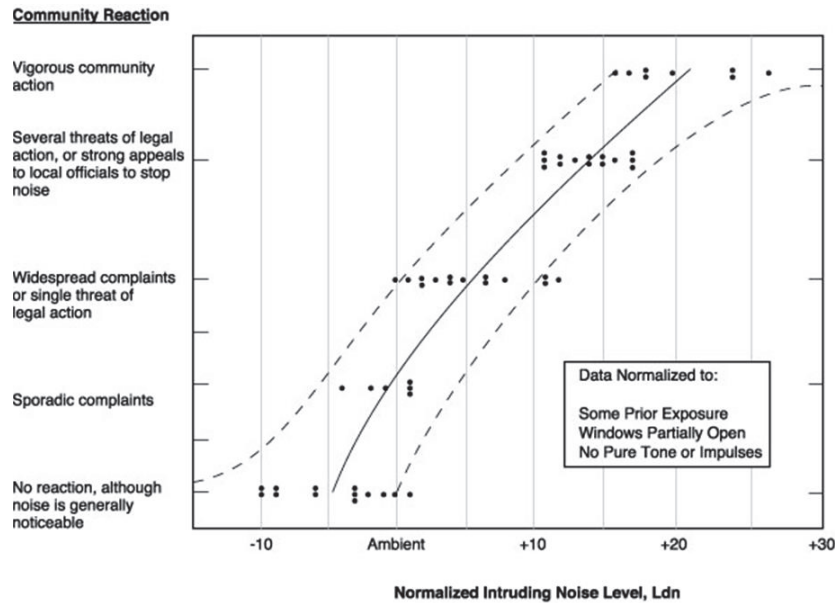


Figure 33. Community Reaction as a Function of Outdoor DNL

Source: Wyle Laboratories, *Community Noise*, prepared for the U.S. EPA, Office of Noise Abatement and Control, Washington, D.C., December 1971, pg. 63

Data summarized in the figure suggest that little reaction would be expected for intrusive noise levels five decibels below the ambient, while widespread complaints can be expected as

intruding noise exceeds background levels by about five decibels. Vigorous action is likely when levels exceed the background by 20 dB.

6.3 Noise Propagation

This section presents information sound-propagation effect due to weather, source-to-listener distance, and vegetation.

6.3.1 Weather-Related Effects

Weather (or atmospheric) conditions that can influence the propagation of sound include humidity, precipitation, temperature, wind, and turbulence (or gustiness). The effect of wind – turbulence in particular – is generally more important than the effects of other factors. Under calm-wind conditions, the importance of temperature (in particular vertical “gradients”) can increase, sometimes to very significant levels. Humidity generally has little significance relative to the other effects.



6.3.2 Influence of Humidity and Precipitation

Humidity and precipitation rarely effect sound propagation in a significant manner. Humidity can reduce propagation of high-frequency noise under calm-wind conditions. This is called “Atmospheric absorption.” In very cold conditions, listeners often observe that aircraft sound “tinny,” because the dry air increases the propagation of high-frequency sound. Rain, snow, and fog also have little if any noticeable effect on sound propagation. A substantial body of empirical data supports these conclusions.³⁸

6.3.3 Influence of Temperature

The velocity of sound in the atmosphere is dependent on the air temperature.³⁹ As a result, if the temperature varies at different heights above the ground, sound will travel in curved paths rather than straight lines. During the day, temperature normally decreases with increasing height. Under such “temperature lapse” conditions, the atmosphere refracts (“bends”) sound waves upwards and an acoustical shadow zone may exist at some distance from the noise source.

Under some weather conditions, an upper level of warmer air may trap a lower layer of cool air. Such a “temperature inversion” is most common in the evening, at night, and early in the morning when heat absorbed by the ground during the day radiates into the atmosphere.⁴⁰ The effect of an inversion is just the opposite of lapse conditions. It causes sound propagating through the atmosphere to refract downward.

The downward refraction caused by temperature inversions often allows sound rays with originally upward-sloping paths to bypass obstructions and ground effects, increasing noise levels at greater distances. This type of effect is most prevalent at night, when temperature

³⁸Ingard, Uno. “A Review of the Influence of Meteorological Conditions on Sound Propagation,” *Journal of the Acoustical Society of America*, Vol. 25, No. 3, May 1953, p. 407.

³⁹In dry air, the approximate velocity of sound can be obtained from the relationship:

$c = 331 + 0.6T_c$ (c in meters per second, T_c in degrees Celsius). Pierce, Allan D., *Acoustics: An Introduction to its Physical Principles and Applications*. McGraw-Hill. 1981. p. 29.

⁴⁰Embleton, T.F.W., G.J. Thiessen, and J.E. Piercy, “Propagation in an inversion and reflections at the ground,” *Journal of the Acoustical Society of America*, Vol. 59, No. 2, February 1976, p. 278.

inversions are most common and when wind levels often are very low, limiting any confounding factors.⁴¹ Under extreme conditions, one study found that noise from ground-borne aircraft might be amplified 15 to 20 dB by a temperature inversion. In a similar study, noise caused by an aircraft on the ground registered a higher level at an observer location 1.8 miles away than at a second observer location only 0.2 miles from the aircraft.⁴²

6.3.4 Influence of Wind

Wind has a strong directional component that can lead to significant variation in propagation. In general, receivers that are downwind of a source will experience higher sound levels, and those that are upwind will experience lower sound levels. Wind perpendicular to the source-to-receiver path has no significant effect.

The refraction caused by wind direction and temperature gradients is additive.⁴³ One study suggests that for frequencies greater than 500 Hz, the combined effects of these two factors tends towards two extreme values: approximately 0 dB in conditions of downward refraction (temperature inversion or downwind propagation) and -20 dB in upward refraction conditions (temperature lapse or upwind propagation). At lower frequencies, the effects of refraction due to wind and temperature gradients are less pronounced.⁴⁴

Wind turbulence (or “gustiness”) can also affect sound propagation. Sound levels heard at remote receiver locations will fluctuate with gustiness. In addition, gustiness can cause considerable attenuation of sound due to effects of eddies traveling with the wind. Attenuation due to eddies is essentially the same in all directions, with or against the flow of the wind, and can mask the refractive effects discussed above.⁴⁵

6.3.5 Distance-Related Effects

People often ask how distance from an aircraft to a listener affects sound levels. Changes in distance may be associated with varying terrain, offsets to the side of a flight path, or aircraft altitude. The answer is a bit complex because distance affects the propagation of sound in several ways.

The principal effect results from the fact that any emitted sound expands in a spherical fashion – like a balloon – as the distance from the source increases, resulting in the sound energy being spread out over a larger volume. With each doubling of distance, spherical spreading reduces instantaneous or maximum level by approximately six decibels and SEL by approximately three decibels.

⁴¹Ingard, p. 407.

⁴²Dickinson, P.J., “Temperature Inversion Effects on Aircraft Noise Propagation,” (Letters to the Editor) *Journal of Sound and Vibration*. Vol. 47, No. 3, 1976, p. 442.

⁴³Piercy and Embleton, p. 1412. Note, in addition, that as a result of the scalar nature of temperature and the vector nature of wind, the following is true: under lapse conditions, the refractive effects of wind and temperature add in the upwind direction and cancel each other in the downwind direction. Under inversion conditions, the opposite is true.

⁴⁴Piercy and Embleton, p. 1413.

⁴⁵Ingard, pp. 409-410.

6.3.6 Vegetation-Related Effects

Sound can be scattered and absorbed as it travels through vegetation. This results in a decrease in sound levels. The literature on the effect of vegetation on sound propagation contains several approaches to calculating its effect. Though these approaches differ in some aspects, they agree on the following:

- The vegetation must be dense and deep enough to block the line of sight
- The noise reduction is greatest at high frequencies and least at low frequencies

The International Standard ISO 9613-2⁴⁶ provides a useful example of the types of calculations employed in these methods. Originally developed for industrial noise sources, ISO 9613-2 is well-suited for the evaluation of ground-based aircraft noise sources under favorable meteorological conditions for sound propagation. ISO 9613-2's methodology for calculating sound propagation includes geometric dispersion from acoustical point sources, atmospheric absorption, the effects of areas of hard and soft ground, screening due to barriers, and reflections. The attenuation provided by dense foliage varies by octave band and by distance as shown in **Table 31**.



For propagation through less than 10 m of dense foliage, no attenuation is assumed. For propagation through 10 m to 20 m of dense foliage, the total attenuation is shown in the first row of **Table 31**. For distances between 20 m and 200 m, the total attenuation is computed by multiplying the distance of propagation through dense foliage by the dB/m values shown in the second row of **Table 31**.

Table 31. Dense Foliage Noise Attenuation

Source: ISO 9613-2, Table A.1

Propagation Distance	Nominal Midband Frequency (Hz)							
	63	125	250	500	1,000	2,000	4,000	8,000
10 m to 20 m (dB Attenuation)	0	0	1	1	1	1	2	3
20 m to 200 m (dB/m Attenuation)	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.12

ISO 9613-2 assumes a moderate downwind condition. The equations in the ISO Standard also hold, equivalently, for average propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs on clear, calm nights. In either case, the sound is refracted downward. The radius of this curved path is assumed to be 5 km. With this curved sound path, only portions of the sound path may travel through the dense foliage, as illustrated by **Figure 34**. Thus, the relative locations of the source and receiver, the dimensions of the volume of dense foliage, and the contours of the intervening terrain are essential to the estimation of the noise attenuation.

⁴⁶ International Organization for Standardization, Acoustics – Attenuation of sound during propagation outdoors – Part 2: General Method of calculation, International Standard ISO9613-2, Geneva, Switzerland (15 December 1996).

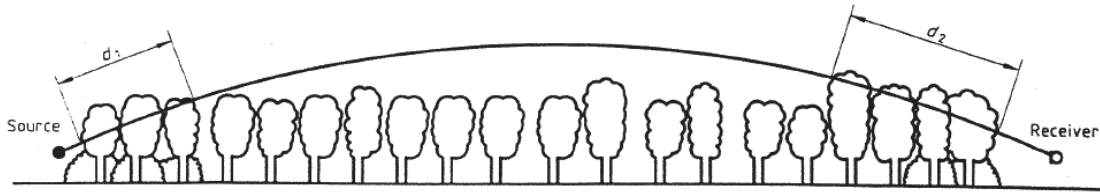


Figure 34. Downward Refracting Sound Path

source: ISO 9613-2

As illustrated in **Figure 34**, the foliage only provides attenuation if the sound path passes through the foliage. For aircraft in the air, the sound will pass through little, if any foliage. Additionally, either the noise source or receiver must be near the foliage for it to have an effect.



Appendix A – Emissions Calculations



STUDY

Study Name

Austin Airport

Study Description

Construction Schedule 2022

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton
 Units for greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

Scenario ID	Year	Project	Construct/Equipment	Fuel	Movers/Loaders/Forklifts/Diesel	HP Average Load Factor/Hours of A CO	NONROAD Emission Factors g/HP-hr											NOx	CO2	SO2	PM10	PM2.5	VOC	11	NONROAD Emissions (TPY)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
							3	6	9	12	15	18	21	24	27	30	33								36	39	42	45	48	51	54	57	60	63	66	69	72	75	78	81	84	87	90	93	96	99	102	105	108	111	114	117	120	123	126	129	132	135	138	141	144	147	150	153	156	159	162	165	168	171	174	177	180	183	186	189	192	195	198	201	204	207	210	213	216	219	222	225	228	231	234	237	240	243	246	249	252	255	258	261	264	267	270	273	276	279	282	285	288	291	294	297	300	303	306	309	312	315	318	321	324	327	330	333	336	339	342	345	348	351	354	357	360	363	366	369	372	375	378	381	384	387	390	393	396	399	402	405	408	411	414	417	420	423	426	429	432	435	438	441	444	447	450	453	456	459	462	465	468	471	474	477	480	483	486	489	492	495	498	501	504	507	510	513	516	519	522	525	528	531	534	537	540	543	546	549	552	555	558	561	564	567	570	573	576	579	582	585	588	591	594	597	600	603	606	609	612	615	618	621	624	627	630	633	636	639	642	645	648	651	654	657	660	663	666	669	672	675	678	681	684	687	690	693	696	699	702	705	708	711	714	717	720	723	726	729	732	735	738	741	744	747	750	753	756	759	762	765	768	771	774	777	780	783	786	789	792	795	798	801	804	807	810	813	816	819	822	825	828	831	834	837	840	843	846	849	852	855	858	861	864	867	870	873	876	879	882	885	888	891	894	897	900	903	906	909	912	915	918	921	924	927	930	933	936	939	942	945	948	951	954	957	960	963	966	969	972	975	978	981	984	987	990	993	996	999	1002	1005	1008	1011	1014	1017	1020	1023	1026	1029	1032	1035	1038	1041	1044	1047	1050	1053	1056	1059	1062	1065	1068	1071	1074	1077	1080	1083	1086	1089	1092	1095	1098	1101	1104	1107	1110	1113	1116	1119	1122	1125	1128	1131	1134	1137	1140	1143	1146	1149	1152	1155	1158	1161	1164	1167	1170	1173	1176	1179	1182	1185	1188	1191	1194	1197	1200	1203	1206	1209	1212	1215	1218	1221	1224	1227	1230	1233	1236	1239	1242	1245	1248	1251	1254	1257	1260	1263	1266	1269	1272	1275	1278	1281	1284	1287	1290	1293	1296	1299	1302	1305	1308	1311	1314	1317	1320	1323	1326	1329	1332	1335	1338	1341	1344	1347	1350	1353	1356	1359	1362	1365	1368	1371	1374	1377	1380	1383	1386	1389	1392	1395	1398	1401	1404	1407	1410	1413	1416	1419	1422	1425	1428	1431	1434	1437	1440	1443	1446	1449	1452	1455	1458	1461	1464	1467	1470	1473	1476	1479	1482	1485	1488	1491	1494	1497	1500	1503	1506	1509	1512	1515	1518	1521	1524	1527	1530	1533	1536	1539	1542	1545	1548	1551	1554	1557	1560	1563	1566	1569	1572	1575	1578	1581	1584	1587	1590	1593	1596	1599	1602	1605	1608	1611	1614	1617	1620	1623	1626	1629	1632	1635	1638	1641	1644	1647	1650	1653	1656	1659	1662	1665	1668	1671	1674	1677	1680	1683	1686	1689	1692	1695	1698	1701	1704	1707	1710	1713	1716	1719	1722	1725	1728	1731	1734	1737	1740	1743	1746	1749	1752	1755	1758	1761	1764	1767	1770	1773	1776	1779	1782	1785	1788	1791	1794	1797	1800	1803	1806	1809	1812	1815	1818	1821	1824	1827	1830	1833	1836	1839	1842	1845	1848	1851	1854	1857	1860	1863	1866	1869	1872	1875	1878	1881	1884	1887	1890	1893	1896	1899	1902	1905	1908	1911	1914	1917	1920	1923	1926	1929	1932	1935	1938	1941	1944	1947	1950	1953	1956	1959	1962	1965	1968	1971	1974	1977	1980	1983	1986	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016	2019	2022	2025	2028	2031	2034	2037	2040	2043	2046	2049	2052	2055	2058	2061	2064	2067	2070	2073	2076	2079	2082	2085	2088	2091	2094	2097	2100	2103	2106	2109	2112	2115	2118	2121	2124	2127	2130	2133	2136	2139	2142	2145	2148	2151	2154	2157	2160	2163	2166	2169	2172	2175	2178	2181	2184	2187	2190	2193	2196	2199	2202	2205	2208	2211	2214	2217	2220	2223	2226	2229	2232	2235	2238	2241	2244	2247	2250	2253	2256	2259	2262	2265	2268	2271	2274	2277	2280	2283	2286	2289	2292	2295	2298	2301	2304	2307	2310	2313	2316	2319	2322	2325	2328	2331	2334	2337	2340	2343	2346	2349	2352	2355	2358	2361	2364	2367	2370	2373	2376	2379	2382	2385	2388	2391	2394	2397	2400	2403	2406	2409	2412	2415	2418	2421	2424	2427	2430	2433	2436	2439	2442	2445	2448	2451	2454	2457	2460	2463	2466	2469	2472	2475	2478	2481	2484	2487	2490	2493	2496	2499	2502	2505	2508	2511	2514	2517	2520	2523	2526	2529	2532	2535	2538	2541	2544	2547	2550	2553	2556	2559	2562	2565	2568	2571	2574	2577	2580	2583	2586	2589	2592	2595	2598	2601	2604	2607	2610	2613	2616	2619	2622	2625	2628	2631	2634	2637	2640	2643	2646	2649	2652	2655	2658	2661	2664	2667	2670	2673	2676	2679	2682	2685	2688	2691	2694	2697	2700	2703	2706	2709	2712	2715	2718	2721	2724	2727	2730	2733	2736	2739	2742	2745	2748	2751	2754	2757	2760	2763	2766	2769	2772	2775	2778	2781	2784	2787	2790	2793	2796	2799	2802	2805	2808	2811	2814	2817	2820	2823	2826	2829	2832	2835	2838	2841	2844	2847	2850	2853	2856	2859	2862	2865	2868	2871	2874	2877	2880	2883	2886	2889	2892	2895	2898	2901	2904	2907	2910	2913	2916	2919	2922	2925	2928	2931	2934	2937	2940	2943	2946	2949	2952	2955	2958	2961	2964	2967	2970	2973	2976	2979	2982	2985	2988	2991	2994	2997	3000	3003	3006	3009	3012	3015	3018	3021	3024	3027	3030	3033	3036	3039	3042	3045	3048	3051	3054	3057	3060	3063	3066	3069	3072	3075	3078	3081	3084	3087	3090	3093	3096	3099	3102	3105	3108	3111	3114	3117	3120	3123	3126	3129	3132	3135	3138	3141	3144	3147	3150	3153	3156	3159	3162	3165	3168	3171	3174	3177	3180	3183	3186	3189	3192	3195	3198	3201	3204	3207	3210	3213	3216	3219	3222	3225	3228	3231	3234	3237	3240	3243	3246	3249	3252	3255	3258	3261	3264	3267	3270	3273	3276	3279	3282	3285	3288	3291	3294	3297	3300	3303	3306	3309	3312	3315	3318	3321	3324	3327	3330	3333	3336	3339	3342	3345	3348	3351	3354	3357	3360	3363	3366	3369	3372	3375	3378	3381	3384	3387	3390	3393	3396	3399	3402	3405	3408	3411	3414	3417	3420	3423	3426	3429	3432	3435	3438	3441	3444	3447	3450	3453	3456	3459	3462	3465	3468	3471	3474	3477	3480	3483	3486	3489	3492	3495	3498	3501	3504	3507	3510	3513	3516	3519	3522	3525	3528	3531	3534	3537	3540	3543	3546	3549	3552	3555	3558	3561	3564	3567	3570

3	2022 Building - Material M	9	0	0	0	0.00895	0
3	2022 Building - Material M	9	0	0	0	0.02645	0
Totals			0	0	0	0.04395	0

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2022 Totals												
Year	Emission	SCO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO2e	
2022	NonRoad	1.37913	3.206988		0.010574057	0.234496354	0.2274615	0.242986	3904.888	--	--	
2022	OnRoad	6.720377	0.243207		0.004676289	0.005206482	0.004614206	0.123834	706.1614	0.021055	0.00418	
2022	Fugitive	0	0		0	0.04395	--	0	--	--	--	
2022	TOTAL	8.099507	3.450195		0.015250346	0.283652836	0.232075706	0.366819	4611.049	0.021055	0.00418	4612.746

ASSUMPTIONS

Emission factors were developed from the following models:

On-Road Vehicles: MOVES3.0.2, revised September 2021

Non-Road Equipment: MOVES3.0.2 September 2021

In addition to the overall project size dimensions (e.g., Length and width) provided by the user, an additional 10 ft length and 10 ft width is added to account for disturbance areas.

The number of employees is based on the higher of two methods: (1) number of equipment, and (2) multiply the project cost in million by 11.

The average employee travels 30 miles round-trip from home to construction site each day.

The average on-road material delivery round-trip distance per truck is 40 miles per day.

For calculating fugitive, re-entrained PM emissions from on-road and non-road material delivery and handling equipment, a nominal VMT of 5 miles is used for each vehicle per day.

In deriving emission factors from NONROAD, the horsepower for each equipment represents the most popular in each equipment category.

The total length of each modeled scenario is used to define the number of days associated with vehicle/equipment evaporative emissions.

The choice of location and season are assumed to adequately represent differences in fuel characteristics affecting emissions.

Only two seasons (Summer and Winter) are used to represent all seasons.

14 U.S. Counties are used to represent all other counties in the U.S. (all other counties are mapped to the 14).

The default methods assume that all construction equipment use diesel as well as heavy-duty on-road vehicles, while passenger vehicles (including motorcycles) use gasoline.

Fugitive emissions are only modeled for:

- Asphalt drying
- Asphalt storage and batching
- Concrete mixing/batching
- Soil handling
- Unstabilized land and wind erosion
- Material movement (unpaved roads)
- Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the asphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO2, CH4, and N2O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 cy)

Emissions Factors (g/mile)										MOVES ONROAD Emissions (tpy)								
12	14	5	8	9	7	10	13	11	12	14	5	8	9					
PM2.5	VOC	CO2	CH4	N2O	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O					
0.052322	0.154556	1072.698	0.018641	0.003286	0	0	0	0	0	0	0	0	0					
0.002136	0.059875	341.0253	0.010196	0.002025	0.0536	0.001868	3.72E-05	3.97E-05	3.51E-05	0.000983	5.601179	0.000167	3.33E-05					
0.052322	0.154556	1072.698	0.018641	0.003286	0	0	0	0	0	0	0	0	0					
0.002136	0.059875	341.0253	0.010196	0.002025	0.131177	0.004571	9.11E-05	9.7E-05	8.58E-05	0.002407	13.70785	0.00041	8.14E-05					
0.052322	0.154556	1072.698	0.018641	0.003286	0.003528	0.005521	9.18E-06	0.000145	0.000133	0.000394	2.735015	4.75E-05	8.38E-06					
0.052322	0.154556	1072.698	0.018641	0.003286	0.001881	0.002943	4.9E-06	7.73E-05	7.11E-05	0.00021	1.457965	2.53E-05	4.47E-06					
0.002136	0.059875	341.0253	0.010196	0.002025	6.529779	0.227517	0.004533	0.004831	0.004273	0.119802	682.3532	0.020401	0.004052					
0.086838	0.209892	1735.582	0.02366	0.002802	0.000412	0.000788	1.03E-06	1.66E-05	1.53E-05	3.7E-05	0.306106	4.17E-06	4.94E-07					
					6.720377	0.243207	0.004676	0.005206	0.004614	0.123834	706.1614	0.021055	0.00418					

4	2023	Access Ro:Concrete F	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	22.2	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.000633	0.001951	4.650097	1.24E-05	0.000134	0.00013	0.000137
4	2023	Access Ro:Concrete F	Other General Equipment	Other Construction Equipment17	Diesel	175	0.43	10.656	0.30314	0.935436	536.6725	0.00151	0.073779	0.071565	0.054797	0.000268	0.000827	0.474369	1.34E-06	6.52E-05	6.33E-05	4.84E-05
4	2023	Access Ro:Concrete F	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	15.984	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.000456	0.001405	3.34807	8.94E-06	9.67E-05	9.38E-05	9.88E-05
4	2023	Access Ro:Concrete F	Rubber Tired Loader	Tractors/Loaders/Backhoes175	Diesel	175	0.59	5.328	1.177854	2.091966	625.6269	0.001906	0.256407	0.248715	0.31546	0.000714	0.001269	0.379382	1.16E-06	0.000155	0.000151	0.000191
4	2023	Access Ro:Concrete F	Slip Form Paver	Pavers175	Diesel	175	0.59	5.328	0.209737	0.546697	536.7345	0.001474	0.052645	0.051065	0.03349	0.000127	0.000332	0.325477	8.94E-07	3.19E-05	3.1E-05	2.03E-05
4	2023	Access Ro:Concrete F	Surface Equipment (Grooving)	Other Construction Equipment25	Diesel	25	0.59	5.328	1.499691	3.765005	595.1478	0.002188	0.172084	0.166922	0.352846	0.00013	0.000326	0.051557	1.9E-07	1.49E-05	1.45E-05	3.06E-05
4	2023	Access Ro:Curbing	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	48	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.001369	0.004219	10.05426	2.68E-05	0.00029	0.000282	0.000297
4	2023	Access Ro:Curbing	Curb/Gutter Paver	Pavers175	Diesel	175	0.59	48	0.209737	0.546697	536.7345	0.001474	0.052645	0.051065	0.03349	0.001146	0.002987	2.932225	8.05E-06	0.000288	0.000279	0.000183
4	2023	Access Ro:Curbing	Other General Equipment	Other Construction Equipment17	Diesel	175	0.43	48	0.30314	0.935436	536.6725	0.00151	0.073779	0.071565	0.054797	0.001521	0.003725	2.136799	6.01E-06	0.000294	0.000285	0.000218
4	2023	Access Ro:Curbing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	48	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.001369	0.004219	10.05426	2.68E-05	0.00029	0.000282	0.000297
4	2023	Access Ro:Drainage	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	38.72	0.173769	0.459721	536.7568	0.00146	0.044767	0.043424	0.025781	0.000766	0.002026	2.365427	6.44E-06	0.000197	0.000191	0.000114
4	2023	Access Ro:Drainage	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	38.72	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.001104	0.003403	8.110439	2.16E-05	0.000234	0.000227	0.000239
4	2023	Access Ro:Drainage	Excavator	Excavators175	Diesel	175	0.59	38.72	0.114838	0.351797	536.7809	0.001438	0.028734	0.027872	0.01734	0.000506	0.00155	2.365533	6.34E-06	0.000127	0.000123	7.64E-05
4	2023	Access Ro:Drainage	Loader	Tractors/Loaders/Backhoes175	Diesel	175	0.59	38.72	1.177854	2.091966	625.6269	0.001906	0.256407	0.248715	0.31546	0.0005191	0.009219	2.757067	8.4E-06	0.00113	0.001096	0.00139
4	2023	Access Ro:Drainage	Other General Equipment	Other Construction Equipment17	Diesel	175	0.43	38.72	0.30314	0.935436	536.6725	0.00151	0.073779	0.071565	0.054797	0.000974	0.003004	1.723684	4.85E-06	0.000237	0.00023	0.000176
4	2023	Access Ro:Drainage	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	38.72	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.001104	0.003403	8.110439	2.16E-05	0.000234	0.000227	0.000239
4	2023	Access Ro:Drainage	Roller	Rollers100	Diesel	100	0.59	38.72	0.504707	1.277084	596.0359	0.001638	0.076422	0.074129	0.042273	0.001271	0.003216	1.50095	4.12E-06	0.000192	0.000187	0.000106
4	2023	Access Ro:Drainage	Dump Truck	Off-highway Trucks600	Diesel	600	0.59	21.51111	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.000614	0.001891	4.5058	1.2E-05	0.00013	0.000126	0.000133
4	2023	Access Ro:Drainage	Loader	Tractors/Loaders/Backhoes175	Diesel	175	0.59	21.51111	1.177854	2.091966	625.6269	0.001906	0.256407	0.248715	0.31546	0.002884	0.005122	1.531704	4.67E-06	0.000132	0.000069	0.000072
4	2023	Access Ro:Drainage	Other General Equipment	Other Construction Equipment17	Diesel	175	0.43	21.51111	0.30314	0.935436	536.6725	0.00151	0.073779	0.071565	0.054797	0.000541	0.001669	0.957602	2.69E-06	0.000132	0.000128	9.78E-05
4	2023	Access Ro:Drainage	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	21.51111	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.000614	0.001891	4.5058	1.2E-05	0.00013	0.000126	0.000133
4	2023	Access Ro:Drainage	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	21.51111	2.836111	7.282112	694.7262	0.002118	0.374745	0.363503	0.436618	0.001412	0.001385	0.345941	1.05E-06	0.000187	0.000181	0.000137
4	2023	Access Ro:Dust Contr	Water Truck	Off-highway Trucks600	Diesel	600	0.59	2880	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.002144	0.025143	603.2558	0.00161	0.017422	0.016899	0.017798
4	2023	Access Ro:Excavation	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	8.88	0.173769	0.459721	536.7568	0.00146	0.044767	0.043424	0.025781	0.000176	0.000465	0.542484	1.48E-06	4.52E-05	4.39E-05	2.61E-05
4	2023	Access Ro:Excavation	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	8.88	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.000253	0.000781	1.860039	4.96E-06	5.37E-05	5.21E-05	5.49E-05
4	2023	Access Ro:Excavation	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	8.88	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.000253	0.000781	1.860039	4.96E-06	5.37E-05	5.21E-05	5.49E-05
4	2023	Access Ro:Excavation	Roller	Rollers100	Diesel	100	0.59	4.098462	0.504707	1.277084	596.0359	0.001638	0.076422	0.074129	0.042273	0.001035	0.00034	0.1158874	1.26E-06	0.00013	0.000127	0.00013
4	2023	Access Ro:Excavation	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	6.66	0.173769	0.459721	536.7568	0.00146	0.044767	0.043424	0.025781	0.000132	0.000348	0.406863	1.11E-06	3.39E-05	3.29E-05	1.95E-05
4	2023	Access Ro:Excavation	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	17.76	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.000507	0.001561	3.720077	9.93E-06	0.000107	0.000104	0.00011
4	2023	Access Ro:Excavation	Excavator	Excavators175	Diesel	175	0.59	5.328	0.114838	0.351797	536.7809	0.001438	0.028734	0.027872	0.01734	0.000506	0.000213	0.325505	8.72E-07	1.74E-05	1.69E-05	1.05E-05
4	2023	Access Ro:Excavation	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	5.328	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.000152	0.000468	1.116023	2.98E-06	3.22E-05	3.13E-05	3.29E-05
4	2023	Access Ro:Excavation	Roller	Rollers100	Diesel	100	0.59	5.328	0.504707	1.277084	596.0359	0.001638	0.076422	0.074129	0.042273	0.000175	0.000443	0.206536	5.67E-07	2.65E-05	2.57E-05	1.46E-05
4	2023	Access Ro:Excavation	Scraper	Scrapers600	Diesel	600	0.59	6.66	0.281977	0.70373	536.7116	0.001506	0.047742	0.046309	0.040601	0.000733	0.001829	1.394842	3.91E-06	0.000124	0.00012	0.000106
4	2023	Access Ro:Excavation	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	2.507294	0.173769	0.459721	536.7568	0.00146	0.044767	0.043424	0.025781	0.000132	0.000131	0.153172	4.17E-07	1.28E-05	1.24E-05	7.36E-06
4	2023	Access Ro:Excavation	Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	13.33333	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.00038	0.001172	2.792851	7.45E-06	8.07E-05	7.82E-05	8.24E-05
4	2023	Access Ro:Excavation	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	13.33333	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.00038	0.001172	2.792851	7.45E-06	8.07E-05	7.82E-05	8.24E-05
4	2023	Access Ro:Fencing	Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	53.33333	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.001521	0.004688	11.1714	2.98E-05	0.000323	0.000313	0.00033
4	2023	Access Ro:Fencing	Other General Equipment	Other Construction Equipment17	Diesel	175	0.43	53.33333	0.30314	0.935436	536.6725	0.00151	0.073779	0.071565	0.054797	0.001341	0.004138	2.374221	6.68E-06	0.000326	0.000317	0.000242
4	2023	Access Ro:Fencing	Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	53.33333	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	0.001521	0.004688	11.1714	2.98E-05	0.000323	0.000313	0.00033
4	2023	Access Ro:Fencing	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	53.33333	3.515177	4.233588	693.9764	0.002207	0.495546	0.480679	0.685836	0.003255	0.00392	6.642585	2.04E-06	0.000459	0.000445	0.000635
4	2023	Access Ro:Fencing	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.21	53.33333	2.836111	7.282112	694.7262	0.002118	0.374745	0.363503	0.436618	0.003501	0.003435	7.060126	2.61E-06	0.000463	0.000449	0.000539
4	2023	Access Ro:Grading	Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	2.9548	0.173769	0.459721	536.7568	0.00146	0.044767	0.043424	0.025781	0.000132	0.000155	1.8051	4.91E-07	1.51E-05	1.46E-05	8.67E-06
4	2023	Access Ro:Grading	Grader	Graders300	Diesel	300	0.59	2.9548	0.096096	0.281619	536.7688	0.001445	0.021526	0.020881	0.021383	5.54E-05	0.000162	0.309453	8.33E-07	1.24E-05	1.12E-05	1.23E-05
4	2023	Access Ro:Grading	Roller	Rollers100	Diesel	100	0.59	2.9548	0.504707	1.277084	596.0359	0.001638	0.076422	0.074129	0.042273	9.7E-05	0.000245	0.11454	3.15E-07	1.47E-05	1.42E-05	8.12E-06
4	2023	Access Ro:Hydroseed	Hydroseeder	Other Construction Equipment60	Diesel	600	0.59	2.662	0.730929	1.569261	536.5382	0.001634	0.114059	0.110638	0.100008	0.000759	0.0163	0.557338	1.76E-06	0.000118	0.000115	0.000104
4	2023	Access Ro:Hydroseed	Flatbed Truck	Off-highway Trucks600	Diesel	600	0.59	2.662	0.073093	0.225249	536.7836	0.001433	0.015502	0.015037	0.015837	7.59E-05	0.000234	0.557593	1.49E-06	1.61E-05	1.56E-05	1.65E-05
4	2023	Access Ro:Markings	Tractors/Loader/Backhoe	Tractors/Loaders/Backhoes100	Diesel	100	0.59	32.91429	0.073093	0.225249	536.7836	0.001433	0.015502	0								

For calculating fugitive, re-entrained PM emissions from on-road and non-road material delivery and handling equipment, a nominal VMT of 5 miles is used for each vehicle per day.

In deriving emission factors from NONROAD, the horsepower for each equipment represents the most popular in each equipment category.

The total length of each modeled scenario is used to define the number of days associated with vehicle/equipment evaporative emissions.

The choice of location and season are assumed to adequately represent differences in fuel characteristics affecting emissions.

Only two seasons (Summer and Winter) are used to represent all seasons.

14 U.S. Counties are used to represent all other counties in the U.S. (all other counties are mapped to the 14).

The default methods assume that all construction equipment use diesel as well as heavy-duty on-road vehicles, while passenger vehicles (including motorcycles) use gasoline.

Fugitive emissions are only modeled for:

- Asphalt drying
- Asphalt storage and batching
- Concrete mixing/batching
- Soil handling
- Unstabilized land and wind erosion
- Material movement (unpaved roads)
- Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the asphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO₂, CH₄, and N₂O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 cy)

(mile)	MOVES ONROAD Emissions (tpy)												
	5	8	9	7	10	13	11	12	14	5	8	9	
CO2	CH4	N2O	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O		
1055.084	0.017295	0.003286	0.034164	0.051551	9.02E-05	0.001212	0.001115	0.003436	26.89522	0.000441	8.38E-05		
1055.084	0.017295	0.003286	0.01822	0.027493	4.81E-05	0.000647	0.000595	0.001832	14.34373	0.000235	4.47E-05		
332.4565	0.009671	0.001982	12.96491	0.423273	0.00912	0.009673	0.008557	0.340154	1372.865	0.039936	0.008183		
1707.092	0.021732	0.002802	0.006069	0.011189	1.51E-05	0.000221	0.000203	0.000513	4.516215	5.75E-05	7.41E-06		
1055.084	0.017295	0.003286	0	0	0	0	0	0	0	0	0		
332.4565	0.009671	0.001982	0.051567	0.001684	3.63E-05	3.85E-05	3.4E-05	0.001353	5.46044	0.000159	3.25E-05		
1055.084	0.017295	0.003286	0	0	0	0	0	0	0	0	0		
332.4565	0.009671	0.001982	0.471451	0.015392	0.000332	0.000352	0.000311	0.012369	49.92235	0.001452	0.000298		
1707.092	0.021732	0.002802	0.000529	0.000974	1.32E-06	1.92E-05	1.77E-05	4.47E-05	0.393287	5.01E-06	6.46E-07		
1055.084	0.017295	0.003286	0.00492	0.007423	1.3E-05	0.000175	0.000161	0.000495	3.872912	6.35E-05	1.21E-05		
1055.084	0.017295	0.003286	0.000437	0.00066	1.15E-06	1.55E-05	1.43E-05	4.4E-05	0.344259	5.64E-06	1.07E-06		
1055.084	0.017295	0.003286	0.002624	0.003959	6.93E-06	9.31E-05	8.57E-05	0.000264	2.065553	3.39E-05	6.43E-06		
332.4565	0.009671	0.001982	2.303683	0.07521	0.001621	0.001719	0.00152	0.060441	243.9388	0.007096	0.001454		
1055.084	0.017295	0.003286	0.003417	0.005156	9.02E-06	0.000121	0.000112	0.000344	2.690104	4.41E-05	8.38E-06		
1055.084	0.017295	0.003286	0.001822	0.002749	4.81E-06	6.46E-05	5.95E-05	0.000183	1.434024	2.35E-05	4.47E-06		
332.4565	0.009671	0.001982	11.13804	0.36363	0.007835	0.00831	0.007351	0.292223	1179.416	0.034308	0.00703		
1707.092	0.021732	0.002802	0.000405	0.000746	1.01E-06	1.47E-05	1.35E-05	3.42E-05	0.301081	3.83E-06	4.94E-07		
			Totals	27.00225	0.991088	0.019134	0.022674	0.02015	0.713373	2908.458	0.083864	0.017166	

STUDY

Study Name

Austin Airport

Study Description

Construction Schedule 2024

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Units for Greenhouse Gases (CO₂, CH₄, and N₂O) Emission: Metric Ton

Scenario II	Year	Project	Constructi	Equipment	Moves	Lookup	Fuel	HP Averag	Load	Factor	Hours of A	NONROAD Emission Factors g/hp-hr											NONROAD Emissio										
												3	6	2	9	10	8	11	CO ₂	CH ₄	N ₂ O	PM ₁₀	PM _{2.5}	VOC	CO (tpy)	NOx (tpy)	CO ₂ (tpy)	SO ₂ (tpy)					
1	2024	Taxiways	Asphalt Pk	Asphalt Paver	Pavers175	Diesel	175	0.59	13.73625	0.177152	0.447389	536.7527	0.001462	0.045103	0.04375	0.027391	0.000277	0.000699	0.839149	2.29E-06	0.59	13.73625	0.177152	0.447389	536.7527	0.001462	0.045103	0.04375	0.027391	0.000277	0.000699	0.839149	2.29E-06
1	2024	Taxiways	Asphalt Pk	Dump Truck	Off-highway Trucks60	Diesel	600	0.59	49.47214	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000373	0.001061	0.532495	1.45E-06	0.59	49.47214	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000373	0.001061	0.532495	1.45E-06
1	2024	Taxiways	Asphalt Pk	Other General Equipment	Other Construction Ec	Diesel	175	0.43	27.4725	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.000588	0.00185	1.230401	3.4E-06	0.59	13.73625	0.177152	0.447389	536.7527	0.001462	0.045103	0.04375	0.027391	0.000277	0.000699	0.839149	2.29E-06
1	2024	Taxiways	Asphalt Pk	Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	13.73625	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.00028	0.000979	2.877288	7.64E-06	0.59	13.73625	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.00028	0.000979	2.877288	7.64E-06
1	2024	Taxiways	Asphalt Pk	Skid Steer Loader	Rollers100	Diesel	100	0.59	13.73625	0.177152	0.447389	536.7527	0.001462	0.045103	0.04375	0.027391	0.000277	0.000699	0.839149	2.29E-06	0.59	13.73625	0.177152	0.447389	536.7527	0.001462	0.045103	0.04375	0.027391	0.000277	0.000699	0.839149	2.29E-06
1	2024	Taxiways	Asphalt Pk	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	13.73625	3.281564	4.101785	694.13	0.002185	0.457728	0.443996	0.633997	0.000783	0.000978	0.165537	5.21E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Clearing ai	Chain Saw	Other Construction Ec	Diesel	11	0.7	36	2.473256	4.183481	593.756	0.002183	0.240901	0.233674	0.83744	0.000756	0.001278	0.181429	6.67E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Clearing ai	Chipper/Stump Grinder	Other Construction Ec	Diesel	100	0.43	36	6.54952	1.47016	595.9832	0.00166	0.098026	0.095085	0.060399	0.001118	0.002509	0.1016978	2.83E-06	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Clearing ai	Chipper/Stump Grinder	Other Construction Ec	Diesel	100	0.43	36	6.54952	1.47016	595.9832	0.00166	0.098026	0.095085	0.060399	0.001118	0.002509	0.1016978	2.83E-06	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07
1	2024	Taxiways	Drainage	Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000428	0.001076	0.170138	6.26E-07	0.59	17.5824	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636					

2	2024 Terminal A Concrete F Surfacing Equipment (Grooving)	Other Construction Ec Diesel	25	0.59	105.968	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.002577	0.006485	1.025413	3.77E-06
2	2024 Terminal A Drainage - Dozer	Crawler Tractor/Doze Diesel	175	0.59	23.232	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	0.000337	0.000946	1.419306	3.81E-06
2	2024 Terminal A Drainage - Dump Truck	Off-highway Trucks60 Diesel	600	0.59	23.232	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000447	0.001657	4.866333	1.29E-05
2	2024 Terminal A Drainage - Excavator	Excavators175 Diesel	175	0.59	23.232	0.084645	0.280526	536.7934	0.001427	0.020501	0.019886	0.013129	0.000224	0.000742	1.419353	3.77E-06
2	2024 Terminal A Drainage - Loader	Tractors/Loaders/Bac Diesel	175	0.59	23.232	1.090944	1.946746	625.6994	0.001889	0.241644	0.234395	0.290885	0.002885	0.005147	1.654432	5E-06
2	2024 Terminal A Drainage - Other General Equipment	Other Construction Ec Diesel	175	0.43	23.232	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.000497	0.001564	1.034259	2.88E-06
2	2024 Terminal A Drainage - Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	23.232	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000474	0.001657	4.866333	1.29E-05
2	2024 Terminal A Drainage - Roller	Rollers100 Diesel	100	0.59	23.232	0.417356	1.187531	596.0587	0.001624	0.064693	0.062752	0.034547	0.000631	0.001794	0.900605	2.45E-06
2	2024 Terminal A Drainage - Dump Truck	Off-highway Trucks60 Diesel	600	0.59	12.90667	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000263	0.00092	2.703518	7.18E-06
2	2024 Terminal A Drainage - Loader	Tractors/Loaders/Bac Diesel	175	0.59	12.90667	1.090944	1.946746	625.6994	0.001889	0.241644	0.234395	0.290885	0.016063	0.00286	0.919129	2.78E-06
2	2024 Terminal A Drainage - Other General Equipment	Other Construction Ec Diesel	175	0.43	12.90667	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.000276	0.000869	0.574589	1.6E-06
2	2024 Terminal A Drainage - Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	12.90667	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000263	0.00092	2.703518	7.1E-06
2	2024 Terminal A Drainage - Tractors/Loader/Backhoe	Tractors/Loaders/Bac Diesel	100	0.21	12.90667	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.000794	0.000791	0.207559	6.27E-07
2	2024 Terminal A Drainage - Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	2880	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.058785	0.205359	6.032644	0.001602
2	2024 Terminal A Excavation Dozer	Crawler Tractor/Doze Diesel	175	0.59	176.6133	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	0.002559	0.007188	10.78979	2.9E-05
2	2024 Terminal A Excavation Dump Truck (12 cy)	Off-highway Trucks60 Diesel	600	0.59	176.6133	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000605	0.0012593	36.99463	9.8E-05
2	2024 Terminal A Excavation Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	176.6133	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000605	0.0012593	36.99463	9.8E-05
2	2024 Terminal A Excavation Roller	Rollers100 Diesel	100	0.59	81.51385	0.417356	1.187531	596.0587	0.001624	0.064693	0.062752	0.034547	0.002213	0.002629	3.159941	8.61E-06
2	2024 Terminal A Excavation Dozer	Crawler Tractor/Doze Diesel	175	0.59	132.46	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	0.000497	0.001564	1.034259	2.88E-06
2	2024 Terminal A Excavation Dump Truck (12 cy)	Off-highway Trucks60 Diesel	600	0.59	353.2267	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000721	0.0025187	73.98926	0.000196
2	2024 Terminal A Excavation Excavator	Excavators175 Diesel	175	0.59	105.968	0.084645	0.280526	536.7934	0.001427	0.020501	0.019886	0.013129	0.000224	0.000742	1.419353	3.77E-06
2	2024 Terminal A Excavation Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	105.968	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000263	0.00092	2.703518	7.1E-06
2	2024 Terminal A Excavation Roller	Rollers100 Diesel	100	0.59	105.968	0.417356	1.187531	596.0587	0.001624	0.064693	0.062752	0.034547	0.000276	0.000869	0.574589	1.6E-06
2	2024 Terminal A Excavation Scrapper	Scrapers600 Diesel	600	0.59	132.46	0.231824	0.588102	536.729	0.001489	0.040091	0.038888	0.034682	0.011983	0.030398	27.74275	7.7E-05
2	2024 Terminal A Excavation Dozer	Crawler Tractor/Doze Diesel	175	0.59	49.86729	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	0.000723	0.00203	3.046528	8.19E-06
2	2024 Terminal A Fencing Concrete Truck	Off-highway Trucks60 Diesel	600	0.59	7.955556	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.00062	0.000567	1.666425	4.42E-06
2	2024 Terminal A Fencing Dump Truck	Off-highway Trucks60 Diesel	600	0.59	31.82222	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.00062	0.002269	6.656599	1.77E-05
2	2024 Terminal A Fencing Other General Equipment	Other Construction Ec Diesel	175	0.43	31.82222	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.00061	0.002143	1.161685	3.94E-06
2	2024 Terminal A Fencing Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	31.82222	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.00062	0.002269	6.656599	1.77E-05
2	2024 Terminal A Fencing Skid Steer Loader	Skid Steer Loaders75 Diesel	75	0.21	31.82222	3.281564	4.101785	694.13	0.002185	0.457728	0.443996	0.633997	0.001813	0.002266	0.383494	1.21E-06
2	2024 Terminal A Fencing Tractors/Loader/Backhoe	Tractors/Loaders/Bac Diesel	100	0.21	31.82222	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.001957	0.001949	0.511839	1.55E-06
2	2024 Terminal A Grading Dozer	Crawler Tractor/Doze Diesel	175	0.59	33.0403	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	0.000497	0.001564	1.034259	2.88E-06
2	2024 Terminal A Grading Grader	Graders300 Diesel	300	0.59	33.0403	0.070474	0.225529	536.7797	0.001435	0.016427	0.015934	0.017337	0.000454	0.001454	3.460349	9.25E-06
2	2024 Terminal A Grading Roller	Rollers100 Diesel	100	0.59	33.0403	0.417356	1.187531	596.0587	0.001624	0.064693	0.062752	0.034547	0.000897	0.002252	1.28083	3.49E-06
2	2024 Terminal A Hydroseed Hydroseeder	Other Construction Ec Diesel	600	0.59	29.766	0.674104	1.451475	536.5624	0.00162	0.106831	0.103626	0.092216	0.00783	0.016859	6.232331	1.88E-05
2	2024 Terminal A Hydroseed Off-Road Truck	Off-highway Trucks60 Diesel	600	0.59	29.766	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000605	0.002122	6.234989	1.66E-05
2	2024 Terminal A Lighting Dump Truck	Off-highway Trucks60 Diesel	600	0.59	14.88	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000304	0.001061	6.158666	8.28E-06
2	2024 Terminal A Lighting Loader	Tractors/Loaders/Bac Diesel	175	0.59	14.88	1.090944	1.946746	625.6994	0.001889	0.241644	0.234395	0.290885	0.01848	0.003297	1.059567	3.2E-06
2	2024 Terminal A Lighting Other General Equipment	Other Construction Ec Diesel	175	0.43	14.88	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.000319	0.001002	0.662439	1.84E-06
2	2024 Terminal A Lighting Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	14.88	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000304	0.001061	6.158666	8.28E-06
2	2024 Terminal A Lighting Skid Steer Loader	Skid Steer Loaders75 Diesel	75	0.21	14.88	3.281564	4.101785	694.13	0.002185	0.457728	0.443996	0.633997	0.000848	0.001016	0.179321	5.64E-07
2	2024 Terminal A Lighting Tractors/Loader/Backhoe	Tractors/Loaders/Bac Diesel	100	0.21	14.88	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.001957	0.001949	0.511839	1.55E-06
2	2024 Terminal A Markings Flatbed Truck	Off-highway Trucks60 Diesel	600	0.59	654.6286	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.013362	0.046678	137.1229	0.000364
2	2024 Terminal A Markings Other General Equipment	Other Construction Ec Diesel	175	0.43	654.6286	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.014014	0.044076	29.14324	8.11E-05
2	2024 Terminal A Markings Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	654.6286	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.013362	0.046678	137.1229	0.000364
2	2024 Terminal A Sealing/Fu Distributing Tanker	Off-highway Trucks60 Diesel	600	0.59	84.7744	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.001173	0.006045	17.75742	4.71E-05
2	2024 Terminal A Sealing/Fu Other General Equipment	Other Construction Ec Diesel	175	0.43	84.7744	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.001815	0.005708	3.77405	1.05E-05
2	2024 Terminal A Sealing/Fu Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	84.7744	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.001173	0.006045	17.75742	4.71E-05
2	2024 Terminal A Soil Erosio Other General Equipment	Other Construction Ec Diesel	175	0.43	27.2	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.000582	0.001831	1.21091	3.37E-06
2	2024 Terminal A Soil Erosio Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	54.4	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.00111	0.003879	11.39499	3.03E-05
2	2024 Terminal A Soil Erosio Pumps	Other Construction Ec Diesel	11	0.43	27.2	2.473256	4.183481	593.756	0.002183	0.240901	0.236374	0.837744	0.000351	0.000593	0.084206	3.1E-07
2	2024 Terminal A Soil Erosio Tractors/Loader/Backhoe	Tractors/Loaders/Bac Diesel	100	0.21	27.2	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.001672	0.001666	0.437944	1.32E-06
2	2024 Terminal A Subbase P Dozer	Crawler Tractor/Doze Diesel	175	0.59	66.92716	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	0.000791	0.002274	4.08761	1.1E-05
2	2024 Terminal A Subbase P Dump Truck (12 cy)	Off-highway Trucks60 Diesel	600	0.59	470.9689	0.052307	0.182731	536.7912	0.001425	0.011908	0.011555	0.013356	0.000613	0.003583	98.65234	0.0

3	2024	Terminal A	Grading	Roller	Rollers100	Diesel	100	0.59	35.7709	0.417356	1.187531	596.0587	0.001624	0.064693	0.062752	0.034547	0.000971	0.002763	1.386684	3.78E-06
3	2024	Terminal A	Hydroseed	Hydroseeder	Other Construction Ec	Diesel	600	0.59	32.226	0.674104	1.451475	536.5624	0.00162	0.06831	0.103626	0.092216	0.008477	0.018253	6.7474	2.04E-05
3	2024	Terminal A	Hydroseed	Off-Road Truck	Off-highway Trucks60	Diesel	600	0.59	32.226	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000658	0.002298	6.750277	1.79E-05
3	2024	Terminal A	Lighting	Dump Truck	Off-highway Trucks60	Diesel	600	0.59	15.68	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000932	0.001118	3.284439	8.72E-06
3	2024	Terminal A	Lighting	Loader	Tractors/Loaders/Bac	Diesel	175	0.59	15.68	1.090944	1.946746	625.6994	0.001889	0.241644	0.234395	0.290885	0.001947	0.003474	1.116628	3.77E-06
3	2024	Terminal A	Lighting	Other General Equipment	Other Construction Ec	Diesel	175	0.43	15.68	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.000336	0.001056	0.698054	1.94E-06
3	2024	Terminal A	Lighting	Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	15.68	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000932	0.001118	3.284439	8.72E-06
3	2024	Terminal A	Lighting	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	15.68	3.281564	4.101785	694.13	0.002185	0.457728	0.443996	0.633997	0.000893	0.001117	1.88962	5.95E-07
3	2024	Terminal A	Lighting	Tractors/Loader/Backhoe	Tractors/Loaders/Bac	Diesel	100	0.21	15.68	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.000964	0.000964	0.252202	7.62E-07
3	2024	Terminal A	Markings	Flatbed Truck	Off-highway Trucks60	Diesel	600	0.59	709.4857	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.014482	0.05059	148.6137	0.000395
3	2024	Terminal A	Markings	Other General Equipment	Other Construction Ec	Diesel	175	0.43	709.4857	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.015189	0.047769	31.58541	8.79E-05
3	2024	Terminal A	Markings	Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	709.4857	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.014482	0.05059	148.6137	0.000395
3	2024	Terminal A	Sealing/Fu	Distributing Tanker	Off-highway Trucks60	Diesel	600	0.59	91.8784	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.01875	0.066551	19.24547	5.11E-05
3	2024	Terminal A	Sealing/Fu	Other General Equipment	Other Construction Ec	Diesel	175	0.43	91.8784	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.001967	0.006186	0.4090311	1.14E-05
3	2024	Terminal A	Sealing/Fu	Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	91.8784	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.01875	0.066551	19.24547	5.11E-05
3	2024	Terminal A	Soil Erosio	Other General Equipment	Other Construction Ec	Diesel	175	0.43	29.6	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.000634	0.001993	1.317755	3.67E-06
3	2024	Terminal A	Soil Erosio	Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	59.2	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.012008	0.004221	12.40043	3.29E-05
3	2024	Terminal A	Soil Erosio	Pumps	Other Construction Ec	Diesel	11	0.43	29.6	2.473256	4.183481	593.756	0.002183	0.240901	0.233674	0.83754	0.000382	0.000646	0.091636	3.37E-07
3	2024	Terminal A	Soil Erosio	Tractors/Loader/Backhoe	Tractors/Loaders/Bac	Diesel	100	0.21	29.6	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.00182	0.001813	0.476096	1.44E-06
3	2024	Terminal A	Subbase P/Dozer	Crawler Tractor/Doze	Diesel	175	0.59	72.53558	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	0.010051	0.002952	4.431395	1.19E-05	
3	2024	Terminal A	Subbase P/Dump Truck (12 cy)	Off-highway Trucks60	Diesel	600	0.59	10.4356	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.010419	0.036397	106.9193	0.000284	
3	2024	Terminal A	Subbase P/Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	72.53558	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.010418	0.005172	15.1938	4.03E-05	
3	2024	Terminal A	Subbase P/Roller	Rollers100	Diesel	100	0.59	70.67569	0.417356	1.187531	596.0587	0.001624	0.064693	0.062752	0.034547	0.001948	0.005459	2.739792	7.47E-06	
3	2024	Terminal A	Topsoil P/Dozer	Crawler Tractor/Doze	Diesel	175	0.59	79.49067	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	0.011252	0.003235	4.8563	1.31E-05	
3	2024	Terminal A	Topsoil P/Dump Truck	Off-highway Trucks60	Diesel	600	0.59	79.49067	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.001623	0.005668	16.65066	4.42E-05	
3	2024	Terminal A	Topsoil P/Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	79.49067	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.001623	0.005668	16.65066	4.42E-05	
4	2024	Taxiway E	Asphalt P/Asphalt Paver	Pavers175	Diesel	175	0.59	14.89625	0.177152	0.447389	536.7527	0.001462	0.045103	0.04375	0.027391	0.00023	0.000759	0.910013	2.48E-06	
4	2024	Taxiway E	Asphalt P/Dump Truck	Off-highway Trucks60	Diesel	600	0.59	53.64997	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.01095	0.003826	11.23789	2.98E-05	
4	2024	Taxiway E	Asphalt P/Other General Equipment	Other Construction Ec	Diesel	175	0.43	29.7925	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.000198	0.002006	1.326325	3.69E-06	
4	2024	Taxiway E	Asphalt P/Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	14.89625	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000304	0.001062	3.12027	8.28E-06	
4	2024	Taxiway E	Asphalt P/Roller	Rollers100	Diesel	100	0.59	14.89625	0.417356	1.187531	596.0587	0.001624	0.064693	0.062752	0.034547	0.000404	0.00115	0.577463	1.57E-06	
4	2024	Taxiway E	Asphalt P/Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	14.89625	3.281564	4.101785	694.13	0.002185	0.457728	0.443996	0.633997	0.000849	0.001061	1.179517	5.65E-07	
4	2024	Taxiway E	Asphalt P/Surfacing Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	19.0672	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000646	0.001167	1.84506	6.78E-07	
4	2024	Taxiway E	Clearing at Chain Saw	Other Construction Ec	Diesel	11	0.7	36	2.473256	4.183481	593.756	0.002183	0.240901	0.233674	0.83754	0.000756	0.001278	1.81429	6.67E-07	
4	2024	Taxiway E	Clearing at Chipper/Stamp Grider	Other Construction Ec	Diesel	100	0.43	36	0.654952	1.47016	595.9832	0.00166	0.098026	0.095085	0.060399	0.01118	0.002509	1.016978	2.83E-06	
4	2024	Taxiway E	Clearing at Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	48	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000998	0.003423	10.05441	2.67E-05	
4	2024	Taxiway E	Concrete FAir Compressor	Other Construction Ec	Diesel	100	0.43	39.7232	0.654952	1.47016	595.9832	0.00166	0.098026	0.095085	0.060399	0.01233	0.002768	1.122156	3.12E-06	
4	2024	Taxiway E	Concrete FConcrete Saws	Other Construction Ec	Diesel	40	0.59	39.7232	0.319365	2.565449	595.8652	0.001583	0.029353	0.028472	0.098234	0.00083	0.002651	0.615759	1.64E-06	
4	2024	Taxiway E	Concrete FConcrete Truck	Off-highway Trucks60	Diesel	600	0.59	165.1313	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.003378	0.011802	34.66955	9.21E-05	
4	2024	Taxiway E	Concrete FOther General Equipment	Other Construction Ec	Diesel	175	0.43	79.4464	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.01071	0.005349	3.536854	9.84E-06	
4	2024	Taxiway E	Concrete FPickup Truck	Off-highway Trucks60	Diesel	600	0.59	119.1696	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.002432	0.008497	24.96207	6.63E-05	
4	2024	Taxiway E	Concrete FRubber Tired Loader	Tractors/Loaders/Bac	Diesel	175	0.59	39.7232	1.090944	1.946746	625.6994	0.001889	0.241644	0.234395	0.290885	0.004932	0.008801	2.828828	8.54E-06	
4	2024	Taxiway E	Concrete FSlip Form Paver	Pavers175	Diesel	175	0.59	39.7232	0.177152	0.447389	536.7527	0.001462	0.045103	0.04375	0.027391	0.000801	0.002023	2.426694	6.61E-06	
4	2024	Taxiway E	Concrete FSurfacing Equipment (Grooving)	Other Construction Ec	Diesel	25	0.59	39.7232	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	0.000966	0.002431	3.84387	1.41E-06	
4	2024	Taxiway E	Drainage - Dozer	Crawler Tractor/Doze	Diesel	175	0.59	78.4	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	0.001136	0.003191	4.789668	1.29E-05	
4	2024	Taxiway E	Drainage - Dump Truck	Off-highway Trucks60	Diesel	600	0.59	78.4	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.00076	0.00559	16.4222	4.36E-05	
4	2024	Taxiway E	Drainage - Excavator	Excavators175	Diesel	175	0.59	78.4	0.084645	0.280526	536.7934	0.001427	0.020501	0.019886	0.013129	0.000155	0.002505	4.789827	1.27E-05	
4	2024	Taxiway E	Drainage - Loader	Tractors/Loaders/Bac	Diesel	175	0.59	78.4	1.090944	1.946746	625.6994	0.001889	0.241644	0.234395	0.290885	0.009735	0.017371	5.883139	1.69E-05	
4	2024	Taxiway E	Drainage - Other General Equipment	Other Construction Ec	Diesel	175	0.43	78.4	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.01678	0.005279	3.94269	9.71E-06	
4	2024	Taxiway E	Drainage - Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	78.4	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.0016	0.00559	16.4222	4.36E-05	
4	2024	Taxiway E	Drainage - Roller	Rollers100	Diesel	100	0.59	78.4	0.417356	1.187531	596.0587	0.001624	0.064693	0.062752	0.034547	0.002128	0.006055	3.03923	8.28E-06	
4	2024	Taxiway E	Drainage - Dump Truck	Off-highway Trucks60	Diesel	600	0.59	43.55556	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000889	0.003106	9.123443	2.42E-05	
4	2024	Taxiway E	Drainage - Loader	Tractors/Loaders/Bac	Diesel	175	0.59	43.55556	1.090944	1.946746	625.6994	0.001889	0.241644	0.234395	0.290885	0.005408	0.00965	3.10174	9.37E-06	
4	2024	Taxiway E	Drainage - Other General Equipment	Other Construction Ec	Diesel	175	0.43	43.55556	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	0.000892	0.002933	1.939039	5.39E-06	
4	2024	Taxiway E	Drainage - Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	43.55556	0.											

5	2024 Building - Exterior W Tractor Trailer- Material Delivery	Off-highway Trucks60 Diesel	600	0.59	24	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.00049	0.001711	5.027203	1.33E-05
5	2024 Building - Interior BuFork Truck	Other Construction Ec Diesel	100	0.59	960	0.654952	1.47016	595.9832	0.00166	0.098026	0.059085	0.060399	0.040892	0.09179	27.21035	0.000104
5	2024 Building - Interior BuMan Lift	Rough Terrain Forklift Diesel	75	0.21	960	0.559297	2.73688	595.8792	0.001663	0.06081	0.058986	0.092933	0.090322	0.045616	9.931538	2.77E-05
5	2024 Building - Interior Bu Tool Truck	Off-highway Trucks60 Diesel	600	0.59	120	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.002449	0.008557	25.13602	6.67E-05
5	2024 Building - Interior Bu Tractor Trailer- Material Delivery	Off-highway Trucks60 Diesel	600	0.59	120	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.002449	0.008557	25.13602	6.67E-05
5	2024 Building - Roofing High Lift	Rough Terrain Forklift Diesel	100	0.59	120	0.529425	1.320666	596.0214	0.001641	0.079303	0.076924	0.047138	0.004132	0.010307	4.651592	1.28E-05
5	2024 Building - Roofing Man Lift (Fascia Construction)	Rough Terrain Forklift Diesel	75	0.21	120	0.559297	2.73688	595.8792	0.001663	0.06081	0.058986	0.092933	0.090322	0.045616	9.931538	2.77E-05
5	2024 Building - Roofing Material Deliveries	Off-highway Trucks60 Diesel	600	0.59	8	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000163	0.00057	1.675734	4.45E-06
5	2024 Building - Roofing Tractor Trailer- Material Delivery	Off-highway Trucks60 Diesel	600	0.59	12	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000245	0.000856	2.513602	6.67E-06
5	2024 Building - Security & High Lift	Rough Terrain Forklift Diesel	100	0.59	320	0.529425	1.320666	596.0214	0.001641	0.079303	0.076924	0.047138	0.011018	0.027485	12.40425	3.42E-05
5	2024 Building - Security & Tool Truck	Off-highway Trucks60 Diesel	600	0.59	80	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.001633	0.005704	16.75734	4.45E-05
5	2024 Building - Structural 40 Ton Crane	Cranes300 Diesel	300	0.43	240	0.098349	0.390469	530.9601	0.001447	0.020525	0.01991	0.02823	0.003356	0.013326	18.12047	4.94E-05
5	2024 Building - Structural Fork Truck	Other Construction Ec Diesel	100	0.59	120	0.654952	1.47016	595.9832	0.00166	0.098026	0.059085	0.060399	0.05112	0.011474	4.651294	1.3E-05
5	2024 Building - Structural Tool Truck	Off-highway Trucks60 Diesel	600	0.59	60	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.001225	0.004278	12.56801	3.34E-05
5	2024 Building - Structural Tractor Trailer- Steel Deliveries	Off-highway Trucks60 Diesel	600	0.59	16	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000327	0.001141	3.351469	8.9E-06
6	2024 Building - Concrete FBackhoe	Tractors/Loaders/Bac Diesel	100	0.21	320	2.656022	2.64619	694.8278	0.0021	0.350932	0.340044	0.402188	0.011867	0.019602	5.146986	1.56E-05
6	2024 Building - Concrete F Concrete Ready Mix Trucks	Off-highway Trucks60 Diesel	600	0.59	60	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.001225	0.004278	12.56801	3.34E-05
6	2024 Building - Concrete F Fork Truck	Other Construction Ec Diesel	100	0.59	320	0.654952	1.47016	595.9832	0.00166	0.098026	0.059085	0.060399	0.013621	0.030597	12.40345	3.45E-05
6	2024 Building - Concrete F Tool Truck	Off-highway Trucks60 Diesel	600	0.59	80	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.001633	0.005704	16.75734	4.45E-05
6	2024 Building - Concrete F Tractor Trailer- Material Delivery	Off-highway Trucks60 Diesel	600	0.59	16	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000327	0.001141	3.351469	8.9E-06
6	2024 Building - Constructi Survey Crew Truck	Off-highway Trucks60 Diesel	600	0.59	10	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000204	0.000713	2.094668	5.56E-06
6	2024 Building - Constructi Tractor Trailers Temp Fac.	Off-highway Trucks60 Diesel	600	0.59	4	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.18E-05	0.000285	0.837867	2.22E-06
6	2024 Building - Exterior W Fork Truck	Other Construction Ec Diesel	100	0.59	240	0.654952	1.47016	595.9832	0.00166	0.098026	0.059085	0.060399	0.010223	0.022947	9.302588	2.59E-05
6	2024 Building - Exterior W Man Lift	Rough Terrain Forklift Diesel	75	0.21	240	0.559297	2.73688	595.8792	0.001663	0.06081	0.058986	0.092933	0.00223	0.011404	2.482885	6.93E-06
6	2024 Building - Exterior W Tool Truck	Off-highway Trucks60 Diesel	600	0.59	60	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.001225	0.004278	12.56801	3.34E-05
6	2024 Building - Exterior W Tractor Trailer- Material Delivery	Off-highway Trucks60 Diesel	600	0.59	24	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000499	0.001711	5.027203	1.33E-05
6	2024 Building - Interior BuFork Truck	Other Construction Ec Diesel	100	0.59	960	0.654952	1.47016	595.9832	0.00166	0.098026	0.059085	0.060399	0.040892	0.09179	27.21035	0.000104
6	2024 Building - Interior BuMan Lift	Rough Terrain Forklift Diesel	75	0.21	960	0.559297	2.73688	595.8792	0.001663	0.06081	0.058986	0.092933	0.09322	0.045616	9.931538	2.77E-05
6	2024 Building - Interior Bu Tool Truck	Off-highway Trucks60 Diesel	600	0.59	120	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.002449	0.008557	25.13602	6.67E-05
6	2024 Building - Interior Bu Tractor Trailer- Material Delivery	Off-highway Trucks60 Diesel	600	0.59	120	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.002449	0.008557	25.13602	6.67E-05
6	2024 Building - Roofing High Lift	Rough Terrain Forklift Diesel	100	0.59	120	0.529425	1.320666	596.0214	0.001641	0.079303	0.076924	0.047138	0.004132	0.010307	4.651592	1.28E-05
6	2024 Building - Roofing Man Lift (Fascia Construction)	Rough Terrain Forklift Diesel	75	0.21	120	0.559297	2.73688	595.8792	0.001663	0.06081	0.058986	0.092933	0.090322	0.045616	9.931538	2.77E-05
6	2024 Building - Roofing Material Deliveries	Off-highway Trucks60 Diesel	600	0.59	8	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000163	0.00057	1.675734	4.45E-06
6	2024 Building - Roofing Tractor Trailer- Material Delivery	Off-highway Trucks60 Diesel	600	0.59	12	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000245	0.000856	2.513602	6.67E-06
6	2024 Building - Security & High Lift	Rough Terrain Forklift Diesel	100	0.59	320	0.529425	1.320666	596.0214	0.001641	0.079303	0.076924	0.047138	0.011018	0.027485	12.40425	3.42E-05
6	2024 Building - Security & Tool Truck	Off-highway Trucks60 Diesel	600	0.59	80	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.001633	0.005704	16.75734	4.45E-05
6	2024 Building - Structural 40 Ton Crane	Cranes300 Diesel	300	0.43	240	0.098349	0.390469	530.9601	0.001447	0.020525	0.01991	0.02823	0.003356	0.013326	18.12047	4.94E-05
6	2024 Building - Structural Fork Truck	Other Construction Ec Diesel	100	0.59	120	0.654952	1.47016	595.9832	0.00166	0.098026	0.059085	0.060399	0.05112	0.011474	4.651294	1.3E-05
6	2024 Building - Structural Tool Truck	Off-highway Trucks60 Diesel	600	0.59	60	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.001225	0.004278	12.56801	3.34E-05
6	2024 Building - Structural Tractor Trailer- Steel Deliveries	Off-highway Trucks60 Diesel	600	0.59	16	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000327	0.001141	3.351469	8.9E-06
1	2024 DemolitionBuilding D-Bob Cat	Tractors/Loaders/Bac Diesel	75	0.21	9936	2.427734	3.590307	694.7561	0.002129	0.303223	0.294126	0.425008	0.018793	0.019342	11.94881	0.000367
1	2024 DemolitionBuilding D-Dump Truck	Off-highway Trucks60 Diesel	600	0.59	9936	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.002087	0.070849	2081.262	0.005526
1	2024 DemolitionBuilding D-Excavator with Bucket	Excavators175 Diesel	175	0.59	4968	0.084645	2.80526	536.7934	0.001427	0.020501	0.019886	0.013129	0.047861	0.158618	303.5186	0.000807
1	2024 DemolitionBuilding D-Generator Sets	Other Construction Ec Diesel	40	0.43	4968	0.139365	2.565449	595.8652	0.001583	0.029353	0.028472	0.098284	0.030082	0.241646	56.12606	0.000149
1	2024 DemolitionBuilding D-Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	5796	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.118304	0.413285	1214.07	0.003224
2	2024 Access Ro Asphalt PliAsphalt Paver	Pavers175 Diesel	175	0.59	1.998	0.177152	0.447389	536.7527	0.001462	0.045103	0.04375	0.027391	4.03E-05	0.000102	0.122058	3.32E-07
2	2024 Access Ro Asphalt PliDump Truck	Off-highway Trucks60 Diesel	600	0.59	7.195948	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000147	0.000513	1.507312	4E-06
2	2024 Access Ro Asphalt PliOther General Equipment	Other Construction Ec Diesel	175	0.43	3.996	0.258085	0.811691	536.6978	0.001493	0.062621	0.060743	0.046238	8.55E-05	0.000269	0.177897	4.95E-07
2	2024 Access Ro Asphalt PliPickup Truck	Off-highway Trucks60 Diesel	600	0.59	1.998	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	4.08E-05	0.000142	0.418515	1.11E-06
2	2024 Access Ro Asphalt PliRoller	Rollers100 Diesel	100	0.59	1.998	0.417356	1.187531	596.0587	0.001624	0.064693	0.062752	0.034547	5.42E-05	0.000154	0.077454	2.11E-07
2	2024 Access Ro Asphalt PliSkid Steer Loader	Skid Steer Loaders75 Diesel	75	0.21	1.998	3.281564	4.101785	694.13	0.002185	0.457728	0.443996	0.639997	0.000114	0.000142	0.024078	7.58E-08
2	2024 Access Ro Asphalt PliSurfacing Equipment (Grooving)	Other Construction Ec Diesel	25	0.59	2.55744	1.495637	3.763971	595.1489	0.002188	0.171506	0.16636	0.352256	6.22E-05	0.000157	0.024747	9.1E-08
2	2024 Access Ro Clearing ar Chain Saw	Other Construction Ec Diesel	11	0.7	7.2	2.473256	4.183481	593.756	0.002183	0.240991	0.236774	0.83744	0.000126	0.000256	0.36286	1.3E-07
2	2024 Access Ro Clearing ar Chipper/Stump Grinder	Other Construction Ec Diesel	100	0.43	7.2	0.654952	1.47016	595.9832	0.00166	0.098026	0.059085	0.060399	0.000124	0.000502	0.203396	5.66E-07
2	2024 Access Ro Clearing ar Pickup Truck	Off-highway Trucks60 Diesel	600	0.59	9.6	0.052307	0.182731	536.7912	0.001425	0.011908	0.01155	0.013356	0.000096	0.000685	2.010881	5.34E-06
2	2															

2	2024	Access RoSidewalks	Vibratory Compactor	Plate Compactors6	Diesel	6	0.43	96	2.543503	4.195136	588.0165	0.002162	0.257447	0.249724	0.820403	0.000694	0.001145	0.160541	5.9E-07
2	2024	Access RoSoil Erosio	Other General Equipment	Other Construction E	Diesel	175	0.43	2.4	0.258085	0.811691	536.6978	0.001493	0.062621	0.001743	0.046238	5.14E-05	0.000162	0.106845	2.97E-07
2	2024	Access RoStreet Lig	Erosio Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	4.8	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	9.8E-05	0.000342	1.005441	2.67E-06
2	2024	Access RoSoil Erosio	Pumps	Other Construction E	Diesel	11	0.43	2.4	2.473256	4.183481	593.756	0.002183	0.240901	0.233674	0.83744	3.09E-05	5.24E-05	0.00743	2.73E-08
2	2024	Access RoSoil Erosio	Tractors/Loader/Backhoe	Tractors/Loaders/Bac	Diesel	100	0.21	2.4	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.000148	0.000147	0.038602	1.17E-08
2	2024	Access RoStreet Lig	Other General Equipment	Off-highway Trucks60	Diesel	600	0.59	32	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000653	0.002282	6.702937	1.78E-05
2	2024	Access RoStreet Lig	Other General Equipment	Tractors/Loaders/Bac	Diesel	175	0.59	32	1.090944	1.946746	625.6994	0.001889	0.216464	0.234395	0.290885	0.000373	0.007029	2.278832	6.88E-06
2	2024	Access RoStreet Lig	Other General Equipment	Other Construction E	Diesel	175	0.43	32	0.258085	0.811691	536.6978	0.001493	0.062621	0.001743	0.046238	0.000678	0.002155	1.4246	3.96E-06
2	2024	Access RoStreet Lig	Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	32	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000653	0.002282	6.702937	1.78E-05
2	2024	Access RoStreet Lig	Skid Steer Loader	Skid Steer Loaders75	Diesel	75	0.21	32	3.281564	4.017785	694.13	0.002185	0.457728	0.443996	0.633997	0.000183	0.002279	0.385636	1.21E-06
2	2024	Access RoStreet Lig	Tractors/Loader/Backhoe	Tractors/Loaders/Bac	Diesel	100	0.21	32	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.000167	0.00196	0.514699	1.56E-06
2	2024	Access RoSubbase P	Dozer	Crawler Tractor/Doze	Diesel	175	0.59	3.365053	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	4.88E-05	0.000137	0.20558	5.53E-07
2	2024	Access RoSubbase P	Dump Truck (12 cy)	Off-highway Trucks60	Diesel	600	0.59	23.68	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000483	0.001689	4.960174	1.32E-05
2	2024	Access RoSubbase P	Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	3.365053	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	6.87E-05	0.00024	0.704867	1.87E-06
2	2024	Access RoSubbase P	Roller	Rollers100	Diesel	100	0.59	3.278769	0.417356	1.87531	596.0587	0.001624	0.064693	0.062752	0.034547	8.9E-05	0.000253	0.127104	3.46E-07
2	2024	Access RoTopsoil Pl	Dozer	Crawler Tractor/Doze	Diesel	175	0.59	6.566667	0.127318	0.357586	536.7756	0.001443	0.032211	0.031245	0.019137	9.52E-05	0.000267	0.401175	1.08E-06
2	2024	Access RoTopsoil Pl	Dump Truck	Off-highway Trucks60	Diesel	600	0.59	6.566667	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000134	0.000468	1.375499	3.65E-06
2	2024	Access RoTopsoil Pl	Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	6.566667	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000134	0.000468	1.375499	3.65E-06
2	2024	Access RoTree Plant	Flatbed Truck	Off-highway Trucks60	Diesel	600	0.59	33120	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.876023	2.361629	6937.54	0.01842
2	2024	Access RoTree Plant	Other General Equipment	Other Construction E	Diesel	175	0.43	33120	0.258085	0.811691	536.6978	0.001493	0.062621	0.001743	0.046238	0.709033	2.229945	1474.461	0.004101
2	2024	Access RoTree Plant	Pickup Truck	Off-highway Trucks60	Diesel	600	0.59	33120	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.676023	2.361629	6937.54	0.01842
2	2024	Access RoTree Plant	Tractors/Loader/Backhoe	Tractors/Loaders/Bac	Diesel	100	0.21	33120	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.036238	0.20879	532.7131	0.00161
3	2024	Building	Concrete F Backhoe	Tractors/Loaders/Bac	Diesel	100	0.21	320	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.019675	0.019602	5.146986	1.56E-05
3	2024	Building	Concrete F Concrete Ready Mix Trucks	Off-highway Trucks60	Diesel	600	0.59	60	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.001225	0.004278	12.56801	3.34E-05
3	2024	Building	Concrete F Fork Truck	Other Construction E	Diesel	100	0.59	320	0.654952	1.47016	595.9832	0.00166	0.098026	0.095085	0.060399	0.013631	0.030597	12.40345	3.45E-05
3	2024	Building	Concrete F Tool Truck	Off-highway Trucks60	Diesel	600	0.59	80	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.001633	0.005704	16.75734	4.45E-05
3	2024	Building	Concrete F Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	16	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000327	0.001141	3.351469	8.9E-06
3	2024	Building	Constructi Survey Crew Trucks	Off-highway Trucks60	Diesel	600	0.59	10	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000204	0.000713	2.094668	5.56E-06
3	2024	Building	Constructi Tractor Trailers Temp Fac.	Off-highway Trucks60	Diesel	600	0.59	4	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	8.16E-05	0.000285	0.837867	2.22E-06
3	2024	Building	Exterior W Fork Truck	Other Construction E	Diesel	100	0.59	240	0.654952	1.47016	595.9832	0.00166	0.098026	0.095085	0.060399	0.010223	0.022947	9.302588	2.59E-05
3	2024	Building	Exterior W Man Lift	Rough Terrain Forklift Diesel		75	0.21	240	0.559297	2.73688	595.8792	0.001663	0.06081	0.058986	0.092933	0.00233	0.011404	2.482885	6.93E-06
3	2024	Building	Exterior W Tool Truck	Off-highway Trucks60	Diesel	600	0.59	60	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.001225	0.004278	12.56801	3.34E-05
3	2024	Building	Exterior W Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	24	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.00049	0.001711	5.027203	1.33E-05
3	2024	Building	Interior B Fork Truck	Other Construction E	Diesel	100	0.59	960	0.654952	1.47016	595.9832	0.00166	0.098026	0.095085	0.060399	0.040892	0.019179	37.21035	0.00014
3	2024	Building	Interior B Man Lift	Rough Terrain Forklift Diesel		75	0.21	960	0.559297	2.73688	595.8792	0.001663	0.06081	0.058986	0.092933	0.009322	0.045616	9.931538	2.77E-05
3	2024	Building	Interior B Tool Truck	Off-highway Trucks60	Diesel	600	0.59	120	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.002449	0.008557	25.13602	6.67E-05
3	2024	Building	Interior B Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	120	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.002449	0.008557	25.13602	6.67E-05
3	2024	Building	Roofing High Lift	Rough Terrain Forklift Diesel		100	0.59	120	0.529425	1.320666	596.0214	0.001641	0.079303	0.076924	0.047138	0.004132	0.010307	4.651592	1.28E-05
3	2024	Building	Roofing Man Lift (Fascia Construction)	Rough Terrain Forklift Diesel		75	0.21	120	0.559297	2.73688	595.8792	0.001663	0.06081	0.058986	0.092933	0.001165	0.005702	1.241442	3.46E-06
3	2024	Building	Roofing Material Deliveries	Off-highway Trucks60	Diesel	600	0.59	8	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000163	0.00057	1.675734	4.45E-06
3	2024	Building	Roofing Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	12	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000245	0.000856	2.513602	6.67E-06
3	2024	Building	Security & High Lift	Rough Terrain Forklift Diesel		100	0.59	320	0.529425	1.320666	596.0214	0.001641	0.079303	0.076924	0.047138	0.011018	0.027485	12.40425	3.42E-05
3	2024	Building	Security & Tool Truck	Off-highway Trucks60	Diesel	600	0.59	80	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.001633	0.005704	16.75734	4.45E-05
3	2024	Building	Structural 40 Ton Crane	Cranes300	Diesel	300	0.43	240	0.098349	0.390469	530.9601	0.001447	0.020525	0.01991	0.02823	0.003356	0.013326	18.12047	4.94E-05
3	2024	Building	Structural Fork Truck	Other Construction E	Diesel	100	0.59	120	0.654952	1.47016	595.9832	0.00166	0.098026	0.095085	0.060399	0.010223	0.011474	4.651294	1.3E-05
3	2024	Building	Structural Fork Truck	Off-highway Trucks60	Diesel	600	0.59	16	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000125	0.000478	12.56801	3.34E-05
3	2024	Building	Structural Tractor Trailer- Steel Deliveries	Off-highway Trucks60	Diesel	600	0.59	16	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000327	0.001141	3.351469	8.9E-06
4	2024	Building	Concrete F Backhoe	Tractors/Loaders/Bac	Diesel	100	0.21	320	2.656022	2.64619	694.8278	0.0021	0.350932	0.340404	0.402188	0.019675	0.019602	5.146986	1.56E-05
4	2024	Building	Concrete F Concrete Ready Mix Trucks	Off-highway Trucks60	Diesel	600	0.59	60	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.001225	0.004278	12.56801	3.34E-05
4	2024	Building	Concrete F Fork Truck	Other Construction E	Diesel	100	0.59	320	0.654952	1.47016	595.9832	0.00166	0.098026	0.095085	0.060399	0.013631	0.030597	12.40345	3.45E-05
4	2024	Building	Concrete F Tool Truck	Off-highway Trucks60	Diesel	600	0.59	80	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.001633	0.005704	16.75734	4.45E-05
4	2024	Building	Concrete F Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	16	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000327	0.001141	3.351469	8.9E-06
4	2024	Building	Constructi Survey Crew Trucks	Off-highway Trucks60	Diesel	600	0.59	10	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	0.000204	0.000713	2.094668	5.56E-06
4	2024	Building	Constructi Tractor Trailers Temp Fac.	Off-highway Trucks60	Diesel	600	0.59	4	0.052307	0.182731	536.7912	0.001425	0.011908	0.011155	0.013356	8.16E-05	0.000285	0.837867	2.22E-06
4	2024	Building	Exterior W Fork Truck	Other Construction E	Diesel	100	0.59	240	0.654952	1.47016	595.9832	0.00166	0.098026	0.095085	0.060399	0.010223	0.022947	9.302588	2.59E-05
4	2024	Building	Exterior W Man Lift	Rough Terrain Forklift Diesel		75	0.21	240	0.559297	2.73688	595.8792	0.001663	0.06081	0.058986	0.092933	0.00233	0.011404	2.482885	6.93E

2	2024 Terminal #Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	2 --	258	716	400 --	--	--	--	--	--
2	2024 Terminal #Passenger Passenger Car	Employee Commute	GasolineU Gasoline	Urban Unr	30 --		76	76	258 --	--	--	--	--	--	--
3	2024 Terminal #Asphalt 18Combination Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	400	776 --	--	--	--	--	--
3	2024 Terminal #Cement MSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	4 --	258	400	776 --	--	--	--	--	--
3	2024 Terminal #Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	400	776 --	--	--	--	--	--
3	2024 Terminal #Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	2 --	258	400	776 --	--	--	--	--	--
3	2024 Terminal #Passenger Passenger Car	Employee Commute	GasolineU Gasoline	Urban Unr	30 --		374	374	258 --	--	--	--	--	--	--
4	2024 Taxiway E#Asphalt 18Combination Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	2440	44 --	--	--	--	--	--
4	2024 Taxiway E#Cement MSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	2 --	258	2440	44 --	--	--	--	--	--
4	2024 Taxiway E#Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	2440	44 --	--	--	--	--	--
4	2024 Taxiway E#Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	2440	44 --	--	--	--	--	--
4	2024 Taxiway E#Passenger Passenger Car	Employee Commute	GasolineU Gasoline	Urban Unr	30 --		125.4	125.4	258 --	--	--	--	--	--	--
5	2024 Building - :Cement MSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	--	10000 --	--	--	--	--	--
5	2024 Building - :Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	--	10000 --	--	--	--	--	--
5	2024 Building - :Passenger Passenger Car	Employee Commute	GasolineU Gasoline	Urban Unr	30 --		1936	1936	258 --	--	--	--	--	--	--
5	2024 Building - :Tractor Tr:Combination Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	--	10000 --	--	--	--	--	0.0016
6	2024 Building - :Cement MSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	193	--	10000 --	--	--	--	--	--
6	2024 Building - :Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	193	--	10000 --	--	--	--	--	--
6	2024 Building - :Passenger Passenger Car	Employee Commute	GasolineU Gasoline	Urban Unr	30 --		2079	2079	193 --	--	--	--	--	--	--
6	2024 Building - :Tractor Tr:Combination Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	193	--	10000 --	--	--	--	--	0.0016
1	2024 DemolitionDump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	193	--	414000	35	35	--	--	--
1	2024 DemolitionPassenger Passenger Car	Employee Commute	GasolineU Gasoline	Urban Unr	30 --		110	110	193 --	--	--	--	--	--	--
2	2024 Access Ro:Asphalt 18Combination Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	1200	12 --	--	--	--	--	--
2	2024 Access Ro:Cement MSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	1200	12 --	--	--	--	--	--
2	2024 Access Ro:Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	1200	12 --	--	--	--	--	--
2	2024 Access Ro:Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	258	1200	12 --	--	--	--	--	--
2	2024 Access Ro:Passenger Passenger Car	Employee Commute	GasolineU Gasoline	Urban Unr	30 --		86	86	258 --	--	--	--	--	--	--
3	2024 Building - :Cement MSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	193	--	10000 --	--	--	--	--	--
3	2024 Building - :Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	193	--	10000 --	--	--	--	--	--
3	2024 Building - :Passenger Passenger Car	Employee Commute	GasolineU Gasoline	Urban Unr	30 --		264	264	193 --	--	--	--	--	--	--
3	2024 Building - :Tractor Tr:Combination Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	193	--	10000 --	--	--	--	--	0.0016
4	2024 Building - :Cement MSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	129	--	10000 --	--	--	--	--	--
4	2024 Building - :Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	129	--	10000 --	--	--	--	--	--
4	2024 Building - :Passenger Passenger Car	Employee Commute	GasolineU Gasoline	Urban Unr	30 --		198	198	129 --	--	--	--	--	--	--
4	2024 Building - :Tractor Tr:Combination Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	129	--	10000 --	--	--	--	--	0.0016
5	2024 Site Work Cement MSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	129	--	10000 --	--	--	--	--	--
5	2024 Site Work Dump TruSingle Unit Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	129	--	10000 --	--	--	--	--	--
5	2024 Site Work Passenger Passenger Car	Employee Commute	GasolineU Gasoline	Urban Unr	30 --		660	660	129 --	--	--	--	--	--	--
5	2024 Site Work Tractor Tr:Combination Short-haul Truck	Material Delivery	DieselUrb:Diesel	Urban Unr	40	5	1 --	129	--	10000 --	--	--	--	--	0.008

Fugitive Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Scenario I\Year	Project	Fugitive St	Number of Months	CO	NOx	SO2	PM10	VOC	
1	2024 Taxiways Asphalt Dr			12	0	0	0	0.05	
1	2024 Taxiways Asphalt St			12	0.23955	0.01495	0.002752	0.0164	0.0074
1	2024 Taxiways Material N			12	0	0	0	0.02995	0
1	2024 Taxiways Material N			12	0	0	0	0.0963	0
1	2024 Taxiways Soil Handli			12	0	0	0	0.028	0
1	2024 Taxiways Unstabiliz			12	0	0	0	3.99E-08	0
2	2024 Terminal #Asphalt Dr			12	0	0	0	0.05	
2	2024 Terminal #Asphalt St			12	0.69295	0.04325	0.00795	0.04745	0.02145
2	2024 Terminal #Concrete P			12	0	0	0	0.24505	0
2	2024 Terminal #Material N			12	0	0	0	0.0479	0
2	2024 Terminal #Material N			12	0	0	0	0.152	0
2	2024 Terminal #Soil Handli			12	0	0	0	0.08105	0
2	2024 Terminal #Unstabiliz			12	0	0	0	1.16E-07	0
3	2024 Terminal #Asphalt Dr			12	0	0	0	0.05	
3	2024 Terminal #Asphalt St			12	0.75105	0.0469	0.00865	0.05145	0.02325
3	2024 Terminal #Concrete P			12	0	0	0	0.2656	0
3	2024 Terminal #Material N			12	0	0	0	0.0479	0
3	2024 Terminal #Material N			12	0	0	0	0.15245	0
3	2024 Terminal #Soil Handli			12	0	0	0	0.08785	0
3	2024 Terminal #Unstabiliz			12	0	0	0	1.25E-07	0
4	2024 Taxiway E#Asphalt Dr			12	0	0	0	0.05	
4	2024 Taxiway E#Asphalt St			12	0.25975	0.0162	0.002985	0.0178	0.00805
4	2024 Taxiway E#Concrete P			12	0	0	0	0.09185	0
4	2024 Taxiway E#Material N			12	0	0	0	0.02995	0
4	2024 Taxiway E#Material N			12	0	0	0	0.0954	0
4	2024 Taxiway E#Soil Handli			12	0	0	0	0.0304	0
4	2024 Taxiway E#Unstabiliz			12	0	0	0	4.33E-08	0
5	2024 Building - :Concrete P			12	0	0	0	0.00855	0
5	2024 Building - :Material N			12	0	0	0	0.01195	0
5	2024 Building - :Material N			12	0	0	0	0.03535	0
6	2024 Building - :Concrete P			9	0	0	0	0.00855	0
6	2024 Building - :Material N			9	0	0	0	0.00895	0
6	2024 Building - :Material N			9	0	0	0	0.02645	0
2	2024 Access Ro:Asphalt Dr			12	0	0	0	0.0475	
2	2024 Access Ro:Asphalt St			12	0.03485	0.002176	0.000401	0.002386	0.001079
2	2024 Access Ro:Concrete P			12	0	0	0	0.0123	0
2	2024 Access Ro:Material N			12	0	0	0	0.02395	0
2	2024 Access Ro:Material N			12	0	0	0	0.073	0
2	2024 Access Ro:Soil Handli			12	0	0	0	0.004076	0
2	2024 Access Ro:Unstabiliz			12	0	0	0	5.81E-09	0
3	2024 Building - :Concrete P			9	0	0	0	0.00855	0
3	2024 Building - :Material N			9	0	0	0	0.00895	0
3	2024 Building - :Material N			9	0	0	0	0.02645	0
4	2024 Building - :Concrete P			6	0	0	0	0.00855	0
4	2024 Building - :Material N			6	0	0	0	0.006	0
4	2024 Building - :Material N			6	0	0	0	0.01765	0
5	2024 Site Work Material N			6	0	0	0	0.006	0
5	2024 Site Work Material N			6	0	0	0	0.018	0
5	2024 Site Work Soil Handli			6	0	0	0	0.002831	0
5	2024 Site Work Unstabiliz			6	0	0	0	2.02E-09	0
Totals					1.97815	0.123476	0.022737	1.933243	0.308729

2024 Totals

Year	Emission SCO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO2e	
2024 NonRoad	6.495923	15.51591		0.072942339	1.189925837	1.154227	1.254158	27254.13	--	--	
2024 OnRoad	49.45708	2.036828		0.036389226	0.05161262	0.046211	1.249178	5673.515	0.143606	0.031344	
2024 Fugitive	1.97815	0.123476		0.022737	1.933242832	--	0.308729	--	--	--	
2024 TOTAL	57.93115	17.67622		0.132068565	3.174781289	1.200438	2.812065	32927.65	0.143606	0.031344	32939.98

ASSUMPTIONS

Emission factors were developed from the following models:

On-Road Vehicles: MOVES3.0.2, revised September 2021

Non-Road Equipment: MOVES3.0.2 September 2021

In addition to the overall project size dimensions (e.g., Length and width) provided by the user, an additional 10 ft length and 10 ft width is added to account for disturbance areas.

The number of employees is based on the higher of two methods: (1) number of equipment, and (2) multiply the project cost in million by 11.

The average employee travels 30 miles round-trip from home to construction site each day.

The average on-road material delivery round-trip distance per truck is 40 miles per day.

For calculating fugitive, re-entrained PM emissions from on-road and non-road material delivery and handling equipment, a nominal VMT of 5 miles is used for each vehicle per day.

In deriving emission factors from NONROAD, the horsepower for each equipment represents the most popular in each equipment category.

The total length of each modeled scenario is used to define the number of days associated with vehicle/equipment evaporative emissions.

The choice of location and season are assumed to adequately represent differences in fuel characteristics affecting emissions.

Only two seasons (Summer and Winter) are used to represent all seasons.

14 U.S. Counties are used to represent all other counties in the U.S. (all other counties are mapped to the 14).

The default methods assume that all construction equipment use diesel as well as heavy-duty on-road vehicles, while passenger vehicles (including motorcycles) use gasoline.

Fugitive emissions are only modeled for:

- Asphalt drying
- Asphalt storage and batching
- Concrete mixing/batching
- Soil handling
- Unstabilized land and wind erosion
- Material movement (unpaved roads)
- Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the asphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO₂, CH₄, and N₂O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 cy)

ns (TPY)

PM10 (tpy) PM2.5 (tpy) VOC Exhaust (tpy)

7.05E-05	6.84E-05	4.28E-05
0.00023	0.000223	0.000258
0.000143	0.000138	0.000105
6.38E-05	6.19E-05	7.16E-05
5.78E-05	5.61E-05	3.09E-05
0.000109	0.000106	0.000151
4.9E-05	4.76E-05	0.000101
7.36E-05	7.14E-05	0.000256
0.000167	0.000162	0.000103
0.000223	0.000216	0.00025
0.000388	0.000377	0.000231
0.000492	0.000477	0.000552
0.000247	0.00024	0.000158
0.002913	0.002826	0.003507
0.00055	0.000534	0.000406
0.000492	0.000477	0.000552
0.000446	0.000432	0.000238
0.000273	0.000265	0.000307
0.001618	0.00157	0.001948
0.000306	0.000296	0.000226
0.000273	0.000265	0.000307
0.000478	0.000464	0.000548
0.013382	0.012981	0.01501
0.000224	0.000217	0.000133
0.000284	0.000275	0.000318
0.000284	0.000275	0.000318
0.000119	0.000115	6.33E-05
0.000168	0.000163	9.97E-05
0.000567	0.00055	0.000636
8.55E-05	8.29E-05	5.47E-05
0.00017	0.000165	0.000191
0.000154	0.000149	8.23E-05
0.000716	0.000695	0.00062
6.32E-05	6.13E-05	3.75E-05
0.00017	0.000165	0.000191
0.000681	0.000661	0.000764
0.000762	0.000739	0.000563
0.000681	0.000661	0.000764
0.001166	0.001131	0.001614
0.001191	0.001156	0.001365
5.39E-05	5.23E-05	3.2E-05
4.71E-05	4.57E-05	4.97E-05
6.18E-05	6E-05	3.3E-05
0.000552	0.000535	0.000476
6.15E-05	5.97E-05	6.9E-05
0.000206	0.0002	0.000231
0.001221	0.001184	0.00147
0.000231	0.000224	0.00017
0.000206	0.0002	0.000231
0.000353	0.000342	0.000489
0.000361	0.00035	0.000413
0.001051	0.00102	0.001179
0.001175	0.00114	0.000868
0.001051	0.00102	0.001179
6.23E-05	6.05E-05	4.6E-05
0.000112	0.000108	0.000125
1.51E-05	1.46E-05	5.24E-05
9.75E-05	9.46E-05	0.000112
8.48E-05	8.23E-05	5.04E-05
0.000756	0.000734	0.000848
0.000107	0.000104	0.000121
9.48E-05	9.2E-05	5.06E-05
0.00012	0.000116	7.11E-05
0.000152	0.000147	0.00017
0.000152	0.000147	0.00017
0.000204	0.000198	0.000124
0.000665	0.000645	0.000746
0.000413	0.0004	0.000305
0.000185	0.000179	0.000207
0.000167	0.000162	8.93E-05
0.000316	0.000306	0.000437
0.000142	0.000138	0.000291
0.000167	0.000162	0.00058
0.000379	0.000368	0.000234
0.000506	0.00049	0.000567
0.000492	0.000478	0.000303
8.09E-05	7.85E-05	0.000271
0.002052	0.00199	0.002301
0.001101	0.001068	0.000813
0.001477	0.001433	0.001657
0.002914	0.002827	0.003508
0.000544	0.000528	0.00033

0.000295 0.000287 0.000607
8.52E-05 8.26E-05 5.06E-05
0.000108 0.000105 0.000121
5.42E-05 5.26E-05 3.47E-05
0.000639 0.00062 0.000769
0.000121 0.000117 8.91E-05
0.000108 0.000105 0.000121
9.77E-05 9.48E-05 5.22E-05
6E-05 5.82E-05 6.73E-05
0.000355 0.000344 0.000427
6.7E-05 6.5E-05 4.95E-05
6E-05 5.82E-05 6.73E-05
0.000105 0.000102 0.00012
0.013382 0.012981 0.01501
0.000647 0.000628 0.000385
0.000821 0.000796 0.00092
0.000821 0.000796 0.00092
0.000343 0.000333 0.000183
0.000486 0.000471 0.000289
0.001641 0.001592 0.001841
0.000247 0.00024 0.000158
0.000492 0.000478 0.000552
0.000446 0.000432 0.000238
0.002072 0.00201 0.001793
0.000183 0.000177 0.000109
3.7E-05 3.59E-05 4.15E-05
0.000148 0.000143 0.000166
0.000165 0.00016 0.000122
0.000148 0.000143 0.000166
0.000253 0.000245 0.00035
0.000259 0.000251 0.000296
0.000121 0.000117 7.2E-05
0.000106 0.000103 0.000112
0.000139 0.000135 7.42E-05
0.001241 0.001204 0.001071
0.000138 0.000134 0.000155
6.91E-05 6.71E-05 7.76E-05
0.000409 0.000397 0.000493
7.73E-05 7.5E-05 5.71E-05
6.91E-05 6.71E-05 7.76E-05
0.000118 0.000115 0.000164
0.000121 0.000117 0.000139
0.003042 0.002951 0.003412
0.0034 0.003298 0.002511
0.003042 0.002951 0.003412
0.000394 0.000382 0.000442
0.00044 0.000427 0.000325
0.000394 0.000382 0.000442
0.000141 0.000137 0.000104
0.000253 0.000245 0.000284
3.42E-05 3.31E-05 0.000119
0.000221 0.000214 0.000253
0.000245 0.000238 0.000146
0.002188 0.002123 0.002455
0.000311 0.000302 0.000349
0.000274 0.000266 0.000147
0.000269 0.000261 0.00016
0.000341 0.000331 0.000383
0.000341 0.000331 0.000383
0.000221 0.000214 0.000134
0.000721 0.000699 0.000808
0.000447 0.000434 0.00033
0.0002 0.000194 0.000224
0.000181 0.000176 9.68E-05
0.000342 0.000332 0.000474
0.000154 0.000149 0.000316
0.000182 0.000176 0.000631
0.000413 0.0004 0.000254
0.00055 0.000534 0.000617
0.000534 0.000518 0.000329
8.77E-05 8.51E-05 0.000294
0.002224 0.002157 0.002494
0.001193 0.001157 0.000881
0.001601 0.001553 0.001796
0.003159 0.003064 0.003802
0.00059 0.000572 0.000358
0.00032 0.000311 0.000658
4.81E-05 4.67E-05 2.86E-05
6.1E-05 5.91E-05 6.84E-05
3.06E-05 2.97E-05 1.96E-05
0.000361 0.00035 0.000434
6.82E-05 6.61E-05 5.03E-05
6.1E-05 5.91E-05 6.84E-05
5.52E-05 5.35E-05 2.95E-05
3.39E-05 3.29E-05 3.8E-05
0.0002 0.000194 0.000241
3.79E-05 3.67E-05 2.8E-05
3.39E-05 3.29E-05 3.8E-05
5.92E-05 5.74E-05 6.79E-05
0.013382 0.012981 0.01501
0.000702 0.000681 0.000417
0.000889 0.000863 0.000998
0.000889 0.000863 0.000998
0.000372 0.000361 0.000198
0.000526 0.000511 0.000313
0.001779 0.001725 0.001995
0.000268 0.00026 0.000172
0.000534 0.000518 0.000599
0.000483 0.000469 0.000258
0.002246 0.002179 0.001943
0.000198 0.000192 0.000118
2.07E-05 2E-05 2.32E-05
8.26E-05 8.01E-05 9.27E-05
9.23E-05 8.96E-05 6.82E-05
8.26E-05 8.01E-05 9.27E-05
0.000141 0.000137 0.000196
0.000144 0.00014 0.000166
0.000131 0.000127 7.79E-05
0.000115 0.000111 0.000121

0.000151 0.000146 8.04E-05
0.001343 0.001303 0.00116
0.00015 0.000145 0.000168
7.29E-05 7.07E-05 8.17E-05
0.000431 0.000418 0.000519
8.14E-05 7.9E-05 6.01E-05
7.29E-05 7.07E-05 8.17E-05
0.000125 0.000121 0.000173
0.000127 0.000124 0.000146
0.003297 0.003198 0.003698
0.003685 0.003575 0.002721
0.003297 0.003198 0.003698
0.00427 0.000414 0.000479
0.000477 0.000463 0.000352
0.00427 0.000414 0.000479
0.000154 0.000149 0.000114
0.000275 0.000267 0.000309
3.72E-05 3.61E-05 0.000129
0.00024 0.000233 0.000276
0.000266 0.000258 0.000158
0.002372 0.002301 0.00266
0.000337 0.000327 0.000378
0.000297 0.000288 0.000159
0.000291 0.000283 0.000173
0.000369 0.000358 0.000414
0.000369 0.000358 0.000414
7.65E-05 7.42E-05 4.64E-05
0.000249 0.000242 0.00028
0.000155 0.00015 0.000114
6.92E-05 6.71E-05 7.76E-05
6.27E-05 6.08E-05 3.35E-05
0.000118 0.000115 0.000164
5.32E-05 5.16E-05 0.000109
7.36E-05 7.14E-05 0.000256
0.000167 0.000162 0.000103
0.000223 0.000216 0.00025
0.000185 0.000179 0.000114
3.03E-05 2.94E-05 0.000102
0.000769 0.000746 0.000863
0.000413 0.0004 0.000305
0.000554 0.000537 0.000621
0.001092 0.00106 0.001315
0.000204 0.000198 0.000124
0.000111 0.000107 0.000228
0.000287 0.000279 0.000171
0.000364 0.000353 0.000409
0.000183 0.000177 0.000117
0.002156 0.002092 0.002596
0.000407 0.000395 0.000301
0.000364 0.000353 0.000409
0.00033 0.00032 0.000176
0.000202 0.000196 0.000227
0.001198 0.001162 0.001442
0.000226 0.000219 0.000167
0.000202 0.000196 0.000227
0.000354 0.000343 0.000406
0.013382 0.012981 0.01501
0.000243 0.000235 0.000144
0.000308 0.000298 0.000345
0.000308 0.000298 0.000345
0.000129 0.000125 6.87E-05
0.000182 0.000177 0.000108
0.000615 0.000597 0.00069
9.27E-05 8.99E-05 5.94E-05
0.000185 0.000179 0.000207
0.000167 0.000162 8.92E-05
0.000777 0.000754 0.000672
6.85E-05 6.65E-05 4.07E-05
0.000126 0.000122 0.000141
0.000504 0.000489 0.000565
0.000563 0.000546 0.000416
0.000504 0.000489 0.000565
0.000862 0.000836 0.001194
0.000881 0.000855 0.00101
5.38E-05 5.22E-05 3.2E-05
4.71E-05 4.57E-05 4.97E-05
6.18E-05 5.99E-05 3.3E-05
0.000552 0.000535 0.000476
6.15E-05 5.96E-05 6.9E-05
0.000154 0.000149 0.000173
0.000911 0.000884 0.001096
0.000172 0.000167 0.000127
0.000154 0.000149 0.000173
0.000263 0.000255 0.000365
0.000269 0.000261 0.000308
0.00114 0.001106 0.001279
0.001275 0.001236 0.000941
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9.75E-05 9.46E-05 0.000112
9.2E-05 8.92E-05 5.46E-05
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0.000103 9.98E-05 5.49E-05
0.00012 0.000116 7.11E-05
0.000152 0.000147 0.00017
0.000152 0.000147 0.00017
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0.000372 0.000361 0.000417
7.43E-05 7.21E-05 8.34E-05
4.65E-05 4.51E-05 5.21E-05
1.86E-05 1.8E-05 2.08E-05
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0.000253 0.000246 0.000387
0.000279 0.00027 0.000313

0.000112 0.000108 0.000125
0.00612 0.005937 0.003771
0.001014 0.000983 0.001549
0.000558 0.000541 0.000625
0.000558 0.000541 0.000625
0.000619 0.0006 0.000368
0.000127 0.000123 0.000194
3.72E-05 3.61E-05 4.17E-05
5.58E-05 5.41E-05 6.25E-05
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0.0007 0.000679 0.000963
0.000765 0.000742 0.000471
0.000279 0.00027 0.000313
7.43E-05 7.21E-05 8.34E-05
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0.000372 0.000361 0.000417
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4.65E-05 4.51E-05 5.21E-05
1.86E-05 1.8E-05 2.08E-05
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3.72E-05 3.61E-05 4.17E-05
5.58E-05 5.41E-05 6.25E-05
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7.13E-06 6.92E-06 1.46E-05
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4.46E-05 4.33E-05 5E-05
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2.44E-05 2.37E-05 1.45E-05
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0.000446 0.000433 0.0005
0.000446 0.000433 0.0005
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 1.38E-05 1.34E-05 7.37E-06
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 3.72E-05 3.61E-05 4.17E-05
 5.58E-05 5.41E-05 6.25E-05
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 7.43E-05 7.21E-05 8.34E-05
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 7.43E-05 7.21E-05 8.34E-05
 4.65E-05 4.51E-05 5.21E-05
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 0.000619 0.0006 0.000368
 0.000127 0.000123 0.000194
 3.72E-05 3.61E-05 4.17E-05
 5.58E-05 5.41E-05 6.25E-05
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 0.0007 0.000679 0.000963
 0.000765 0.000742 0.000471
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 7.43E-05 7.21E-05 8.34E-05
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 1.86E-05 1.8E-05 2.08E-05
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 0.000112 0.000108 0.000125
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 8.8E-05 8.53E-05 5.23E-05
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 0.000168 0.000163 8.99E-05
 7.43E-05 7.21E-05 8.34E-05
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 0.000975 0.000946 0.001117
 0.000383 0.000371 0.000236
 0.000139 0.000135 0.000156
1.189926 1.154227 1.254158

VMT	MOVES ONROAD Emissions Factors (g/mile)													MOVES ONROAD Emissions (tpy)												
	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O								
1436	2.24658	4.041014	0.005599	0.074091	0.068163	0.180534	1673.661	0.02058	0.002802	0.003556	0.006397	8.86E-06	0.000117	0.000108	0.000286	2.649283	3.26E-05	4.44E-06								
22894	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.002869	0.047973	8.76E-05	0.001027	0.000944	0.002981	26.13528	0.000413	8.29E-05								
2035	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.002922	0.004264	7.78E-06	9.13E-05	8.4E-05	0.000265	2.32311	3.67E-05	7.37E-06								
12210	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.01753	0.025585	4.67E-05	0.000548	0.000504	0.00159	13.93866	0.00022	4.42E-05								
3848328	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	12.75935	0.338215	0.009139	0.009377	0.008295	0.313857	1375.693	0.035823	0.007852								
4156	2.24658	4.041014	0.005599	0.074091	0.068163	0.180534	1673.661	0.02058	0.002802	0.010292	0.018513	2.56E-05	0.000339	0.000312	0.000827	7.667425	9.43E-05	1.28E-05								
66230	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.095088	0.138781	0.000253	0.00297	0.002732	0.008624	75.60668	0.001194	0.00024								
5887	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.008452	0.012336	2.25E-05	0.000264	0.000243	0.000767	6.720467	0.000106	2.13E-05								

35323	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.050714	0.074017	0.000135	0.001584	0.001457	0.004599	40.32394	0.000637	0.000128	
588240	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	1.950342	0.051698	0.001397	0.001433	0.001268	0.047975	210.2828	0.005476	0.0012	
4504	2.24658	4.041014	0.005599	0.074091	0.068163	0.180534	1673.661	0.02058	0.002802	0.011154	0.020063	2.78E-05	0.000368	0.000338	0.000896	8.309452	0.000102	1.39E-05	
71780	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.103056	0.15041	0.000275	0.003219	0.002961	0.000946	81.94243	0.001294	0.00026	
6380	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.00916	0.013369	2.44E-05	0.000286	0.000263	0.000831	7.283264	0.000115	2.31E-05	
38283	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.054964	0.08022	0.000146	0.001717	0.001579	0.004985	43.70301	0.00069	0.000139	
2894760	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	9.597738	0.254409	0.006874	0.007053	0.006239	0.236087	1034.813	0.026947	0.005906	
1558	2.24658	4.041014	0.005599	0.074091	0.068163	0.180534	1673.661	0.02058	0.002802	0.003858	0.00694	9.62E-06	0.000127	0.000117	0.00031	2.874362	3.53E-05	4.81E-06	
24827	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.035645	0.052023	9.5E-05	0.001113	0.001024	0.003233	28.34194	0.000448	8.99E-05	
2207	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.003169	0.004625	8.44E-06	9.9E-05	9.1E-05	0.000287	2.519462	3.98E-05	7.99E-06	
13241	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.01901	0.027746	5.06E-05	0.000594	0.000546	0.001724	15.11563	0.000239	4.8E-05	
970596	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	3.218065	0.085302	0.002305	0.002365	0.002092	0.079159	346.9667	0.009035	0.00198	
2313	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.003321	0.004847	8.85E-06	0.000104	9.54E-05	0.000301	2.640469	4.17E-05	8.38E-06	
1233	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.00177	0.002584	4.72E-06	5.53E-05	5.09E-05	0.000161	1.407565	2.22E-05	4.47E-06	
1949846	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	6.464823	0.171364	0.00463	0.004751	0.004203	0.159023	697.027	0.018151	0.003978	
160	2.24658	4.041014	0.005599	0.074091	0.068163	0.180534	1673.661	0.02058	0.002802	0.000396	0.000713	9.87E-07	1.31E-05	1.2E-05	3.18E-05	0.295185	3.63E-06	4.94E-07	
2313	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.003321	0.004847	8.85E-06	0.000104	9.54E-05	0.000301	2.640469	4.17E-05	8.38E-06	
1233	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.00177	0.002584	4.72E-06	5.53E-05	5.09E-05	0.000161	1.407565	2.22E-05	4.47E-06	
2037410	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	6.755146	0.17906	0.004838	0.004964	0.004391	0.166164	728.3292	0.018966	0.004157	
160	2.24658	4.041014	0.005599	0.074091	0.068163	0.180534	1673.661	0.02058	0.002802	0.000396	0.000713	9.87E-07	1.31E-05	1.2E-05	3.18E-05	0.295185	3.63E-06	4.94E-07	
0	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0	0	0	0	0	0	0	0	0	
636900	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	2.111677	0.055975	0.001512	0.001552	0.001373	0.051943	227.6777	0.005929	0.001299	
209	2.24658	4.041014	0.005599	0.074091	0.068163	0.180534	1673.661	0.02058	0.002802	0.000518	0.000931	1.29E-06	1.71E-05	1.57E-05	4.16E-05	0.385585	4.74E-06	6.46E-07	
3330	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.004781	0.006978	1.27E-05	0.000149	0.000137	0.000434	3.801453	6E-05	1.21E-05	
296	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.000425	0.00062	1.13E-06	1.33E-05	1.22E-05	3.85E-05	0.337907	5.34E-06	1.07E-06	
1776	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.00255	0.003721	6.79E-06	7.96E-05	7.33E-05	0.000231	2.027442	3.2E-05	6.48E-06	
665640	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	2.206966	0.058501	0.001581	0.001622	0.001435	0.054287	237.9516	0.006196	0.001358	
2313	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.003321	0.004847	8.85E-06	0.000104	9.54E-05	0.000301	2.640469	4.17E-05	8.38E-06	
1233	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.00177	0.002584	4.72E-06	5.53E-05	5.09E-05	0.000161	1.407565	2.22E-05	4.47E-06	
152856	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	5.068083	0.013434	0.000363	0.000372	0.000329	0.012466	54.64265	0.001423	0.000312	
160	2.24658	4.041014	0.005599	0.074091	0.068163	0.180534	1673.661	0.02058	0.002802	0.000396	0.000713	9.87E-07	1.31E-05	1.2E-05	3.18E-05	0.295185	3.63E-06	4.94E-07	
2313	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.003321	0.004847	8.85E-06	0.000104	9.54E-05	0.000301	2.640469	4.17E-05	8.38E-06	
1233	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.00177	0.002584	4.72E-06	5.53E-05	5.09E-05	0.000161	1.407565	2.22E-05	4.47E-06	
766260	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	2.540578	0.067344	0.00182	0.001867	0.001652	0.062494	273.9211	0.007133	0.001563	
160	2.24658	4.041014	0.005599	0.074091	0.068163	0.180534	1673.661	0.02058	0.002802	0.000396	0.000713	9.87E-07	1.31E-05	1.2E-05	3.18E-05	0.295185	3.63E-06	4.94E-07	
2313	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.003321	0.004847	8.85E-06	0.000104	9.54E-05	0.000301	2.640469	4.17E-05	8.38E-06	
1233	1.302458	1.900938	0.00347	0.04068	0.037425	0.118124	1035.616	0.016355	0.003286	0.00177	0.002584	4.72E-06	5.53E-05	5.09E-05	0.000161	1.407565	2.22E-05	4.47E-06	
255420	3.007806	0.079729	0.002154	0.00221	0.001955	0.073987	324.2969	0.008445	0.001851	8.846859	0.022448	0.000607	0.000622	0.000551	0.020831	91.30702	0.002378	0.000521	
800	2.24658	4.041014	0.005599	0.074091	0.068163	0.180534	1673.661	0.02058	0.002802	0.001981	0.003564	4.94E-06	6.53E-05	6.01E-05	0.000159	1.475924	1.81E-05	2.47E-06	
										totals	49.45708	2.036828	0.036389	0.051613	0.046211	1.249178	5673.515	0.143606	0.031344

STUDY

Study Name
 Austin Airport

Study Description
 Construction Schedule 2025

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources
 Units for Non-Greenhouse Gases Emission: Short Ton
 Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

Scenario ID	Year	Project	Construct	Fuel	HP Average Load	Facts	Hours of ACO	3	Nox	CO2	SO2	PM10	PM2.5	VOC	8	11	CO (tpy)	NOx (tpy)	CO2 (tpy)	SO2 (tpy)	PM10 (tpy)	PM2.5 (tpy)	VOC Exhaust (tpy)
1	2025	Taxways	Asphalt P/ Asphalt Paver	Diesel	Moves/lookp	Pavers/175	175	0.59	13.73625	0.135357	0.357378	0.001446	0.034367	0.033336	0.00054	0.00012	0.000556	0.839179	2.28E+06	5.37E+05	5.21E+05	3.21E+05	0.00028
1	2025	Taxways	Asphalt P/ Dump Truck	Diesel	Off-highway Trucks/600	600	0.59	49.47214	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Asphalt P/ Other General Equipment	Diesel	Other Construction Equipment/175	175	0.43	27.4725	0.022517	0.069474	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Asphalt P/ Pickup Truck	Diesel	Off-highway Trucks/600	600	0.59	13.73625	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Asphalt P/ Roller	Diesel	Rollers/100	100	0.59	13.73625	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Asphalt P/ Skid Steer Loader	Diesel	Skid Steer Loaders/75	75	0.21	13.73625	0.015688	0.046430	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Asphalt P/ Surfacing Equipment (Grooving)	Diesel	Other Construction Equipment/25	25	0.59	17.5824	1.493648	3.763477	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Asphalt P/ Chain Saw	Diesel	Other Construction Equipment/11	11	0.7	36	2.469749	4.183621	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Clearing a Chipper/ Stump Grinder	Diesel	Other Construction Equipment/100	100	0.43	36	0.556396	1.360255	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Clearing a Pickup Truck	Diesel	Off-highway Trucks/600	600	0.59	48	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Dozer	Diesel	Crawler Tractor/Dozers/175	175	0.59	105.92	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Dump Truck	Diesel	Off-highway Trucks/600	600	0.59	105.92	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Excavator	Diesel	Excavators/175	175	0.59	105.92	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Excavator	Diesel	Tractors/Loaders/Backhoes/175	175	0.59	105.92	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Other General Equipment	Diesel	Tractors/Loaders/Backhoes/175	175	0.43	105.92	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Pickup Truck	Diesel	Off-highway Trucks/600	600	0.59	105.92	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Roller	Diesel	Rollers/100	100	0.59	105.92	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Dump Truck	Diesel	Off-highway Trucks/600	600	0.59	58.84444	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Other General Equipment	Diesel	Tractors/Loaders/Backhoes/175	175	0.59	58.84444	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Other General Equipment	Diesel	Other Construction Equipment/175	175	0.43	58.84444	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Pickup Truck	Diesel	Off-highway Trucks/600	600	0.59	58.84444	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Drainage - Pickup Truck	Diesel	Tractors/Loaders/Backhoes/100	100	0.21	58.84444	2.416276	2.477235	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Dust Cont. Water/ Truck	Diesel	Off-highway Trucks/600	600	0.59	2.868	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Dozer	Diesel	Crawler Tractor/Dozers/175	175	0.59	61.05067	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Dump Truck (12 cy)	Diesel	Off-highway Trucks/600	600	0.59	61.05067	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Pickup Truck	Diesel	Off-highway Trucks/600	600	0.59	61.05067	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Roller	Diesel	Rollers/100	100	0.59	28.17723	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Dozer	Diesel	Crawler Tractor/Dozers/175	175	0.59	45.788	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Excavator	Diesel	Off-highway Trucks/600	600	0.59	122.1013	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Excavator	Diesel	Excavators/175	175	0.59	36.6304	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Pickup Truck	Diesel	Off-highway Trucks/600	600	0.59	36.6304	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Roller	Diesel	Rollers/100	100	0.59	36.6304	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Scraper	Diesel	Scrapers/600	600	0.59	45.788	0.193562	0.494954	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Excavator Dozer	Diesel	Crawler Tractor/Dozers/175	175	0.59	17.23765	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Fencing	Diesel	Off-highway Trucks/600	600	0.59	36.66667	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Fencing	Diesel	Off-highway Trucks/600	600	0.59	146.6667	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Fencing	Diesel	Other Construction Equipment/175	175	0.43	146.6667	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Fencing	Diesel	Off-highway Trucks/600	600	0.59	146.6667	0.039133	0.154587	0.001421	0.009664	0.009375	0.011812	0.000755	0.002984	10.36285	2.74E+05	0.000187	0.000181	0.000181	0.00028	0.00028
1	2025	Taxways	Fencing	Diesel	Skid Steer Loaders/75	75	0.21	146.6667	3.015688	3.948664	0.001421	0.009664	0.009375	0.011812	0.000755	0.00							

4	2025	TxWay E/Clearing a Pickup Truck	Diesel	600	59	48	0.039133	1.545897	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.002896	10.05449	3.1E-06	0.000181	0.000152	9.51E-05	
4	2025	TxWay E/Concrete F Air Compressor	Diesel	100	0.43	39.7232	0.556396	1.360255	96.0114	0.001645	0.008344	0.008043	0.050507	0.001048	0.002561	1.122029	3.1E-06	0.000157	0.000152	9.51E-05	
4	2025	TxWay E/Concrete F Concrete Saws	Diesel	40	0.59	39.7232	0.302419	2.549508	95.8721	0.001757	0.02584	0.025085	0.959530	0.000313	0.002638	0.615766	2.67E-05	0.000157	0.000152	9.51E-05	
4	2025	TxWay E/Concrete F Concrete Truck	Diesel	40	0.59	16.5133	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.002527	0.009984	34.66982	1.8E-06	0.00024	0.000065	0.000763	
4	2025	TxWay E/Concrete F General Equipment	Diesel	175	0.43	79.4464	0.22517	0.694274	536.7159	0.001481	0.054749	0.039769	0.001481	0.002367	0.009984	9.78E-06	0.000361	0.000035	0.000035	0.000549	
4	2025	TxWay E/Concrete F Pickup Truck	Diesel	600	0.59	119.1696	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.002527	0.009984	21.96227	6.61E-05	0.00049	0.000036	0.000549	
4	2025	TxWay E/Concrete F Rubber Tire Loader	Diesel	175	0.59	39.7232	0.985897	1.764742	536.7955	0.001867	0.228275	0.215995	0.286259	0.004457	0.007189	2.829251	8.4E-06	0.00107	0.000397	0.001169	
4	2025	TxWay E/Concrete F Slip Form Paver	Diesel	175	0.59	39.7232	0.135357	0.955738	636.7177	0.003446	0.034367	0.033336	0.02054	0.006612	0.001608	2.42678	6.5E-06	0.000155	0.000031	9.29E-05	
4	2025	TxWay E/Concrete F Surfacing Equipment (Gridding)	Diesel	25	0.59	78.4	0.093732	0.493668	376.9747	951.486	0.002188	0.171289	0.16615	0.342023	0.009065	0.002431	0.384387	1.4E-06	0.000111	0.000107	0.000227
4	2025	TxWay E/Drainage - Dozer	Diesel	175	0.59	78.4	0.093732	0.386867	536.7896	0.001481	0.032793	0.02211	0.014312	0.00083	0.00256	0.789793	1.4E-06	0.000203	0.000197	0.000128	
4	2025	TxWay E/Drainage - Dump Truck	Diesel	600	0.59	78.4	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001167	0.004729	16.42323	4.3E-05	0.000396	0.000387	0.000361	
4	2025	TxWay E/Drainage - Excavator	Diesel	175	0.59	78.4	0.073559	0.244632	356.7982	0.001423	0.0175	0.016975	0.011812	0.00056	0.002183	4.78897	1.7E-05	0.000156	0.000151	0.000103	
4	2025	TxWay E/Drainage - Excavator	Diesel	175	0.59	78.4	0.985897	1.764742	536.7955	0.001867	0.228275	0.215995	0.286259	0.004457	0.007189	2.829251	8.4E-06	0.00107	0.000397	0.001169	
4	2025	TxWay E/Drainage - Pickup Truck	Diesel	175	0.59	78.4	0.22517	0.694274	536.7159	0.001481	0.054749	0.039769	0.001481	0.002367	0.009984	9.78E-06	0.000361	0.000035	0.000035	0.000549	
4	2025	TxWay E/Drainage - Pickup Truck	Diesel	600	0.59	78.4	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.002527	0.009984	21.96227	6.61E-05	0.00049	0.000036	0.000549	
4	2025	TxWay E/Drainage - Roller	Diesel	100	0.59	43.55556	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.002527	0.009984	9.123515	4.4E-05	0.000164	0.000159	0.000201	
4	2025	TxWay E/Drainage - Roller	Diesel	100	0.59	43.55556	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.002527	0.009984	9.123515	4.4E-05	0.000164	0.000159	0.000201	
4	2025	TxWay E/Drainage - Loader	Diesel	175	0.59	43.55556	0.985897	1.764742	536.7955	0.001867	0.228275	0.215995	0.286259	0.004457	0.007189	2.829251	8.4E-06	0.00107	0.000397	0.001169	
4	2025	TxWay E/Drainage - Other General Equipment	Diesel	175	0.43	43.55556	0.22517	0.694274	536.7159	0.001481	0.054749	0.039769	0.001481	0.002367	0.009984	9.78E-06	0.000361	0.000035	0.000035	0.000549	
4	2025	TxWay E/Drainage - Pickup Truck	Diesel	600	0.59	43.55556	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.002527	0.009984	21.96227	6.61E-05	0.00049	0.000036	0.000549	
4	2025	TxWay E/Drainage - Tractors/Loader/Backhoe	Diesel	100	0.21	43.55556	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.002527	0.009984	9.123515	4.4E-05	0.000164	0.000159	0.000201	
4	2025	TxWay E/Dust Cont Water Truck	Diesel	600	0.59	2880	0.039133	0.154587	694.9526	0.002421	0.032614	0.031486	0.059615	0.002436	0.002493	603.2662	0.001597	0.010861	0.010535	0.013274	
4	2025	TxWay E/Excavator Dozer	Diesel	175	0.59	66.20533	0.039133	0.154587	536.7896	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66.20533	0.039133	0.154587	536.7955	0.001421	0.009664	0.009375	0.011812	0.001733	0.004769	1.08E-05	0.000172	0.000167	0.000108	0.000172	
4	2025	TxWay E/Excavator Dozer	Diesel	600	0.59	66															

5	2025 Fuel Tanks Concrete F Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	725.6497	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.011124	0.048941	152.5845	0.000404	0.002747	0.002865	0.003357		
5	2025 Fuel Tanks Concrete F Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	349.6496	0.22517	0.694274	536.7159	0.00148	0.054749	0.053107	0.039769	0.011812	0.009664	0.009375	0.000182	0.000440	0.002747	0.002865	0.003357	
5	2025 Fuel Tanks Concrete F Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	524.4744	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.009664	0.009375	0.000182	0.000440	0.002747	0.002865	0.003357		
5	2025 Fuel Tanks Concrete F Rubber Tired Loader	Tractors/Loaders/Bachtees175	Diesel	175	0.59	174.8248	0.98857	1.764724	635.7929	0.001867	0.228275	0.258629	0.158122	0.008009	0.019616	0.035114	12.45175	0.372E-05	0.004431	0.004298	0.005146	
5	2025 Fuel Tanks Concrete F Slip Form Paver	Pavers175	Diesel	175	0.59	174.8248	0.98857	1.764724	635.7929	0.001867	0.228275	0.258629	0.158122	0.008009	0.019616	0.035114	12.45175	0.372E-05	0.004431	0.004298	0.005146	
5	2025 Fuel Tanks Concrete F Surfacing Equipment (Gridding)	Other Construction Equipment25	Diesel	25	0.59	174.8248	0.98857	1.764724	635.7929	0.001867	0.228275	0.258629	0.158122	0.008009	0.019616	0.035114	12.45175	0.372E-05	0.004431	0.004298	0.005146	
5	2025 Fuel Tanks Constructi Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	32	0.22517	0.694274	536.7159	0.00148	0.054749	0.053107	0.039769	0.011812	0.009664	0.009375	0.000182	0.000440	0.002747	0.002865	0.003357	
5	2025 Fuel Tanks Constructi Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	32	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.009664	0.009375	0.000182	0.000440	0.002747	0.002865	0.003357		
5	2025 Fuel Tanks Drainage - Excavator	Excavators175	Diesel	175	0.59	151.52	0.073599	0.244632	536.7982	0.001423	0.0175	0.016975	0.011596	0.002168	0.004429	9.257156	2.46E-05	0.000302	0.000293	0.0002		
5	2025 Fuel Tanks Drainage - Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	151.52	0.092973	0.286867	536.7896	0.00143	0.022793	0.02211	0.014312	0.001603	0.009497	9.257156	2.47E-05	0.000302	0.000293	0.000247		
5	2025 Fuel Tanks Drainage - Dump Truck	Off-highway Trucks600	Diesel	600	0.59	151.52	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.002314	0.00914	31.7886	8.4E-05	0.000571	0.000554	0.000698		
5	2025 Fuel Tanks Drainage - Loader	Tractors/Loaders/Bachtees175	Diesel	175	0.43	131.32	0.98857	1.764724	635.7929	0.001867	0.228275	0.258629	0.158122	0.008009	0.019616	0.035114	12.45175	0.372E-05	0.004431	0.004298	0.005146	
5	2025 Fuel Tanks Drainage - Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	151.52	0.22517	0.694274	536.7159	0.00148	0.054749	0.053107	0.039769	0.011812	0.009664	0.009375	0.000182	0.000440	0.002747	0.002865	0.003357	
5	2025 Fuel Tanks Drainage - Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	151.52	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.002314	0.00914	31.7886	8.4E-05	0.000571	0.000554	0.000698		
5	2025 Fuel Tanks Drainage - Roller	Rollers100	Diesel	100	0.59	151.52	0.342347	1.110226	596.0783	0.001613	0.054901	0.053254	0.039406	0.011812	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678		
5	2025 Fuel Tanks Excavator Dozer	Off-highway Trucks600	Diesel	600	0.59	2160	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678			
5	2025 Fuel Tanks Excavator Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	2331	0.029733	0.286867	536.7896	0.00143	0.022793	0.02211	0.014312	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678			
5	2025 Fuel Tanks Excavator Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	2331	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678			
5	2025 Fuel Tanks Excavator Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	2331	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678			
5	2025 Fuel Tanks Excavator Roller	Rollers100	Diesel	100	0.59	1075.846	0.342347	1.110226	596.0783	0.001613	0.054901	0.053254	0.039406	0.011812	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678		
5	2025 Fuel Tanks Excavator Roller	Crawler Tractor/Dozers175	Diesel	175	0.59	1748.25	0.029733	0.286867	536.7896	0.00143	0.022793	0.02211	0.014312	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678			
5	2025 Fuel Tanks Excavator Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	4662	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678			
5	2025 Fuel Tanks Excavator Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	1398.6	0.073599	0.244632	536.7982	0.00143	0.0175	0.016975	0.011596	0.002168	0.004429	9.257156	2.46E-05	0.000302	0.000293	0.000247		
5	2025 Fuel Tanks Excavator Roller	Off-highway Trucks600	Diesel	600	0.59	1398.6	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678			
5	2025 Fuel Tanks Excavator Roller	Rollers100	Diesel	100	0.59	1748.25	0.342347	1.110226	596.0783	0.001613	0.054901	0.053254	0.039406	0.011812	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678		
5	2025 Fuel Tanks Excavator Roller	Other Construction Equipment175	Diesel	175	0.59	82.27059	0.029733	0.286867	536.7896	0.00143	0.022793	0.02211	0.014312	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678			
5	2025 Fuel Tanks Excavator Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	52.5	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.008009	0.019616	0.035114	12.45175	0.372E-05	0.004431	0.004298	0.005146	
5	2025 Fuel Tanks Fencing - Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	210	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.039769	0.011812	0.009664	0.009375	0.000182	0.000440	0.002747	0.002865	0.003357
5	2025 Fuel Tanks Fencing - Dump Truck	Off-highway Trucks600	Diesel	600	0.59	210	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.039769	0.011812	0.009664	0.009375	0.000182	0.000440	0.002747	0.002865	0.003357
5	2025 Fuel Tanks Fencing - Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	210	0.22517	0.694274	536.7159	0.00148	0.054749	0.053107	0.039769	0.011812	0.009664	0.009375	0.000182	0.000440	0.002747	0.002865	0.003357	
5	2025 Fuel Tanks Fencing - Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	210	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.039769	0.011812	0.009664	0.009375	0.000182	0.000440	0.002747	0.002865	0.003357
5	2025 Fuel Tanks Fencing - Skid Steer Loader	Skid Steer Loaders175	Diesel	175	0.59	210	0.315688	3.94864	694.3015	0.002158	0.412121	0.399757	0.176121	0.010995	0.014366	2.531363	7.87E-06	0.001503	0.000768	0.000688	0.000968	
5	2025 Fuel Tanks Fencing - Tractors/Loaders/Bachhoe	Tractors/Loaders/Bachtees100	Diesel	100	0.21	210	2.416276	2.47235	694.9526	0.002075	0.32112	0.311486	0.359615	0.011746	0.01209	3.78316	1.41E-05	0.001561	0.001514	0.001748	0.0021	
5	2025 Fuel Tanks Grading - Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	57.8144	0.029733	0.286867	536.7896	0.00143	0.022793	0.02211	0.014312	0.008009	0.019616	0.035114	12.45175	0.372E-05	0.004431	0.004298	0.005146	
5	2025 Fuel Tanks Grading - Grader	Graders300	Diesel	300	0.59	57.8144	0.050706	0.18307	596.7878	0.001426	0.012448	0.012074	0.014259	0.000587	0.00656	6.05E-06	0.00014	0.000136	0.000161	0.000161		
5	2025 Fuel Tanks Grading - Roller	Rollers100	Diesel	100	0.59	57.8144	0.342347	1.110226	596.0783	0.001613	0.054901	0.053254	0.039406	0.011812	0.032854	5.873974	1.59E-05	0.000541	0.000525	0.000678		
5	2025 Fuel Tanks Hydrosce Off-Road Truck	Other Construction Equipment600	Diesel	600	0.59	52.085	0.06682	1.393279	536.588	0.001601	0.097889	0.094953	0.088191	0.0133	0.02649	10.30955	3.2E-05	0.00199	0.00193	0.001891		
5	2025 Fuel Tanks Hydroscce Off-Road Truck	Off-highway Trucks600	Diesel	600	0.59	1080	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.009664	0.009375	0.000182	0.000440	0.002747	0.002865	0.003357		
5	2025 Fuel Tanks Markings - Flatbed Truck	Other Construction Equipment175	Diesel	175	0.43	1080	0.22517	0.694274	536.7159	0.00148	0.054749	0.053107	0.039769	0.020172	0.016492	0.065149	28.62259	0.000599	0.00073	0.000951	0.000978	
5	2025 Fuel Tanks Markings - Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	1080	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.016492	0.065149	28.62259	0.000599	0.00073	0.000951	0.000978		
5	2025 Fuel Tanks Soil Erosio Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	48	0.22517	0.694274	536.7159	0.00148	0.054749	0.053107	0.039769	0.020172	0.016492	0.065149	28.62259	0.000599	0.00073	0.000951	0.000978	
5	2025 Fuel Tanks Soil Erosio Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	96	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.001466	0.005791	20.10897	5.89E-06	0.000218	0.000218	0.000218		
5	2025 Fuel Tanks Soil Erosio Tractors	Other Construction Equipment11	Diesel	11	0.43	48	2.469749	3.94864	694.3015	0.002158	0.412121	0.399757	0.176121	0.010995	0.014366	2.531363	7.87E-06	0.001503	0.000768	0.000688		
5	2025 Fuel Tanks Soil Erosio Tractors/Loader/Bachhoe	Tractors/Loaders/Bachtees100	Diesel	100	0.21	48	2.416276	2.47235	694.9526	0.002075	0.32112	0.311486	0.359615	0.011746	0.01209	3.78316	1.41E-05	0.001561	0.001514	0.001748	0.0021	
5	2025 Fuel Tanks Street Lig Dump Truck	Off-highway Trucks600	Diesel	600	0.59	31.46667	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.008009	0.019616	0.035114	12.45175	0.372E-05	0.004431	0.004298	0.005146	
5	2025 Fuel Tanks Street Lig Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	31.46667	0.98857	1.764724	635.7929	0.001867	0.228275	0.258629	0.158122	0.008009	0.019616	0.035114	12.45175	0.372E-05	0.004431	0.004298	0.005146	
5	2025 Fuel Tanks Street Lig Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	31.46667	0.22517	0.694274	536.7159	0.00148	0.054749	0.053107	0.039769	0.020172	0.016492	0.065149	28.62259	0.000599	0.00073	0.000951	0.000978	
5	2025 Fuel Tanks Street Lig Skid Steer Loader	Off-highway Trucks600	Diesel	600	0.59	31.46667	0.039133	0.154587	536.7955	0.001421	0.096864	0.009375	0.011812	0.008009	0.019616	0.035114	12.45175	0.372E				

Scenario ID	Year	Project	Fugitive Gas	Number of Months	CO	NOx	SO2	PM10	VOC	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	1558	2.202626	3.881591	0.005494	0.06619	0.060895
1	2025	Taxiway B-Cement M	Single Unit Short-haul Truck	12	0.23955	0.01495	0.002752	0.0164	0.0074	DieselUrbs	Diesel	Urban	Unr	40	5	2	238	2440	44	24827	1.269302	1.803304	0.003409	0.0339	0.031188
1	2025	Taxiways Asphalt Sh		12	0	0	0	0	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	2207	1.269302	1.803304	0.003409	0.0339	0.031188
1	2025	Taxiways Material N		12	0	0	0	0.02995	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	13241	1.269302	1.803304	0.003409	0.0339	0.031188
1	2025	Taxiways Material N		12	0	0	0	0.0963	0	GasolineU	Gasoline	Urban	Unr	30	5	125.4	238	2440	44	970596	2.851508	0.067149	0.002101	0.002103	0.00186
1	2025	Taxiways Soil Handl		12	0	0	0	0.028	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	2313	1.269302	1.803304	0.003409	0.0339	0.031188
1	2025	Taxiways Unstabiliz		12	0	0	0	3.99E-08	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	1233	1.269302	1.803304	0.003409	0.0339	0.031188
2	2025	Terminal Asphalt Dr		12	0.69295	0.04325	0.00795	0.04745	0.02145	GasolineU	Gasoline	Urban	Unr	30	5	1936	238	2440	44	1100000	2.851508	0.067149	0.002101	0.002103	0.00186
2	2025	Terminal Asphalt Sh		12	0	0	0	0.24505	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	160	2.202626	3.881591	0.005494	0.06619	0.060895
2	2025	Terminal Concrete P		12	0	0	0	0.0479	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	2313	1.269302	1.803304	0.003409	0.0339	0.031188
2	2025	Terminal Material N		12	0	0	0	0.152	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	2724480	2.851508	0.067149	0.002101	0.002103	0.00186
2	2025	Terminal Soil Handl		12	0	0	0	0.08105	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	160	2.202626	3.881591	0.005494	0.06619	0.060895
2	2025	Terminal Unstabiliz		12	0	0	0	1.16E-07	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	2313	1.269302	1.803304	0.003409	0.0339	0.031188
3	2025	Terminal Asphalt Dr		12	0.75105	0.0469	0.00865	0.05145	0.02325	GasolineU	Gasoline	Urban	Unr	30	5	1	238	2440	44	1113280	2.851508	0.067149	0.002101	0.002103	0.00186
3	2025	Terminal Asphalt Sh		12	0	0	0	0.2656	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	800	2.202626	3.881591	0.005494	0.06619	0.060895
3	2025	Terminal Material N		12	0	0	0	0.0479	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	2313	1.269302	1.803304	0.003409	0.0339	0.031188
3	2025	Terminal Soil Handl		12	0	0	0	0.15245	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	1233	1.269302	1.803304	0.003409	0.0339	0.031188
3	2025	Terminal Unstabiliz		12	0	0	0	0.08785	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	160	2.202626	3.881591	0.005494	0.06619	0.060895
4	2025	Taxiway B Asphalt Dr		12	0.25975	0.0162	0.002985	0.0178	0.00805	GasolineU	Gasoline	Urban	Unr	30	5	1	238	2440	44	1113280	2.851508	0.067149	0.002101	0.002103	0.00186
4	2025	Taxiway B Asphalt Sh		12	0	0	0	0.02385	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	800	2.202626	3.881591	0.005494	0.06619	0.060895
4	2025	Taxiway B Concrete P		12	0	0	0	0.05385	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	2313	1.269302	1.803304	0.003409	0.0339	0.031188
4	2025	Taxiway B Material N		12	0	0	0	0.02995	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	13241	1.269302	1.803304	0.003409	0.0339	0.031188
4	2025	Taxiway E Material N		12	0	0	0	0.0954	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	970596	2.851508	0.067149	0.002101	0.002103	0.00186
4	2025	Taxiway E Soil Handl		12	0	0	0	0.0304	0	GasolineU	Gasoline	Urban	Unr	30	5	125.4	238	2440	44	2313	1.269302	1.803304	0.003409	0.0339	0.031188
4	2025	Taxiway E Unstabiliz		12	0	0	0	4.33E-08	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	1233	1.269302	1.803304	0.003409	0.0339	0.031188
5	2025	Building - Concrete P		12	0	0	0	0.00855	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	160	2.202626	3.881591	0.005494	0.06619	0.060895
5	2025	Building - Material N		12	0	0	0	0.01195	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	1233	1.269302	1.803304	0.003409	0.0339	0.031188
5	2025	Building - Material N		12	0	0	0	0.03535	0	DieselUrbs	Diesel	Urban	Unr	40	5	1	238	2440	44	800	2.202626	3.881591	0.005494	0.06619	0.060895

Fugitive Sources
Units for Non-Greenhouse Gases Emission: Short Ton

6	2025 Building - : Concrete P	12	0	0	0	0.00855	0
6	2025 Building - : Material N	12	0	0	0	0.01195	0
6	2025 Building - : Material N	12	0	0	0	0.03535	0
1	2025 Demolition Material N	9	0	0	0	0.004479	0
1	2025 Demolition Material N	9	0	0	0	0.0144	0
1	2025 Demolition Soil Handli	9	0	0	0	0.01925	0
1	2025 Demolition Unstabilize	9	0	0	0	2.06E-08	0
2	2025 Access Ro: Asphalt Dr	9	0	0	0	0	0.05
2	2025 Access Ro: Asphalt Str	9	0.1176	0.00735	0.001351	0.00805	0.003642
2	2025 Access Ro: Concrete P	9	0	0	0	0.0416	0
2	2025 Access Ro: Material N	9	0	0	0	0.0179	0
2	2025 Access Ro: Material N	9	0	0	0	0.057	0
2	2025 Access Ro: Soil Handli	9	0	0	0	0.01375	0
2	2025 Access Ro: Unstabilize	9	0	0	0	1.47E-08	0
3	2025 Access Ro: Asphalt Dr	3	0	0	0	0	0.0334
3	2025 Access Ro: Asphalt Str	3	0.0021775	0.000136	2.50E-05	0.000149	6.75E-05
3	2025 Access Ro: Concrete P	3	0	0	0	0.00077	0
3	2025 Access Ro: Material N	3	0	0	0	0.00605	0
3	2025 Access Ro: Material N	3	0	0	0	0.0183	0
3	2025 Access Ro: Soil Handli	3	0	0	0	0.000255	0
3	2025 Access Ro: Unstabilize	3	0	0	0	9.08E-11	0
4	2025 Open Park Asphalt Dr	12	0	0	0	0	0.37095
4	2025 Open Park Material N	12	0	0	0	0.01795	0
4	2025 Open Park Material N	12	0	0	0	0.05315	0
4	2025 Open Park Soil Handli	12	0	0	0	0.002831	0
4	2025 Open Park Unstabilize	12	0	0	0	4.03E-09	0
5	2025 Fuel Tanks Asphalt Dr	9	0	0	0	0	0.09
5	2025 Fuel Tanks Asphalt Str	9	1.14325	0.0714	0.01315	0.0783	0.0354
5	2025 Fuel Tanks Concrete P	9	0	0	0	0.4043	0
5	2025 Fuel Tanks Material N	9	0	0	0	0.0627	0
5	2025 Fuel Tanks Material N	9	0	0	0	0.2803	0
5	2025 Fuel Tanks Soil Handli	9	0	0	0	0.13375	0
5	2025 Fuel Tanks Unstabilize	9	0	0	0	1.43E-07	0
6	2025 Building - : Concrete P	9	0	0	0	0.08555	0
6	2025 Building - : Material N	9	0	0	0	0.01345	0
6	2025 Building - : Material N	9	0	0	0	0.041	0
7	2025 Building - : Concrete P	12	0	0	0	0.00855	0
7	2025 Building - : Material N	12	0	0	0	0.01195	0
7	2025 Building - : Material N	12	0	0	0	0.03535	0
8	2025 Site Work Material N	12	0	0	0	0.01195	0
8	2025 Site Work Material N	12	0	0	0	0.03565	0
8	2025 Site Work Soil Handli	12	0	0	0	0.002831	0
8	2025 Site Work Unstabilize	12	0	0	0	4.03E-09	0
Totals			3.2063275	0.200186	0.036863	3.207964	0.743609

2025 Totals

Year	Emission SCo	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO2e
2025 NonRoad	2.38967	7.270591		0.038327822	0.474959812	0.460711	0.491793	14584.13	--	--
2025 OnRoad	49.79984	2.375674		0.038327822	0.058913601	0.052923	1.262791	6105.195	0.144624	0.031834
2025 Fugitive	3.206328	0.200186		0.03686252	3.207964011	--	0.743609	--	--	--
2025 TOTAL	55.39584	9.846452		0.113518164	3.741837424	0.513635	2.498193	20689.33	0.144624	0.031834 20701.81

ASSUMPTIONS

Emission factors were developed from the following models:

On-Road Vehicles: MOVES3.0.2, revised September 2021

Non-Road Equipment: MOVES3.0.2 September 2021

In addition to the overall project size dimensions (e.g., Length and width) provided by the user, an additional 10 ft length and 10 ft width is added to account for disturbance areas.

The number of employees is based on the higher of two methods: (1) number of equipment, and (2) multiply the project cost in million by 11.

The average employee travels 30 miles round-trip from home to construction site each day.

The average on-road material delivery round-trip distance per truck is 40 miles per day.

For calculating fugitive, re-entrained PM emissions from on-road and non-road material delivery and handling equipment, a nominal VMT of 5 miles is used for each vehicle per day.

In deriving emission factors from NONROAD, the horsepower for each equipment represents the most popular in each equipment category.

The total length of each modeled scenario is used to define the number of days associated with vehicle/equipment evaporative emissions.

The choice of location and season are assumed to adequately represent differences in fuel characteristics affecting emissions.

Only two seasons (Summer and Winter) are used to represent all seasons.

14 U.S. Counties are used to represent all other counties in the U.S. (all other counties are mapped to the 14).

The default methods assume that all construction equipment use diesel as well as heavy-duty on-road vehicles, while passenger vehicles (including motorcycles) use gasoline.

Fugitive emissions are only modeled for:

- Asphalt drying
- Asphalt storage and batching
- Concrete mixing/batching
- Soil handling
- Unstabilized land and wind erosion
- Material movement (unpaved roads)
- Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the asphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO₂, CH₄, and N₂O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 cy)

Factors (g/mile)	MOVES ONROAD Emissions (tpy)												
	14	5	8	9	7	10	13	11	12	14	5	8	9
VOC	CO2	CH4	N2O	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	
0.169144	1643.222	0.019684	0.002802	0.003487	0.006144	8.7E-06	0.000105	9.64E-05	0.000268	2.601101	3.12E-05	4.44E-06	
0.104185	1018.132	0.015684	0.003286	0.032033	0.045509	8.6E-05	0.000856	0.000787	0.002629	25.69403	0.000396	8.29E-05	
0.104185	1018.132	0.015684	0.003286	0.002847	0.004045	7.65E-06	7.6E-05	7E-05	0.000234	2.283889	3.52E-05	7.37E-06	
0.104185	1018.132	0.015684	0.003286	0.017084	0.024271	4.59E-05	0.000456	0.00042	0.001402	13.70333	0.000211	4.42E-05	
0.069524	316.2227	0.007826	0.001731	2.66652	0.062793	0.001964	0.001966	0.001739	0.065014	295.7082	0.007318	0.001619	
0.169144	1643.222	0.019684	0.002802	0.010091	0.017782	2.52E-05	0.000303	0.000279	0.000775	7.527977	9.02E-05	1.28E-05	
0.104185	1018.132	0.015684	0.003286	0.092667	0.131653	0.000249	0.002475	0.002277	0.007606	74.3302	0.001145	0.00024	
0.104185	1018.132	0.015684	0.003286	0.008237	0.011702	2.21E-05	0.00022	0.000202	0.000676	6.607004	0.000102	2.13E-05	
0.104185	1018.132	0.015684	0.003286	0.049423	0.070216	0.000133	0.00132	0.001214	0.004057	39.64315	0.000611	0.000128	
0.069524	316.2227	0.007826	0.001731	1.848995	0.043541	0.001362	0.001363	0.001206	0.045081	205.0473	0.005074	0.001122	
0.169144	1643.222	0.019684	0.002802	0.010936	0.019271	2.73E-05	0.000329	0.000302	0.00084	8.158328	9.77E-05	1.39E-05	
0.104185	1018.132	0.015684	0.003286	0.100433	0.142685	0.00027	0.002682	0.002468	0.008244	80.55899	0.001241	0.00026	
0.104185	1018.132	0.015684	0.003286	0.008927	0.012682	2.4E-05	0.000238	0.000219	0.000733	7.1603	0.00011	2.31E-05	
0.104185	1018.132	0.015684	0.003286	0.053565	0.076099	0.000144	0.001431	0.001316	0.004397	42.96517	0.000662	0.000139	
0.069524	316.2227	0.007826	0.001731	9.099	0.214269	0.006703	0.006709	0.005935	0.221848	1009.049	0.024971	0.005523	

STUDY

Study Name
 Austin Airport

Study Description
 2026 Construction Schedule

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources
 Units for Non-Greenhouse Gases Emission: Short Ton
 Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

Scenario	Year	Project	Construct/Equipment	Fuel	Moves/Load	Fact/Hours	ACO	NOx	CO2	SO2	PM10	PM2.5	VOC	CO	NOx (tpy)	CO2 (tpy)	SO2 (tpy)	PM10 (tpy)	PM2.5 (tpy)	VOC Exhaust (tpy)	
1	2026	Taxways	Asphalt Paver	Diesel	Pavers175	9.87E-02	2.84E-01	5.37E-02	1.43E-03	2.44E-02	2.37E-02	1.52E-02	3.86E-05	0.000111	0.209805	5.6E-07	9.54E-06	9.25E-06	5.93E-06	5.93E-06	5.93E-06
1	2026	Taxways	Asphalt Paver	Diesel	Off-highway Trucks600	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Other Construction Equipment175	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.72E-02	4.57E-02	3.37E-02	0.000111	0.000338	0.305786	8.37E-07	2.68E-05	2.6E-05	1.48E-05	1.48E-05	1.48E-05
1	2026	Taxways	Asphalt Paver	Diesel	Off-highway Trucks600	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Rollers100	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	5.75E-05	0.000232	0.133135	3.57E-07	9.68E-06	9.39E-06	4.72E-06	4.72E-06	4.72E-06
1	2026	Taxways	Asphalt Paver	Diesel	Skid Steer Loaders75	2.74E-00	3.76E-00	5.94E-02	2.13E-03	3.66E-01	3.55E-01	5.18E-01	0.000107	0.000269	0.042536	1.57E-07	2.18E-05	2.11E-05	3.09E-05	3.09E-05	3.09E-05
1	2026	Taxways	Asphalt Paver	Diesel	Other Construction Equipment25	1.49E-00	1.94E-00	5.96E-02	2.18E-03	2.40E-01	2.33E-01	8.38E-01	0.000251	0.000436	0.060476	2.29E-07	2.44E-05	2.37E-05	3.97E-05	3.97E-05	3.97E-05
1	2026	Taxways	Asphalt Paver	Diesel	Other Construction Equipment11	4.18E-00	5.96E-02	1.88E-03	7.01E-02	6.80E-03	6.80E-03	4.10E-02	0.000364	0.00072	0.036023	2.28E-07	3.99E-05	3.97E-05	5.16E-05	5.16E-05	5.16E-05
1	2026	Taxways	Asphalt Paver	Diesel	Off-highway Trucks600	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Crawler Tractor/Dozers175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Excavators175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Other Construction Equipment175	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.72E-02	4.57E-02	3.37E-02	0.000111	0.000338	0.305786	8.37E-07	2.68E-05	2.6E-05	1.48E-05	1.48E-05	1.48E-05
1	2026	Taxways	Asphalt Paver	Diesel	Other Construction Equipment175	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.72E-02	4.57E-02	3.37E-02	0.000111	0.000338	0.305786	8.37E-07	2.68E-05	2.6E-05	1.48E-05	1.48E-05	1.48E-05
1	2026	Taxways	Asphalt Paver	Diesel	Off-highway Trucks600	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Rollers100	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	5.75E-05	0.000232	0.133135	3.57E-07	9.68E-06	9.39E-06	4.72E-06	4.72E-06	4.72E-06
1	2026	Taxways	Asphalt Paver	Diesel	Off-highway Trucks600	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05	5.32E-05	5.32E-05	5.32E-05
1	2026	Taxways	Asphalt Paver	Diesel	Tractors/Loaders/Bachhoes175	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000155	0.000668	2.590773	6.84E-06	4.11E-05	3.99E-05			

1	2026	Taxiways	Soil Erosion Tractors/Loader/Bachhoe	Diesel	100	0.21	4.199E+00	2.17E+00	6.59E+02	2.03E-03	2.72E-01	2.64E-01	2.96E-01	0.000184	0.000201	0.000184	0.000201	0.000184	0.000201	2.52E-05	2.44E-05	2.44E-05	2.69E-05	
1	2026	Taxiways	Subbase P Dozer	Diesel	175	0.59	5.793789	7.88E-02	2.51E-01	5.37E+02	1.42E-03	1.88E-02	1.82E-02	1.32E-02	5.16E-05	0.000165	0.000165	0.000165	0.000165	0.000165	1.88E-07	1.88E-07	1.88E-07	1.88E-07
1	2026	Taxiways	Subbase P Pickup Truck (12 ty)	Diesel	600	0.59	40.70222	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000511	0.000511	0.000511	0.000511	0.000511	0.000511	3.25E-05	3.25E-05	3.25E-05	3.25E-05
1	2026	Taxiways	Subbase P Dump Truck	Diesel	600	0.59	5.783789	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000511	0.000511	0.000511	0.000511	0.000511	0.000511	3.25E-05	3.25E-05	3.25E-05	3.25E-05
1	2026	Taxiways	Subbase P Roller	Diesel	100	0.59	5.639262	2.57E-01	1.04E+00	5.96E+02	1.60E-03	1.33E-02	4.20E-02	2.11E-02	9.43E-05	0.000293	0.000293	0.000293	0.000293	0.000293	8.57E-07	1.59E-05	1.59E-05	1.59E-05
1	2026	Taxiways	Topsoil P/Dump Truck	Diesel	175	0.59	10.23733	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000511	0.000511	0.000511	0.000511	0.000511	0.000511	1.95E-05	1.95E-05	1.95E-05	1.95E-05
1	2026	Taxiways	Topsoil P/Dump Truck	Diesel	600	0.59	10.23733	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000511	0.000511	0.000511	0.000511	0.000511	0.000511	1.95E-05	1.95E-05	1.95E-05	1.95E-05
2	2026	Terminal/Asphalt PI	Asphalt P/Dump Truck	Diesel	175	0.59	9.9345	9.87E-02	2.84E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000128	0.000128	0.000128	0.000128	0.000128	0.000128	2.144408	5.67E-06	3.4E-05	3.3E-05
2	2026	Terminal/Asphalt PI	Asphalt P/Dump Truck	Diesel	600	0.59	35.77985	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000449	0.000449	0.000449	0.000449	0.000449	0.000449	6.606399	1.62E-06	2.76E-05	2.68E-05
2	2026	Terminal/Asphalt PI	Other General Equipment	Diesel	175	0.43	19.869	1.94E-01	5.94E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000494	0.000494	0.000494	0.000494	0.000494	0.000494	7.694785	1.98E-05	0.000119	0.000119
2	2026	Terminal/Asphalt PI	Other General Equipment	Diesel	600	0.59	9.9345	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000319	0.000319	0.000319	0.000319	0.000319	0.000319	6.884602	4.42E-06	7.76E-05	7.53E-05
2	2026	Terminal/Asphalt PI	Rollers	Diesel	600	0.59	9.9345	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000128	0.000128	0.000128	0.000128	0.000128	0.000128	5.3E-06	3.8E-05	3.2E-05	4.27E-05
2	2026	Terminal/Asphalt PI	Skid Steer Loader	Diesel	75	0.21	19.72616	2.74E+00	3.79E+00	6.59E+02	2.13E-03	3.66E-01	3.55E-01	5.18E-01	0.000473	0.000473	0.000473	0.000473	0.000473	0.000473	0.119781	3.68E-07	6.3E-05	6.12E-05
2	2026	Terminal/Asphalt PI	Surfacing Equipment (Grooving)	Diesel	75	0.59	11.716	1.49E+00	3.79E+00	6.59E+02	2.13E-03	3.66E-01	3.55E-01	5.18E-01	0.000308	0.000308	0.000308	0.000308	0.000308	0.000308	0.12305	3.58E-07	3.54E-05	3.43E-05
2	2026	Terminal/Asphalt PI	Surfacing Equipment (Grooving)	Diesel	600	0.59	11.716	1.49E+00	3.79E+00	6.59E+02	2.13E-03	3.66E-01	3.55E-01	5.18E-01	0.000308	0.000308	0.000308	0.000308	0.000308	0.000308	0.12305	3.58E-07	3.54E-05	3.43E-05
2	2026	Terminal/Asphalt PI	Chaper/Stump Grinder	Diesel	11	0.7	21.6	4.47E+00	4.18E+00	5.94E+02	1.42E-03	2.40E-01	2.33E-01	8.38E-01	0.000452	0.000452	0.000452	0.000452	0.000452	0.000452	1.67E-06	1.67E-06	1.67E-06	1.67E-06
2	2026	Terminal/Asphalt PI	Chaper/Stump Grinder	Diesel	100	0.43	21.6	4.47E+00	4.18E+00	5.94E+02	1.42E-03	2.40E-01	2.33E-01	8.38E-01	0.000452	0.000452	0.000452	0.000452	0.000452	0.000452	1.67E-06	1.67E-06	1.67E-06	1.67E-06
2	2026	Terminal/Asphalt PI	Concrete P Pickup Truck	Diesel	600	0.59	28.8	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000361	0.000361	0.000361	0.000361	0.000361	0.000361	6.03272	1.59E-05	9.57E-05	9.29E-05
2	2026	Terminal/Asphalt PI	Concrete P Concrete Saws	Diesel	100	0.43	26.492	4.65E-01	1.27E+00	5.96E+02	1.63E-03	7.01E-02	6.80E-02	4.20E-02	0.000383	0.000383	0.000383	0.000383	0.000383	0.000383	0.00159	0.748489	2.05E-06	8.81E-05
2	2026	Terminal/Asphalt PI	Concrete P Concrete Saws	Diesel	600	0.59	26.492	4.65E-01	1.27E+00	5.96E+02	1.63E-03	7.01E-02	6.80E-02	4.20E-02	0.000383	0.000383	0.000383	0.000383	0.000383	0.000383	0.00159	0.748489	2.05E-06	8.81E-05
2	2026	Terminal/Asphalt PI	Other General Equipment	Diesel	175	0.43	52.984	1.94E-01	5.94E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.0001385	0.0001385	0.0001385	0.0001385	0.0001385	0.0001385	23.12199	1.10E-05	0.000367	0.000367
2	2026	Terminal/Asphalt PI	Other General Equipment	Diesel	600	0.59	79.476	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000851	0.000851	0.000851	0.000851	0.000851	0.000851	0.00261	2.358937	6.45E-06	0.000207
2	2026	Terminal/Asphalt PI	Roller	Diesel	175	0.59	26.492	1.13E-01	1.46E+00	6.26E+02	1.83E-03	1.89E-01	1.83E-01	2.05E-01	0.002452	0.00441	0.002452	0.00441	0.002452	0.00441	1.897354	5.51E-06	0.000568	0.000561
2	2026	Terminal/Asphalt PI	Roller	Diesel	600	0.59	26.492	1.13E-01	1.46E+00	6.26E+02	1.83E-03	1.89E-01	1.83E-01	2.05E-01	0.002452	0.00441	0.002452	0.00441	0.002452	0.00441	1.897354	5.51E-06	0.000568	0.000561
2	2026	Terminal/Asphalt PI	Skid Steer Loader	Diesel	75	0.59	26.492	1.49E+00	3.79E+00	6.59E+02	2.13E-03	3.66E-01	3.55E-01	5.18E-01	0.000238	0.000238	0.000238	0.000238	0.000238	0.000238	1.618395	4.32E-06	7.36E-05	7.14E-05
2	2026	Terminal/Asphalt PI	Skid Steer Loader	Diesel	600	0.59	11.776	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000443	0.000443	0.000443	0.000443	0.000443	0.000443	0.256354	9.43E-07	7.37E-05	7.15E-05
2	2026	Terminal/Asphalt PI	Excavator/Loader	Diesel	600	0.59	11.776	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000148	0.000148	0.000148	0.000148	0.000148	0.000148	2.466712	1.91E-06	2.52E-05	2.44E-05
2	2026	Terminal/Asphalt PI	Excavator/Loader	Diesel	175	0.59	11.776	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000196	0.000196	0.000196	0.000196	0.000196	0.000196	1.9E-06	2.06E-05	2E-05	1.41E-05
2	2026	Terminal/Asphalt PI	Other General Equipment	Diesel	175	0.59	11.776	1.83E-01	1.46E+00	6.26E+02	1.83E-03	1.89E-01	1.83E-01	2.09E-01	0.00109	0.00109	0.00109	0.00109	0.00109	0.00109	0.83895	2.45E-06	0.000253	0.000245
2	2026	Terminal/Asphalt PI	Other General Equipment	Diesel	600	0.59	11.776	1.83E-01	1.46E+00	6.26E+02	1.83E-03	1.89E-01	1.83E-01	2.09E-01	0.00109	0.00109	0.00109	0.00109	0.00109	0.00109	0.83895	2.45E-06	0.000253	0.000245
2	2026	Terminal/Asphalt PI	Rollers	Diesel	100	0.59	11.776	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000148	0.000148	0.000148	0.000148	0.000148	0.000148	2.466712	1.91E-06	2.52E-05	2.44E-05
2	2026	Terminal/Asphalt PI	Rollers	Diesel	600	0.59	11.776	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000148	0.000148	0.000148	0.000148	0.000148	0.000148	2.466712	1.91E-06	2.52E-05	2.44E-05
2	2026	Terminal/Asphalt PI	Excavator/Loader	Diesel	100	0.59	5.942222	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000353	0.000353	0.000353	0.000353	0.000353	0.000353	1.370396	3.62E-06	2.17E-05	2.11E-05
2	2026	Terminal/Asphalt PI	Excavator/Loader	Diesel	175	0.59	5.942222	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000353	0.000353	0.000353	0.000353	0.000353	0.000353	1.370396	3.62E-06	2.17E-05	2.11E-05
2	2026	Terminal/Asphalt PI	Other General Equipment	Diesel	175	0.43	5.942222	1.94E-01	5.94E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000606	0.000606	0.000606	0.000606	0.000606	0.000606	4.666804	1.36E-06	0.00014	0.000136
2	2026	Terminal/Asphalt PI	Other General Equipment	Diesel	600	0.59	5.942222	1.94E-01	5.94E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000606	0.000606	0.000606	0.000606	0.000606	0.000606	4.666804	1.36E-06	0.00014	0.000136
2	2026	Terminal/Asphalt PI	Roller	Diesel	100	0.59	6.542222	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000324	0.000324	0.000324	0.000324	0.000324	0.000324	0.919721	1.97E-07	2.56E-05	2.48E-05
2	2026	Terminal/Asphalt PI	Roller	Diesel	600	0.59	6.542222	3.21E-02	1.38E-01	5.37E+02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000324	0.000324	0.000324	0.000324	0.000324	0.000324	0.919721	1.97E-07	2.56E-05	2.48E-05
2	2026	Terminal/Asphalt PI	Skid Steer Loader	Diesel	100	0.21	6.542222	1.99E+00	2.17E+00	6.59E+02	2.03E-03	2.72E-01	2.64E-01	2.9										

3	2026 Terminal / Asphalt Pl Dump Paver	Diesel	175	0.59	10.767	9.87E-02	2.94E-01	5.37E-02	1.42E-03	2.44E-02	2.37E-02	1.52E-02	0.000121	0.000348	0.6578	1.75E-06	2.99E-05	2.9E-05	0.000129	0.000125	1.86E-05	
3	Off-highway Trucks600	Diesel	600	0.59	38.7787	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000486	0.002094	8.12284	1.25E-05	0.000129	0.000125	0.000167			
3	Other Construction Equipment175	Diesel	175	0.43	21.534	1.94E-01	1.38E-01	5.37E-02	1.42E-03	4.71E-02	4.57E-02	3.37E-02	0.000336	0.000561	0.95873	2.62E-06	8.41E-05	8.16E-05	6.02E-05			
3	Off-highway Trucks600	Diesel	600	0.59	10.767	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000336	0.000561	2.255357	5.96E-06	3.58E-05	3.47E-05	4.63E-05			
3	Skid Steer Loaders75	Diesel	75	0.21	10.767	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000118	0.000729	0.417417	1.12E-06	3.03E-05	2.94E-05	1.68E-05			
3	Other Construction Equipment25	Diesel	25	0.59	13.8716	1.49E-00	3.76E-00	5.95E-02	2.19E-03	1.71E-01	1.66E-01	3.52E-01	0.000334	0.000843	0.133364	4.9E-07	6.83E-05	6.63E-05	9.68E-05			
3	Other Construction Equipment11	Diesel	11	0.7	22.8	2.47E-00	4.18E-00	5.94E-02	2.18E-03	2.40E-01	2.33E-01	8.38E-01	0.000477	0.000881	0.114905	4.22E-07	4.64E-05	3.72E-05	4.5E-05	0.000162		
3	Other Construction Equipment100	Diesel	100	0.43	22.8	4.65E-01	1.27E-00	5.96E-02	1.63E-03	7.01E-02	6.89E-02	4.20E-02	0.000502	0.001369	0.664143	1.78E-05	7.58E-05	7.35E-05	4.54E-05			
3	Off-highway Trucks600	Diesel	600	0.59	30.4	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000336	0.000561	6.347871	1.68E-05	0.000121	0.000125	0.000131	9.8E-05	0.000131	
3	Other Construction Equipment100	Diesel	100	0.43	28.712	4.65E-01	1.27E-00	5.96E-02	1.63E-03	7.01E-03	6.89E-02	4.20E-02	0.000632	0.001724	0.811169	1.22E-06	9.54E-05	9.24E-05	5.71E-05			
3	Other Construction Equipment400	Diesel	400	0.59	119.6333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000222	0.000896	0.001896	4.458801	1.17E-06	1.07E-05	1.07E-05	6.98E-05		
3	Off-highway Trucks600	Diesel	600	0.59	119.6333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000222	0.000896	0.001896	4.458801	1.17E-06	1.07E-05	1.07E-05	6.98E-05		
3	Other Construction Equipment175	Diesel	175	0.43	86.136	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000222	0.000896	2.556614	6.99E-06	0.000224	0.000228	0.000218	0.000167		
3	Off-highway Trucks600	Diesel	600	0.59	87.126	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000222	0.000896	18.04286	4.77E-05	0.000286	0.000278	0.00037			
3	Tractors/Loaders/Bachhoes175	Diesel	175	0.59	28.712	8.13E-01	1.46E-00	6.26E-02	1.83E-03	1.89E-01	1.83E-01	2.03E-01	0.002658	0.000779	2.045512	5.97E-06	0.00016	0.000098	0.000664			
3	Pavers175	Diesel	175	0.59	28.712	9.87E-02	2.94E-01	5.37E-02	1.42E-03	2.44E-02	2.37E-02	1.52E-02	0.000323	0.000928	1.754134	4.68E-06	7.98E-05	7.74E-05	4.96E-05			
3	Other Construction Equipment25	Diesel	25	0.59	28.712	1.49E-00	3.76E-00	5.95E-02	2.19E-03	1.71E-01	1.66E-01	3.52E-01	0.000696	0.001757	0.277837	1.02E-06	7.98E-05	7.74E-05	4.96E-05			
3	Crawler Tractor/Dozers175	Diesel	175	0.59	6.72	7.83E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-02	1.82E-02	1.23E-02	5.99E-05	0.000152	0.001058	1.09E-06	1.44E-05	1.39E-05	9.39E-06			
3	Off-highway Trucks600	Diesel	600	0.59	6.72	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	5.02E-05	0.000166	0.001056	1.09E-06	1.23E-05	2.17E-05	2.89E-05			
3	Excavators175	Diesel	175	0.59	6.72	6.56E-02	2.17E-01	5.37E-02	1.42E-03	1.54E-02	1.49E-02	1.05E-02	0.000166	0.001056	1.09E-06	1.23E-05	2.17E-05	2.89E-05				
3	Tractors/Loaders/Bachhoes175	Diesel	175	0.59	6.72	8.13E-01	1.46E-00	6.26E-02	1.83E-03	1.89E-01	1.83E-01	2.03E-01	0.002658	0.000779	0.478729	1.48E-07	0.000144	0.000144	0.000155			
3	Other Construction Equipment175	Diesel	175	0.43	6.72	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.000108	0.000331	0.298186	1.8E-07	2.63E-05	2.55E-05	1.88E-05			
3	Off-highway Trucks600	Diesel	600	0.59	6.72	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	8.43E-05	0.000363	1.407655	3.72E-06	2.23E-05	2.17E-05	2.89E-05			
3	Rollers100	Diesel	100	0.59	6.72	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000112	0.000425	0.260522	6.99E-07	1.89E-05	1.82E-05	9.24E-06			
3	Off-highway Trucks600	Diesel	600	0.59	6.72	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000112	0.000425	0.260522	6.99E-07	1.89E-05	1.82E-05	9.24E-06			
3	Other Construction Equipment175	Diesel	175	0.59	37.933333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.265972	7.76E-07	8.01E-05	7.7E-05	8.64E-05			
3	Other Construction Equipment175	Diesel	175	0.43	37.933333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.265972	7.76E-07	8.01E-05	7.7E-05	8.64E-05			
3	Other Construction Equipment175	Diesel	175	0.43	37.933333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.265972	7.76E-07	8.01E-05	7.7E-05	8.64E-05			
3	Off-highway Trucks600	Diesel	600	0.59	47.853333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.265972	7.76E-07	8.01E-05	7.7E-05	8.64E-05			
3	Off-highway Trucks600	Diesel	600	0.59	47.853333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.265972	7.76E-07	8.01E-05	7.7E-05	8.64E-05			
3	Crawler Tractor/Dozers175	Diesel	175	0.59	47.853333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.265972	7.76E-07	8.01E-05	7.7E-05	8.64E-05			
3	Off-highway Trucks600	Diesel	600	0.59	47.853333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.265972	7.76E-07	8.01E-05	7.7E-05	8.64E-05			
3	Off-highway Trucks600	Diesel	600	0.59	47.853333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.265972	7.76E-07	8.01E-05	7.7E-05	8.64E-05			
3	Rollers100	Diesel	100	0.59	35.89	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.265972	7.76E-07	8.01E-05	7.7E-05	8.64E-05			
3	Crawler Tractor/Dozers175	Diesel	175	0.59	35.89	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.265972	7.76E-07	8.01E-05	7.7E-05	8.64E-05			
3	Off-highway Trucks600	Diesel	600	0.59	95.70697	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000121	0.000518	20.4762	5.3E-05	0.000318	0.000309	0.000411			
3	Excavators175	Diesel	175	0.59	28.712	6.56E-02	2.17E-01	5.37E-02	1.42E-03	1.54E-02	1.49E-02	1.05E-02	0.000214	0.000719	1.754137	4.64E-06	5.02E-05	4.87E-05	3.43E-05			
3	Off-highway Trucks600	Diesel	600	0.59	28.712	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000348	0.000621	0.000115	0.004286	1.59E-05	9.54E-05	9.26E-05	0.000123		
3	Off-highway Trucks600	Diesel	600	0.59	28.712	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000112	0.000425	1.131132	2.99E-06	8.09E-05	7.85E-05	3.95E-05			
3	Rollers100	Diesel	100	0.59	35.89	1.60E-01	4.09E-01	5.37E-02	1.46E-03	2.95E-02	2.86E-02	2.64E-02	0.002235	0.005722	7.517229	2.05E-05	0.000413	0.000401	0.00037			
3	Crawler Tractor/Dozers175	Diesel	175	0.59	13.51153	7.83E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-02	1.82E-02	1.23E-02	0.000112	0.000386	0.825487	1.29E-06	2.89E-05	2.8E-05	1.89E-05			
3	Off-highway Trucks600	Diesel	600	0.59	22.22222	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	2.79E-05	0.000112	0.00048	1.86195	4.92E-06	2.95E-05	2.87E-05	3.82E-05		
3	Off-highway Trucks600	Diesel	600	0.59	8.888889	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000112	0.00048	0.00048	0.00048	0.00048	0.00048	0.00048	0.00048	0.00048	0.00048
3	Other Construction Equipment175	Diesel	175	0.43	8.888889	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.000143	0.000348	0.395748	1.08E-06	3.47E-05	3.37E-05	2.49E-05			
3	Off-highway Trucks600	Diesel	600	0.59	8.888889	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000112	0.00048	1.86195	4.92E-06	2.95E-05	2.87E-05	3.82E-05			
3	Skid Steer Loaders75	Diesel	75	0.21	8.888889	2.74E-00	3.76E-00	5.94E-02	2.13E-03	3.66E-01	3.55E-01	5.18E-01	0.000112	0.00043	0.00055	0.107174	3.29E-07	5.64E-05	5.47E-05	9.99E-05		
3	Tractors/Loaders/Bachhoes100	Diesel	100	0.21	8.888889	1.99E-00	2.17E-00	6.95E-02	2.03E-03	2.72E-01	2.64E-01	2.90E-01	0.000409	0.000407	0.143039	4.18E-07	5.6E-05	5.49E-05	5.97E-05			
3	Graders300	Diesel	300	0.59	9.2774	7.83E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	8.27E-05	0.000265	0.566803	1.3E-06	1.38E-05	1.32E-05	1.3E-05			
3	Rollers100	Diesel	100	0.59	9.2774	3.81E-02	1.55E-01	5.37E-02	1.42E-03	9.32E-03	9.62E-03	1.28E-02	6.89E-05	0.00281	0.971659	2.57E-06	1.8E-05	1.74E-05	2.23E-05			
3	Other Construction Equipment600	Diesel	600	0.59	9.2774	4.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02										

4	2026 taxiways	Clearing a Chipper/Slump Grinder	Diesel	100	0.43	10.8	4.65E-01	1.27E+00	5.96E-02	1.65E-03	7.01E-02	6.80E-02	4.20E-02	0.000238	0.006648	0.305121	8.35E-07	3.59E-05	3.48E-05	2.15E-05
4	2026 taxiways	Clearing a Pickup Truck	Diesel	600	0.59	14.4	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000183	0.000778	3.01656	7.97E-06	4.79E-05	4.64E-05	6.19E-05
4	2026 taxiways	Concrete Air Compressor	Diesel	400	0.43	9.9312	4.65E-01	1.27E+00	5.96E-02	1.65E-03	7.01E-02	6.80E-02	4.20E-02	0.000238	0.006656	0.280575	7.68E-07	3.3E-05	3.2E-05	4.18E-05
4	2026 taxiways	Concrete Concrete Saws	Diesel	400	0.59	9.9312	2.90E-01	2.54E+00	5.96E-02	1.57E-03	2.31E-02	2.24E-02	9.35E-02	7.49E-05	0.000565	0.153949	4.06E-07	5.97E-06	5.79E-06	2.41E-05
4	2026 taxiways	Concrete Concrete Truck	Diesel	175	0.43	31.2E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000519	0.002274	8.667845	2.29E-05	0.000138	0.000133	0.000133	0.000178
4	2026 taxiways	Concrete Other General Equipment	Diesel	175	0.43	19.8624	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.000319	0.000799	0.884308	2.42E-06	7.76E-05	7.53E-05	5.55E-05
4	2026 taxiways	Concrete Pickup Truck	Diesel	600	0.59	29.7536	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000319	0.001669	6.240848	1.65E-05	9.9E-05	9.61E-05	0.000123
4	2026 taxiways	Concrete Rubber Tired Loader	Diesel	175	0.59	9.9312	8.13E-01	1.46E+00	6.26E-02	1.83E-01	1.89E-01	1.83E-01	2.10E-01	0.000319	0.001669	0.707523	2.06E-06	0.000213	0.000207	0.000208
4	2026 taxiways	Concrete Slip Form Paver	Diesel	25	0.59	9.9312	9.87E-02	2.84E-01	5.37E-02	1.43E-03	2.44E-02	2.37E-02	1.52E-02	0.000112	0.000321	0.660738	1.62E-06	2.76E-05	2.68E-05	1.71E-05
4	2026 taxiways	Concrete Surfacing Equipment (Grooving)	Diesel	35	0.59	9.9312	1.49E+00	3.76E+00	5.96E-02	2.19E-03	1.71E-01	1.66E-01	3.52E-01	0.000241	0.000608	0.096101	3.53E-07	2.76E-05	2.68E-05	5.68E-05
4	2026 taxiways	Drainage- Dozer	Diesel	175	0.59	39.36	7.83E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000351	0.001136	2.404669	6.38E-06	8.41E-05	8.16E-05	5.5E-05
4	2026 taxiways	Drainage- Dump Truck	Diesel	600	0.59	39.36	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000354	0.002125	8.244717	2.18E-05	0.000131	0.000127	0.000169
4	2026 taxiways	Drainage- Excavator	Diesel	175	0.59	39.36	6.56E-02	1.27E-01	5.37E-02	1.42E-03	1.94E-02	1.49E-02	1.05E-02	0.000294	0.000225	2.447717	6.88E-05	6.68E-05	4.7E-05	4.7E-05
4	2026 taxiways	Drainage- Excavator	Diesel	175	0.59	39.36	1.13E-01	1.46E+00	6.26E-02	1.83E-01	1.89E-01	1.83E-01	2.10E-01	0.000354	0.000651	2.894101	1.89E-06	0.000084	0.000089	0.000091
4	2026 taxiways	Drainage- Other General Equipment	Diesel	175	0.43	39.36	1.13E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.000339	0.001399	1.752374	4.78E-06	0.000154	0.000149	0.000111
4	2026 taxiways	Drainage- Pickup Truck	Diesel	600	0.59	39.36	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000339	0.001669	6.240848	1.65E-05	9.9E-05	9.61E-05	0.000123
4	2026 taxiways	Drainage- Roller	Diesel	100	0.59	39.36	2.57E-01	1.04E+00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000659	0.002663	1.525916	4.1E-06	0.000111	0.000108	5.41E-05
4	2026 taxiways	Drainage- Roller Truck	Diesel	600	0.59	21.86667	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000274	0.001181	4.580398	1.21E-05	7.27E-05	7.05E-05	9.4E-05
4	2026 taxiways	Drainage- Loader	Diesel	175	0.59	21.86667	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000274	0.001181	4.580398	1.21E-05	7.27E-05	7.05E-05	9.4E-05
4	2026 taxiways	Drainage- Other General Equipment	Diesel	175	0.43	21.86667	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.000274	0.001181	4.580398	1.21E-05	7.27E-05	7.05E-05	9.4E-05
4	2026 taxiways	Drainage- Pickup Truck	Diesel	600	0.59	21.86667	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000274	0.001181	4.580398	1.21E-05	7.27E-05	7.05E-05	9.4E-05
4	2026 taxiways	Drainage- Tractors/Loader/Bachhoe	Diesel	100	0.21	21.86667	1.99E+00	2.17E+00	6.95E-02	2.03E-03	2.72E-01	2.64E-01	2.90E-01	0.001804	0.007758	301.656	0.000787	0.000478	0.000463	0.000147
4	2026 taxiways	Dust Contn Water Truck	Diesel	600	0.59	14.00	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.001804	0.007758	301.656	0.000787	0.000478	0.000463	0.000147
4	2026 taxiways	Excavator Dozer	Diesel	175	0.59	16.532	7.83E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000473	1.011244	2.68E-06	3.54E-05	3.45E-05	2.31E-05
4	2026 taxiways	Excavator Dump Truck (12 cy)	Diesel	600	0.59	16.532	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000208	0.000894	3.467138	9.10E-06	5.5E-05	5.34E-05	7.12E-05
4	2026 taxiways	Excavator Pickup Truck	Diesel	600	0.59	16.532	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000208	0.000894	3.467138	9.10E-06	5.5E-05	5.34E-05	7.12E-05
4	2026 taxiways	Excavator Roller	Diesel	100	0.59	7.69385	2.57E-01	1.04E+00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000128	0.000351	0.296165	7.95E-07	2.15E-05	2.09E-05	1.05E-05
4	2026 taxiways	Excavator Roller	Diesel	175	0.59	12.414	7.83E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000111	0.000351	0.758433	2.01E-06	2.65E-05	2.57E-05	1.74E-05
4	2026 taxiways	Excavator Roller Truck (12 cy)	Diesel	600	0.59	33.104	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000415	0.001788	6.934276	1.83E-05	0.00011	0.000107	0.000142
4	2026 taxiways	Excavator Excavator	Diesel	175	0.59	9.9312	6.56E-02	2.17E-01	5.37E-02	1.42E-03	1.94E-02	1.49E-02	1.05E-02	7.41E-05	0.000245	0.006752	1.6E-06	1.74E-05	1.69E-05	1.19E-05
4	2026 taxiways	Excavator Pickup Truck	Diesel	600	0.59	9.9312	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000125	0.000536	0.606752	5.5E-06	3.3E-05	3.2E-05	4.37E-05
4	2026 taxiways	Excavator Roller Truck	Diesel	600	0.59	9.9312	2.57E-01	1.04E+00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000166	0.000672	0.380515	1.03E-06	2.8E-05	2.72E-05	1.77E-05
4	2026 taxiways	Excavator Strapper	Diesel	600	0.59	12.414	1.60E-01	4.09E-01	5.37E-02	1.46E-03	2.95E-02	2.86E-02	2.64E-02	0.000773	0.000179	2.600136	7.09E-06	0.000143	0.000139	0.000128
4	2026 taxiways	Excavator Dozer	Diesel	175	0.59	4.673255	7.83E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	4.17E-05	0.000134	0.285513	7.58E-07	9.99E-06	6.99E-06	6.53E-06
4	2026 taxiways	Fencing Concrete Truck	Diesel	600	0.59	15.55556	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.00017	0.000732	2.839474	7.5E-06	4.51E-05	4.37E-05	5.83E-05
4	2026 taxiways	Fencing Dump Truck	Diesel	600	0.59	54.22222	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.00068	0.00928	11.3579	3E-05	0.00018	0.000175	0.000233
4	2026 taxiways	Fencing Other General Equipment	Diesel	175	0.43	54.22222	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.00081	0.00627	2.414065	6.6E-06	0.00012	0.000205	0.000152
4	2026 taxiways	Fencing Pickup Truck	Diesel	600	0.59	54.22222	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.00068	0.00928	11.3579	3E-05	0.00018	0.000175	0.000233
4	2026 taxiways	Fencing Skid Steer Loader	Diesel	75	0.21	54.22222	2.74E+00	3.79E+00	6.94E-02	2.13E-03	3.66E-01	3.58E-01	5.18E-01	0.00238	0.00351	0.653763	2.01E-06	0.00034	0.000334	0.000483
4	2026 taxiways	Fencing Tractors/Loader/Bachhoe	Diesel	100	0.21	54.22222	1.99E+00	2.17E+00	6.95E-02	2.03E-03	2.72E-01	2.64E-01	2.90E-01	0.00238	0.00351	0.653763	2.01E-06	0.00034	0.000334	0.000483
4	2026 taxiways	Fencing Tractors/Loader/Bachhoe	Diesel	175	0.59	4.369	7.83E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	3.9E-05	0.000125	0.266924	7.08E-07	9.34E-06	9.06E-06	6.11E-06
4	2026 taxiways	Grading Grader	Diesel	300	0.59	4.369	3.81E-02	1.55E-01	5.37E-02	1.42E-03	9.92E-03	9.62E-03	1.23E-02	3.24E-05	0.000133	0.457583	1.21E-06	1.43E-06	8.2E-06	1.05E-05
4	2026 taxiways	Grading Roller	Diesel	600	0.59	3.936	4.97E-01	1.09E+00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	7.31E-05	0.000296	0.169378	4.55E-07	8.26E-05	8.01E-05	6.01E-06
4	2026 taxiways	Hydroseed/Hydroseeder	Diesel	600	0.59	3.936	4.97E-01	1.09E+00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	7.31E-05	0.000296	0.169378	4.55E-07	8.26E-05	8.01E-05	6.01E-06
4	2026 taxiways	Hydroseed/Off-Road Truck	Diesel	600	0.59	16.56	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000208	0.000894	3.468814	1.6E-06	5.5E-05	5.34E-05	7.12E-05
4	2026 taxiways	Lighting Dump Truck	Diesel	600	0.59	16.56	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000208	0.000894	3.468814	1.6E-06	5.5E-05	5.34E-05	7.12E-05
4	2026 taxiways	Lighting Loader	Diesel	175	0.59	16.56	8.13E-01	1.46E+00	6.26E-02	1.83E-01	1.89E-01	1.83E-01	2.10E-01	0.001533	0.002756	1.179774	3.44E-06	0.000355	0.000345	0.000383
4	2026 taxiways	Lighting Other General Equipment	Diesel	175	0.43	16.56	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.000266	0.000816	0.732729	2.02E-06	6.47E-05	6.28E-05	4.63E-05
4	2026 taxiways	Lighting Pickup Truck	Diesel	600	0.59	16.56	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.32E-03	8.28E-03	1.10E-02	0.000266	0.000816	0.732729	2.02E-06	6.47E-05	6.28E-05	4.63E-05
4	2026 taxiways	Lighting Skid Steer Loader	Diesel	75	0.21	16.56	2.74E+00	3.79E+00	6.94E-02	2.13E-03	3.66E-01	3.58E-01	5.18E-01	0.00238	0.					

5	2026	taxiways	Drainage - Dump Truck	Off-highway Trucks600	Diesel	600	59	30.208	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000379	0.001631	6.327652	1.67E-05	0.0001	9.74E-05	0.00013	
5	2026	taxiways	Drainage - Excavator	Excavators175	Diesel	175	59	30.208	6.56E-02	1.27E-01	5.37E-02	1.42E-03	1.54E-02	1.49E-02	1.05E-02	0.000225	0.000746	1.845574	4.88E-06	5.28E-05	5.13E-05	3.61E-05	
5	2026	taxiways	Drainage - Loader	Tractors/Loader/Backhoes175	Diesel	175	59	30.208	1.13E-01	1.46E-00	6.26E-02	1.83E-03	1.89E-01	1.83E-01	2.03E-01	0.000796	0.005028	2.15209	6.28E-06	0.000048	0.0000118	8.45E-05	
5	2026	taxiways	Drainage - Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	30.208	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.000485	0.001488	1.34499	3.68E-06	0.0000118	0.0000118	8.45E-05	
5	2026	taxiways	Drainage - Pickup Truck	Off-highway Trucks600	Diesel	600	59	30.208	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000379	0.001631	6.327652	1.67E-05	0.0001	9.74E-05	0.00013	
5	2026	taxiways	Drainage - Roller	Rollers100	Diesel	100	59	30.208	2.57E-01	1.04E-00	5.96E-02	1.62E-03	4.33E-02	4.20E-02	2.11E-02	0.000596	0.002044	1.171109	3.14E-06	8.51E-05	8.26E-05	4.15E-05	
5	2026	taxiways	Drainage - Loader	Tractors/Loader/Backhoes175	Diesel	175	59	16.78222	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	3.515362	9.29E-06	5.58E-05	5.41E-05	7.22E-05	
5	2026	taxiways	Drainage - Dump Truck	Off-highway Trucks600	Diesel	600	59	16.78222	8.13E-01	1.46E-00	6.26E-02	1.83E-03	1.89E-01	1.83E-01	2.03E-01	0.001554	0.002793	1.195660	3.49E-06	0.00039	0.000349	0.000388	
5	2026	taxiways	Drainage - Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	16.78222	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.00027	0.000827	0.747173	2.04E-06	6.56E-05	6.36E-05	4.69E-05	
5	2026	taxiways	Drainage - Pickup Truck	Off-highway Trucks600	Diesel	600	59	16.78222	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	3.515362	9.29E-06	5.58E-05	5.41E-05	7.22E-05	
5	2026	taxiways	Drainage - Tractors/Loader/Backhoe	Tractors/Loader/Backhoes100	Diesel	100	0.21	16.78222	1.99E+00	2.17E+00	6.95E+03	2.03E-01	2.71E+01	2.64E+01	2.90E+01	0.000772	0.009845	0.270957	7.89E-07	0.000106	0.000103	0.000113	
5	2026	taxiways	Dust Control Water	Off-highway Trucks600	Diesel	600	0.59	1.440	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	0.000772	301.656	0.000797	0.004786	0.004643	0.006191
5	2026	taxiways	Excavator Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	10.368	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-02	1.82E-02	1.23E-02	9.74E-05	0.001804	0.007738	0.633493	1.68E-06	2.22E-05	2.15E-05	1.49E-05
5	2026	taxiways	Excavator Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	10.368	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	2.171779	5.74E-06	3.45E-05	3.34E-05	4.46E-05	
5	2026	taxiways	Excavator Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	10.368	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	2.171779	5.74E-06	3.45E-05	3.34E-05	4.46E-05	
5	2026	taxiways	Excavator Roller	Rollers100	Diesel	100	0.59	4.785331	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000596	0.002044	1.185155	4.98E-07	1.35E-05	1.31E-05	5.68E-06	
5	2026	taxiways	Excavator Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	7.776	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-02	1.82E-02	1.23E-02	9.74E-05	0.000224	0.000750	1.28E-07	1.66E-05	1.61E-05	1.09E-05	
5	2026	taxiways	Excavator Dump Truck (12 cy)	Off-highway Trucks600	Diesel	600	0.59	20.736	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.00026	0.00112	4.343558	1.15E-05	6.89E-05	6.66E-05	8.72E-05	
5	2026	taxiways	Excavator Excavator	Off-highway Trucks600	Diesel	600	0.59	6.2208	6.56E-02	2.17E-01	5.37E-02	1.42E-03	1.54E-02	1.49E-02	1.05E-02	4.64E-05	0.000154	0.380063	1.01E-06	1.09E-05	1.06E-05	7.43E-06	
5	2026	taxiways	Excavator Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	6.2208	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	3.515362	9.29E-06	5.58E-05	5.41E-05	7.22E-05	
5	2026	taxiways	Excavator Roller	Rollers100	Diesel	100	0.59	6.2208	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000596	0.002044	1.195660	3.49E-06	0.00039	0.000349	0.000388	
5	2026	taxiways	Excavator Scraper	Other Construction Equipment175	Diesel	175	0.59	7.776	1.60E-01	4.09E-01	5.37E-02	1.46E-03	2.95E-02	2.86E-02	2.64E-02	0.000484	0.00124	1.628688	4.44E-06	8.95E-05	8.68E-05	6.01E-05	
5	2026	taxiways	Excavator Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	10.37778	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	2.173827	5.74E-06	3.45E-05	3.35E-05	4.46E-05	
5	2026	taxiways	Fencing - Concrete Truck	Off-highway Trucks600	Diesel	600	0.59	41.51111	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	2.173827	5.74E-06	3.45E-05	3.35E-05	4.46E-05	
5	2026	taxiways	Fencing - Dump Truck	Off-highway Trucks600	Diesel	600	0.59	41.51111	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	2.173827	5.74E-06	3.45E-05	3.35E-05	4.46E-05	
5	2026	taxiways	Fencing - Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	41.51111	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.57E-02	4.57E-02	3.37E-02	0.000687	0.002045	1.848149	5.06E-06	0.000162	0.000134	0.000116	
5	2026	taxiways	Fencing - Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	41.51111	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	2.173827	5.74E-06	3.45E-05	3.35E-05	4.46E-05	
5	2026	taxiways	Fencing - Skid Steer Loader	Off-highway Trucks600	Diesel	600	0.59	41.51111	2.74E+00	3.79E+00	6.94E+02	2.13E-03	3.66E-01	3.55E-01	5.18E-01	0.001977	0.002734	0.505309	1.54E-06	0.000263	0.000134	0.000178	
5	2026	taxiways	Fencing - Tractors/Loader/Backhoe	Tractors/Loader/Backhoes100	Diesel	100	0.21	41.51111	1.99E+00	2.17E+00	6.95E+02	2.03E-03	2.72E-01	2.64E-01	2.90E-01	0.001908	0.002709	0.667992	1.95E-06	0.000261	0.000254	0.000279	
5	2026	taxiways	Grading - Dozer	Crawler Tractor/Dozers175	Diesel	175	0.59	2.934	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-02	1.82E-02	1.23E-02	9.74E-05	0.000224	0.000750	1.28E-07	1.66E-05	1.61E-05	1.09E-05	
5	2026	taxiways	Grading - Grader	Rollers300	Diesel	300	0.59	2.934	3.81E-02	1.55E-01	5.37E-02	1.42E-03	9.92E-03	9.62E-03	1.23E-02	2.18E-05	8.9E-05	0.30729	3.14E-07	5.68E-06	5.51E-06	7.05E-06	
5	2026	taxiways	Grading - Roller	Rollers100	Diesel	100	0.59	2.934	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000596	0.002044	1.193746	3.14E-07	8.27E-06	8.02E-06	4.03E-06	
5	2026	taxiways	Hydroseeds/Off-Road Truck	Other Construction Equipment600	Diesel	600	0.59	2.6432	4.97E-01	1.09E-00	5.37E-02	1.47E-03	8.05E-02	7.81E-02	6.92E-02	0.000213	0.001127	0.553496	1.66E-06	8.3E-05	8.06E-05	7.13E-05	
5	2026	taxiways	Hydroseeds/Highway Road Truck	Off-highway Trucks600	Diesel	600	0.59	2.6432	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	2.173827	5.74E-06	3.45E-05	3.35E-05	4.46E-05	
5	2026	taxiways	Lighting - Dump Truck	Off-highway Trucks600	Diesel	600	0.59	12.69333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	2.658865	7.09E-06	4.22E-05	4.09E-05	5.46E-05	
5	2026	taxiways	Lighting - Loader	Tractors/Loader/Backhoes175	Diesel	175	0.59	12.69333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	2.658865	7.09E-06	4.22E-05	4.09E-05	5.46E-05	
5	2026	taxiways	Lighting - Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	12.69333	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.57E-02	4.57E-02	3.37E-02	0.000204	0.000625	0.565129	1.58E-06	4.96E-05	4.81E-05	3.59E-05	
5	2026	taxiways	Lighting - Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	12.69333	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	2.658865	7.09E-06	4.22E-05	4.09E-05	5.46E-05	
5	2026	taxiways	Lighting - Skid Steer Loader	Off-highway Trucks600	Diesel	600	0.59	12.69333	2.74E+00	3.79E+00	6.94E+02	2.13E-03	3.66E-01	3.55E-01	5.18E-01	0.000684	0.000836	0.153045	4.7E-07	8.06E-05	7.81E-05	5.00E-05	
5	2026	taxiways	Lighting - Tractors/Loader/Backhoe	Tractors/Loader/Backhoes100	Diesel	100	0.21	12.69333	1.99E+00	2.17E+00	6.95E+02	2.03E-03	2.72E-01	2.64E-01	2.90E-01	0.000584	0.000639	0.20426	5.97E-07	8E-05	7.76E-05	8.33E-05	
5	2026	taxiways	Markings - Flashed Truck	Off-highway Trucks600	Diesel	600	0.59	38.42743	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000482	0.000775	0.049371	2.13E-05	0.000128	0.000124	0.000165	
5	2026	taxiways	Markings - Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	38.42743	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.57E-02	4.57E-02	3.37E-02	0.000682	0.000783	1.070854	4.68E-06	0.000154	0.000146	0.000167	
5	2026	taxiways	Markings - Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	38.42743	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000482	0.000775	1.070854	4.68E-06	0.000154	0.000146	0.000167	
5	2026	taxiways	Markings - Roller	Other Construction Equipment175	Diesel	175	0.43	2.4	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	3.85E-05	0.000118	0.106852	2.92E-07	9.38E-06	9.09E-06	6.71E-06	
5	2026	taxiways	Soil Erosion Other General Equipment	Other Construction Equipment175	Diesel	175	0.43	4.8	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	1.005453	2.66E-06	1.6E-05	1.55E-05	2.06E-05	
5	2026	taxiways	Soil Erosion Pickup Truck	Off-highway Trucks600	Diesel	600	0.59	4.8	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.26E-03	1.10E-02	0.000211	0.000906	1.005453	2.66E-06	1.6E-05	1.55E-05	2.06E-	

4	2026	Access Ro.Drainage - Other General Equipment	Diesel	175	0.43	23.36	1.94E-01	5.94E-02	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.000375	0.001151	1.040277	2.88E-06	9.13E-05	8.85E-05	6.53E-05
4	2026	Access Ro.Drainage - Pickup Truck	Diesel	600	0.59	23.36	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000233	0.001261	4.893206	1.29E-05	7.76E-05	7.53E-05	0.0001
4	2026	Access Ro.Drainage - Roller	Diesel	100	0.59	23.36	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.32E-02	4.20E-02	2.11E-02	0.000391	0.000581	9.905625	2.43E-06	6.59E-05	6.39E-05	3.21E-05
4	2026	Access Ro.Drainage - Rump Truck	Diesel	100	0.59	12.9778	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000391	0.000710	2.718448	1.78E-06	4.31E-05	4.18E-05	5.58E-05
4	2026	Access Ro.Drainage - Loader	Diesel	175	0.59	12.9778	8.13E-01	1.46E-00	6.26E-02	1.83E-03	1.89E-01	1.83E-01	2.03E-01	0.00020	0.000216	0.002156	0.000278	0.00027	0.00027	0.0003
4	2026	Access Ro.Drainage - Other General Equipment	Diesel	175	0.43	12.9778	1.94E-01	5.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.000208	0.00039	5.57793	1.58E-06	5.07E-05	4.92E-05	3.63E-05
4	2026	Access Ro.Drainage - Pickup Truck	Diesel	600	0.59	12.9778	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000391	0.000710	2.718448	1.78E-06	4.31E-05	4.18E-05	5.58E-05
4	2026	Access Ro.Drainage - Tractors/Loader/Backhoe	Diesel	100	0.21	12.9778	1.99E-00	2.17E-00	6.95E-02	2.03E-03	2.72E-01	2.64E-01	2.90E-01	0.000563	0.002887	6.1E-07	8.18E-05	7.93E-05	8.72E-05	0.000137
4	2026	Access Ro.Excavator Dozer	Diesel	600	0.59	28.80	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.00128	0.00555	603.277	0.001594	0.009573	0.009285	0.012383
4	2026	Access Ro.Excavator Dozer	Diesel	175	0.59	17.76	7.88E-02	2.51E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000158	0.000508	1.085407	2.88E-06	3.8E-05	3.69E-05	2.48E-05
4	2026	Access Ro.Excavator Dozer	Diesel	600	0.59	17.76	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000233	0.000959	3.720177	9.83E-06	5.9E-05	5.73E-05	7.64E-05
4	2026	Access Ro.Excavator Dozer	Diesel	600	0.59	17.76	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000233	0.000959	3.720177	9.83E-06	5.9E-05	5.73E-05	7.64E-05
4	2026	Access Ro.Excavator Dozer	Diesel	100	0.59	8.196233	2.57E-01	1.04E-00	5.96E-02	1.60E-03	4.33E-02	4.20E-02	2.11E-02	0.000223	0.000959	3.720177	9.83E-06	5.9E-05	5.73E-05	7.64E-05
4	2026	Access Ro.Excavator Dozer	Diesel	175	0.59	33.32	7.88E-02	2.51E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000118	0.000381	0.31778	8.53E-07	2.31E-05	2.24E-05	1.13E-05
4	2026	Access Ro.Excavator Dozer	Diesel	600	0.59	33.32	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000118	0.000381	0.31778	8.53E-07	2.31E-05	2.24E-05	1.13E-05
4	2026	Access Ro.Excavator Dozer	Diesel	600	0.59	35.52	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000446	0.001918	7.440354	1.97E-05	0.000118	0.000115	0.000153
4	2026	Access Ro.Excavator Dozer	Diesel	175	0.59	10.656	5.6E-02	2.17E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000134	0.000575	2.232106	5.9E-06	3.54E-05	3.44E-05	4.58E-05
4	2026	Access Ro.Excavator Dozer	Diesel	600	0.59	10.656	5.6E-02	2.17E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.000134	0.000575	2.232106	5.9E-06	3.54E-05	3.44E-05	4.58E-05
4	2026	Access Ro.Excavator Dozer	Diesel	100	0.59	13.32	1.60E-01	4.09E-01	5.37E-02	1.42E-03	2.95E-02	2.88E-02	2.64E-02	0.000829	0.002124	2.789859	7.11E-06	0.000153	0.000149	0.000137
4	2026	Access Ro.Excavator Dozer	Diesel	175	0.59	5.014588	7.83E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-02	1.82E-02	1.23E-02	0.000157	0.000432	1.67555	4.83E-06	2.66E-05	2.58E-05	3.44E-05
4	2026	Access Ro.Excavator Dozer	Diesel	600	0.59	8	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.0001	0.000432	1.67555	4.83E-06	2.66E-05	2.58E-05	3.44E-05
4	2026	Access Ro.Fencing	Diesel	600	0.59	32	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.00041	0.001278	6.703022	1.77E-05	0.000106	0.000103	0.000138
4	2026	Access Ro.Fencing	Diesel	175	0.43	32	1.94E-01	5.37E-02	1.47E-03	4.71E-02	4.57E-02	3.37E-02	0.000514	0.00157	1.424694	3.9E-06	0.000125	0.000121	8.95E-05	
4	2026	Access Ro.Fencing	Diesel	600	0.59	32	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.00041	0.001278	6.703022	1.77E-05	0.000106	0.000103	0.000138
4	2026	Access Ro.Fencing	Diesel	600	0.59	32	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.00041	0.001278	6.703022	1.77E-05	0.000106	0.000103	0.000138
4	2026	Access Ro.Fencing	Diesel	75	0.21	32	2.74E-00	3.79E-00	6.94E-02	2.13E-03	3.66E-01	3.55E-01	5.18E-01	0.000915	0.001265	0.231496	7.1E-07	0.000121	0.000117	0.000173
4	2026	Access Ro.Fencing	Diesel	600	0.59	32	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.00041	0.001278	6.703022	1.77E-05	0.000106	0.000103	0.000138
4	2026	Access Ro.Fencing	Diesel	600	0.59	32	3.21E-02	1.38E-01	5.37E-02	1.42E-03	8.52E-03	8.28E-03	1.10E-02	0.00041	0.001278	6.703022	1.77E-05	0.000106	0.000103	0.000138
4	2026	Access Ro.Fencing	Diesel	100	0.21	32	1.99E-00	2.17E-00	6.95E-02	2.03E-03	2.72E-01	2.64E-01	2.90E-01	0.000883	0.000967	0.388964	9.02E-07	0.000121	0.000117	0.000173
4	2026	Access Ro.Fencing	Diesel	175	0.43	32	1.99E-00	2.17E-00	6.95E-02	2.03E-03	2.72E-01	2.64E-01	2.90E-01	0.000883	0.000967	0.388964	9.02E-07	0.000121	0.000117	0.000173
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02	1.42E-03	1.88E-03	1.82E-02	1.23E-02	0.000148	0.000446	0.000632	3.54E-07	4.12E-05	3.99E-05	0.000387
4	2026	Access Ro.Fencing	Diesel	600	0.59	4.0515	7.88E-02	2.51E-01	5.37E-02</											

Soil handling
Unstabilized land and wind erosion
Material movement (unpaved roads)
Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the asphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO₂, CH₄, and N₂O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

Asphalt Deliveries/Ten Wheelers
Bulldozer
Concrete Ready Mix Trucks
Concrete Ready Trucks Mix for Cores
Concrete Truck
Crack Filler (Trailer Mounted)
Delivery of Tanks (3)
Distributing Tanker
Dozer
Dump Truck
Dump Truck (12 cy)

0.092716	1001.869	0.015167	0.003286	0.001952	0.002708	5.26E-06	4.5E-05	4.14E-05	0.000146	1.572634	2.38E-05	5.16E-06	
0.058187	308.5568	0.006878	0.00167	0.780694	0.014841	0.000596	0.000587	0.000519	0.016929	89.7712	0.002001	0.000486	
0.16006	1615.33	0.019075	0.002802	0.000668	0.001162	1.67E-06	1.85E-05	1.71E-05	4.94E-05	0.49857	5.89E-06	8.65E-07	
0.092716	1001.869	0.015167	0.003286	0.006106	0.008472	1.65E-05	0.000141	0.000129	0.000455	4.920002	7.45E-05	1.61E-05	
0.092716	1001.869	0.015167	0.003286	0.000543	0.000753	1.46E-06	1.25E-05	1.15E-05	4.05E-05	0.437333	6.62E-06	1.43E-06	
0.092716	1001.869	0.015167	0.003286	0.003256	0.004518	8.78E-06	7.5E-05	6.9E-05	0.000243	2.624001	3.97E-05	8.61E-06	
0.058187	308.5568	0.006878	0.00167	0.778404	0.014797	0.000595	0.000585	0.000518	0.016879	89.50794	0.001995	0.000484	
0.092716	1001.869	0.015167	0.003286	0.00317	0.004398	8.55E-06	7.3E-05	6.72E-05	0.000236	2.554425	3.87E-05	8.38E-06	
0.092716	1001.869	0.015167	0.003286	0.00169	0.002345	4.56E-06	3.89E-05	3.58E-05	0.000126	1.361697	2.06E-05	4.47E-06	
0.058187	308.5568	0.006878	0.00167	11.08082	0.21064	0.008464	0.008333	0.007372	0.24028	1274.172	0.028404	0.006896	
0.16006	1615.33	0.019075	0.002802	0.000382	0.000664	9.52E-07	1.06E-05	9.74E-06	2.82E-05	0.284897	3.36E-06	4.94E-07	
0.092716	1001.869	0.015167	0.003286	0.00921	0.012779	2.48E-05	0.000212	0.000195	0.000687	7.421417	0.000112	2.43E-05	
0.058187	308.5568	0.006878	0.00167	0.402939	0.00766	0.000308	0.000303	0.000268	0.008737	46.33352	0.001033	0.000251	
0.16006	1615.33	0.019075	0.002802	0.000998	0.001735	2.49E-06	2.77E-05	2.55E-05	7.38E-05	0.744293	8.79E-06	1.29E-06	
0.092716	1001.869	0.015167	0.003286	0.009128	0.012665	2.46E-05	0.00021	0.000193	0.000681	7.355154	0.000111	2.41E-05	
0.092716	1001.869	0.015167	0.003286	0.000811	0.001126	2.19E-06	1.87E-05	1.72E-05	6.05E-05	0.653791	9.9E-06	2.14E-06	
0.092716	1001.869	0.015167	0.003286	0.004868	0.006755	1.31E-05	0.000112	0.000103	0.000363	3.922749	5.94E-05	1.29E-05	
0.058187	308.5568	0.006878	0.00167	1.968905	0.037428	0.001504	0.001481	0.00131	0.042694	226.4024	0.005047	0.001225	
0.092716	1001.869	0.015167	0.003286	0.00317	0.004398	8.55E-06	7.3E-05	6.72E-05	0.000236	2.554425	3.87E-05	8.38E-06	
0.092716	1001.869	0.015167	0.003286	0.000282	0.000392	7.61E-07	6.5E-06	5.98E-06	2.11E-05	0.227502	3.44E-06	7.46E-07	
0.092716	1001.869	0.015167	0.003286	0.00169	0.002345	4.56E-06	3.89E-05	3.58E-05	0.000126	1.361697	2.06E-05	4.47E-06	
0.058187	308.5568	0.006878	0.00167	1.032531	0.019628	0.000789	0.000777	0.000687	0.02239	118.7297	0.002647	0.000643	
0.16006	1615.33	0.019075	0.002802	0.000286	0.000498	7.14E-07	7.94E-06	7.31E-06	2.12E-05	0.213673	2.52E-06	3.71E-07	
0.16006	1615.33	0.019075	0.002802	0.005455	0.009483	1.36E-05	0.000151	0.000139	0.000403	4.068684	4.8E-05	7.06E-06	
0.092716	1001.869	0.015167	0.003286	0.004918	0.069261	0.000135	0.00115	0.001058	0.003722	40.22364	0.000609	0.000132	
0.092716	1001.869	0.015167	0.003286	0.004438	0.006157	1.2E-05	0.000102	9.41E-05	0.000331	3.575974	5.41E-05	1.17E-05	
0.092716	1001.869	0.015167	0.003286	0.026623	0.036939	7.18E-05	0.000613	0.000564	0.001985	21.45253	0.000325	7.04E-05	
0.058187	308.5568	0.006878	0.00167	0.409523	0.007785	0.000313	0.000308	0.000272	0.00888	47.09065	0.00105	0.000255	
0.092716	1001.869	0.015167	0.003286	0.00317	0.004398	8.55E-06	7.3E-05	6.72E-05	0.000236	2.554425	3.87E-05	8.38E-06	
0.092716	1001.869	0.015167	0.003286	0.00169	0.002345	4.56E-06	3.89E-05	3.58E-05	0.000126	1.361697	2.06E-05	4.47E-06	
0.058187	308.5568	0.006878	0.00167	0.317236	0.00603	0.000242	0.000239	0.000211	0.006879	36.47867	0.000813	0.000197	
0.16006	1615.33	0.019075	0.002802	0.000382	0.000664	9.52E-07	1.06E-05	9.74E-06	2.82E-05	0.284897	3.36E-06	4.94E-07	
0.092716	1001.869	0.015167	0.003286	0.00317	0.004398	8.55E-06	7.3E-05	6.72E-05	0.000236	2.554425	3.87E-05	8.38E-06	
0.092716	1001.869	0.015167	0.003286	0.00169	0.002345	4.56E-06	3.89E-05	3.58E-05	0.000126	1.361697	2.06E-05	4.47E-06	
0.058187	308.5568	0.006878	0.00167	0.513923	0.009769	0.000393	0.000387	0.000342	0.011144	59.09545	0.001317	0.00032	
0.16006	1615.33	0.019075	0.002802	0.000382	0.000664	9.52E-07	1.06E-05	9.74E-06	2.82E-05	0.284897	3.36E-06	4.94E-07	
				totals	33.41468	1.046677	0.026093	0.031812	0.028386	0.740219	4045.751	0.088443	0.021368

1	2027	Taxiways	Soil Erosion Tractors/Loader/Backhoe	Tractors/L/Diesel	100	0.21	8	1.596653	1.90781	695.3356	0.00199	0.226892	0.220085	0.227907	0.000296	0.000353	0.128769	3.68E-07	4.2E-05	4.08E-05	4.22E-05
1	2027	Taxiways	Subbase P/ Dozer	Crawler Tr Diesel	175	0.59	15.71474	0.069639	0.226304	536.7988	0.001421	0.016409	0.015917	0.011077	0.000125	0.000405	0.960097	2.54E-06	2.93E-05	2.85E-05	1.98E-05
1	2027	Taxiways	Subbase P/ Dump Truck (12 cy)	Off-high/Diesel	600	0.59	110.5867	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.001173	0.005473	23.16459	6.11E-05	0.000332	0.000322	0.000451
1	2027	Taxiways	Subbase P/ Pickup Truck	Off-high/Diesel	600	0.59	15.71474	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000167	0.000778	3.291766	8.69E-06	4.72E-05	4.58E-05	6.41E-05
1	2027	Taxiways	Subbase P/ Roller	Rollers100Diesel	100	0.59	15.312	0.169521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	0.000169	0.000959	0.593636	1.58E-06	3.06E-05	2.97E-05	1.5E-05
1	2027	Taxiways	Topsoil P/ Dozer	Crawler Tr Diesel	175	0.59	21.30933	0.069639	0.226304	536.7988	0.001421	0.016409	0.015917	0.011077	0.000169	0.000549	1.301901	3.45E-06	3.98E-05	3.86E-05	2.69E-05
1	2027	Taxiways	Topsoil P/ Dump Truck	Off-high/Diesel	600	0.59	21.30933	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000226	0.001055	4.463667	1.18E-05	6.4E-05	6.21E-05	8.69E-05
1	2027	Taxiways	Topsoil P/ Pickup Truck	Off-high/Diesel	600	0.59	21.30933	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000226	0.001055	4.463667	1.18E-05	6.4E-05	6.21E-05	8.69E-05
2	2027	Taxiways	Asphalt P/ Asphalt Paver	Pavers175 Diesel	175	0.59	31.8615	0.083807	0.250139	536.7939	0.001426	0.020777	0.019475	0.012961	0.000301	0.000907	1.956572	5.17E-06	7.28E-05	7.06E-05	4.7E-05
2	2027	Taxiways	Asphalt P/ Dump Truck	Off-high/Diesel	600	0.59	114.7516	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.001217	0.005628	24.03702	6.34E-05	0.000345	0.000334	0.000468
2	2027	Taxiways	Asphalt P/ Other General Equipment	Other Con Diesel	175	0.43	63.723	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.000887	0.002648	2.837132	7.71E-06	0.000216	0.000209	0.000153
2	2027	Taxiways	Asphalt P/ Pickup Truck	Off-high/Diesel	600	0.59	31.8615	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000338	0.001577	6.67403	1.76E-05	9.57E-05	9.29E-05	0.00013
2	2027	Taxiways	Asphalt P/ Roller	Rollers100Diesel	100	0.59	31.8615	0.169521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	0.000351	0.001995	1.23525	3.29E-06	6.37E-05	6.18E-05	3.12E-05
2	2027	Taxiways	Asphalt P/ Skid Steer Loader	Skid Steer Diesel	75	0.21	31.8615	2.567846	3.695226	694.5866	0.002114	0.336823	0.326726	0.479842	0.000142	0.002044	0.38422	1.17E-06	0.000186	0.000181	0.000265
2	2027	Taxiways	Asphalt P/ Surfacing Equipment (Grooving)	Other Con Diesel	25	0.59	40.78272	1.489019	3.762538	595.1512	0.002188	0.170468	0.165354	0.351665	0.000987	0.002495	0.394641	1.45E-06	0.000113	0.00011	0.000233
2	2027	Taxiways	Clearing a/ Chain Saw	Other Con Diesel	11	0.7	82.8	2.461074	4.183513	593.7557	0.002183	0.238964	0.231795	0.837797	0.00173	0.00294	0.417288	1.53E-06	0.000168	0.000163	0.000589
2	2027	Taxiways	Clearing a/ Chipper/ Stump Grinder	Other Con Diesel	100	0.43	82.8	0.389666	1.180819	596.0566	0.00162	0.059454	0.05767	0.03496	0.001529	0.004634	2.139337	6.36E-06	0.000233	0.000226	0.000137
2	2027	Taxiways	Clearing a/ Pickup Truck	Off-high/Diesel	600	0.59	110.4	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.001171	0.005464	23.12549	6.1E-05	0.000332	0.000322	0.00045
2	2027	Taxiways	Concrete F/ Air Compressor	Other Con Diesel	100	0.43	84.964	0.389666	1.180819	596.0566	0.00162	0.059454	0.05767	0.03496	0.001569	0.004755	2.400477	6.52E-06	0.000239	0.000232	0.000141
2	2027	Taxiways	Concrete F/ Concrete Saws	Other Con Diesel	40	0.59	84.964	0.281744	2.531371	595.8804	0.00157	0.021132	0.020498	0.092708	0.000623	0.005595	1.317081	3.47E-06	4.67E-05	4.53E-05	0.00025
2	2027	Taxiways	Concrete F/ Concrete Truck	Off-high/Diesel	600	0.59	354.0167	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.003754	0.017522	74.15588	0.000196	0.001064	0.001032	0.001444
2	2027	Taxiways	Concrete F/ Other General Equipment	Other Con Diesel	175	0.43	169.928	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.002366	0.007051	7.565686	2.06E-05	0.000575	0.000558	0.000407
2	2027	Taxiways	Concrete F/ Pickup Truck	Off-high/Diesel	600	0.59	254.892	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.002703	0.012616	53.39224	0.000141	0.000766	0.000743	0.00104
2	2027	Taxiways	Concrete F/ Rubber Tired Loader	Tractors/L/Diesel	175	0.59	84.964	0.655566	1.228319	626.0668	0.00179	0.151301	0.146762	0.164407	0.006339	0.011878	6.054137	1.73E-05	0.001463	0.001419	0.00159
2	2027	Taxiways	Concrete F/ Slip Form Paver	Pavers175 Diesel	175	0.59	84.964	0.083807	0.250139	536.7939	0.001426	0.020777	0.019475	0.012961	0.000803	0.002419	5.190857	1.38E-05	0.000194	0.000188	0.000125
2	2027	Taxiways	Concrete F/ Surfacing Equipment (Grooving)	Other Con Diesel	25	0.59	84.964	1.489019	3.762538	595.1512	0.002188	0.170468	0.165354	0.351665	0.002057	0.005198	0.822168	3.02E-06	0.000235	0.000228	0.000486
2	2027	Taxiways	Drainage - Dozer	Crawler Tr Diesel	175	0.59	229.952	0.069639	0.226304	536.7995	0.001421	0.016409	0.015917	0.011077	0.001823	0.005923	14.049	3.73E-06	0.000429	0.000417	0.00029
2	2027	Taxiways	Drainage - Dump Truck	Off-high/Diesel	600	0.59	229.952	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.002438	0.011381	48.16805	0.000127	0.000691	0.00067	0.000938
2	2027	Taxiways	Drainage - Excavator	Excavators Diesel	175	0.59	229.952	0.059583	0.19603	536.8041	0.001417	0.013754	0.013341	0.009662	0.000519	0.00513	10.04913	3.71E-05	0.00036	0.000349	0.000253
2	2027	Taxiways	Drainage - Loader	Tractors/L/Diesel	175	0.59	229.952	0.655566	1.228319	626.0668	0.00179	0.151301	0.146762	0.164407	0.007157	0.032147	16.3853	4.68E-05	0.00396	0.00384	0.00403
2	2027	Taxiways	Drainage - Other General Equipment	Other Con Diesel	175	0.43	229.952	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.003201	0.009555	10.23813	2.78E-05	0.000779	0.000755	0.000551
2	2027	Taxiways	Drainage - Pickup Truck	Off-high/Diesel	600	0.59	229.952	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.002438	0.011381	48.16805	0.000127	0.000691	0.00067	0.000938
2	2027	Taxiways	Drainage - Roller	Rollers100Diesel	100	0.59	229.952	0.169521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	0.002535	0.0144	8.915089	2.37E-05	0.00046	0.000466	0.000225
2	2027	Taxiways	Drainage - Dump Truck	Off-high/Diesel	600	0.59	127.7511	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.001355	0.006323	26.76003	7.06E-05	0.000384	0.000372	0.000521
2	2027	Taxiways	Drainage - Loader	Tractors/L/Diesel	175	0.59	127.7511	0.655566	1.228319	626.0668	0.00179	0.151301	0.146762	0.164407	0.009352	0.01786	9.020946	2.6E-05	0.0022	0.002134	0.00239
2	2027	Taxiways	Drainage - Other General Equipment	Other Con Diesel	175	0.43	127.7511	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.001779	0.005308	5.687849	1.55E-05	0.000433	0.00042	0.000306
2	2027	Taxiways	Drainage - Pickup Truck	Off-high/Diesel	600	0.59	127.7511	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.001355	0.006323	26.76003	7.06E-05	0.000384	0.000372	0.000521
2	2027	Taxiways	Drainage - Tractors/Loader/Backhoe	Tractors/L/Diesel	100	0.21	127.7511	1.596653	1.90781	695.3356	0.00199	0.226892	0.220085	0.227907	0.004722	0.005642	2.056293	5.88E-06	0.000671	0.000651	0.000674
2	2027	Taxiways	Dust Contr Water Truck	Off-high/Diesel	600	0.59	2880	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.003059	0.142543	603.2737	0.001592	0.008653	0.008393	0.011749
2	2027	Taxiways	Excavator Dozer	Crawler Tr Diesel	175	0.59	141.6067	0.069639	0.226304	536.7988	0.001421	0.016409	0.015917	0.011077	0.001122	0.004647	8.651509	2.29E-05	0.000264	0.000257	0.000179
2	2027	Taxiways	Excavator Dump Truck (12 cy)	Off-high/Diesel	600	0.59	141.6067	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.001502	0.007009	29.66235	7.83E-05	0.000425	0.000413	0.000578
2	2027	Taxiways	Excavator Pickup Truck	Off-high/Diesel	600	0.59	141.6067	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.001502	0.007009	29.66235	7.83E-05	0.000425	0.000413	0.000578
2	2027	Taxiways	Excavator Roller	Rollers100Diesel	100	0.59	65.3692	0.169521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	0.000721	0.004093	2.533845	6.75E-06	0.000131	0.000127	6.4E-05
2	2027	Taxiways	Excavator Dozer	Crawler Tr Diesel	175	0.59	141.6067	0.069639	0.226304	536.7988	0.001421	0.016409	0.015917	0.011077	0.000842	0.002735	6.488632	1.72E-05	0.000198	0.000192	0.000134
2	2027	Taxiways	Excavator Dump Truck (12 cy)	Off-high/Diesel	600	0.59	283.2133	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.003003	0.014017	59.32471	0.000157	0.000851	0.000825	0.001155
2	2027	Taxiways	Excavator Excavator	Excavators Diesel	175	0.59	84.964	0.059583	0.19603	536.8041	0.001417	0.013754	0.013341	0.009662	0.000576	0.001896	5.190956	1.37E-05	0.000133	0.000129	9.34E-05
2	2027	Taxiways	Excavator Pickup Truck	Off-high/Diesel	600	0.59	84.964	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000901	0.004205	17.79741	4.7E-05	0.000255	0.000248	0.000347
2	2027	Taxiways	Excavator Roller	Rollers100Diesel	100	0.59	84.964	0.169521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	0.000937	0.00532	3.293999	8.77E-06</			

4	2027 Apron (GA Asphalt Pl: Asphalt Paver)	Pavers175 Diesel	175	0.59	10.6915	0.083087	0.250139	536.7939	0.001426	0.020077	0.019475	0.012961	0.000101	0.000304	0.653195	1.74E-06	2.44E-05	2.37E-05	1.58E-05
4	2027 Apron (GA Asphalt Pl: Dump Truck)	Off-high: Diesel	600	0.59	38.50625	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000408	0.001906	0.865909	2.13E-05	0.000116	0.000112	0.000157
4	2027 Apron (GA Asphalt Pl: Other General Equipment)	Other Con Diesel	175	0.43	21.383	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.000298	0.000888	0.952033	2.59E-06	7.24E-05	7.02E-05	5.13E-05
4	2027 Apron (GA Asphalt Pl: Pickup Truck)	Off-high: Diesel	600	0.59	10.6915	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000113	0.000529	2.239549	5.91E-06	3.21E-05	3.12E-05	4.36E-05
4	2027 Apron (GA Asphalt Pl: Roller)	Rollers100 Diesel	100	0.59	10.6915	0.169521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	0.000118	0.00067	0.414502	1.1E-06	2.14E-05	2.07E-05	1.05E-05
4	2027 Apron (GA Asphalt Pl: Skid Steer Loader)	Skid Steer Diesel	75	0.21	10.6915	2.567846	3.695226	694.5866	0.002114	0.33683	0.326726	0.479842	0.000477	0.000686	0.128929	3.92E-07	6.25E-05	6.06E-05	8.91E-05
4	2027 Apron (GA Asphalt Pl: Surfacing Equipment (Grooving))	Other Con Diesel	25	0.59	13.68512	1.489019	3.762538	595.1512	0.002188	0.170468	0.165354	0.351665	0.000331	0.000837	0.132426	4.87E-07	3.79E-05	3.68E-05	7.82E-05
4	2027 Apron (GA Clearing a Chain Saw)	Other Con Diesel	11	0.7	22.8	2.461074	4.183513	593.7557	0.002183	0.238964	0.231795	0.837797	0.000476	0.00081	0.114905	4.22E-07	4.62E-05	4.49E-05	0.000162
4	2027 Apron (GA Clearing a Chipper/ Stump Grinder)	Other Con Diesel	100	0.43	22.8	0.389666	1.180819	596.0566	0.00162	0.059454	0.05767	0.03496	0.000421	0.001276	0.644165	1.75E-06	6.43E-05	6.33E-05	3.78E-05
4	2027 Apron (GA Clearing a Pickup Truck)	Off-high: Diesel	600	0.59	30.4	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000322	0.001505	0.563789	1.68E-05	9.13E-05	8.85E-05	0.000124
4	2027 Apron (GA Concrete Fair Compressor)	Other Con Diesel	100	0.43	28.5104	0.389666	1.180819	596.0566	0.00162	0.059454	0.05767	0.03496	0.000527	0.001596	0.805501	2.19E-06	8.03E-05	7.79E-05	4.68E-05
4	2027 Apron (GA Concrete F Concrete Saws)	Other Con Diesel	40	0.59	28.5104	0.281744	2.531371	595.8804	0.00157	0.021132	0.020498	0.092708	0.000209	0.001877	0.441958	1.16E-06	1.57E-05	1.52E-05	6.88E-05
4	2027 Apron (GA Concrete F Concrete Truck)	Off-high: Diesel	600	0.59	118.7933	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.00126	0.00588	24.88364	6.57E-05	0.000357	0.000346	0.000485
4	2027 Apron (GA Concrete F Other General Equipment)	Other Con Diesel	175	0.43	57.0208	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.000794	0.002369	2.538731	6.9E-06	0.000193	0.000187	0.000137
4	2027 Apron (GA Concrete F Pickup Truck)	Off-high: Diesel	600	0.59	85.5312	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000907	0.004233	17.91622	4.73E-05	0.000257	0.000249	0.000349
4	2027 Apron (GA Concrete F Rubber Tired Loader)	Tractors/L Diesel	175	0.59	28.5104	0.655566	1.228319	626.0668	0.00179	0.151301	0.146762	0.164407	0.000217	0.003986	2.031518	5.81E-06	0.000491	0.000476	0.000533
4	2027 Apron (GA Concrete F Slip Form Paver)	Pavers175 Diesel	175	0.59	28.5104	0.083087	0.250139	536.7939	0.001426	0.020077	0.019475	0.012961	0.00027	0.000812	1.741837	4.63E-06	6.51E-05	6.32E-05	4.21E-05
4	2027 Apron (GA Concrete F Surfacing Equipment (Grooving))	Other Con Diesel	25	0.59	28.5104	1.489019	3.762538	595.1512	0.002188	0.170468	0.165354	0.351665	0.000609	0.001744	0.275886	1.01E-06	7.9E-05	7.67E-05	0.000163
4	2027 Apron (GA Drainage - Dozer)	Crawler Tr Diesel	175	0.59	11.328	0.069639	0.226304	536.7988	0.001421	0.016409	0.015917	0.011077	8.98E-05	0.000292	0.692088	1.83E-06	2.12E-05	2.05E-05	1.43E-05
4	2027 Apron (GA Drainage - Dump Truck)	Off-high: Diesel	600	0.59	11.328	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.00012	0.000561	2.372877	6.26E-06	3.4E-05	3.3E-05	4.62E-05
4	2027 Apron (GA Drainage - Excavator)	Excavators Diesel	175	0.59	11.328	0.059583	0.19603	536.8041	0.001417	0.013754	0.013341	0.009662	7.68E-05	0.000253	0.692095	1.83E-06	1.77E-05	1.72E-05	1.25E-05
4	2027 Apron (GA Drainage - Loader)	Tractors/L Diesel	175	0.59	11.328	0.655566	1.228319	626.0668	0.00179	0.151301	0.146762	0.164407	0.000845	0.001584	0.807128	2.31E-06	0.000195	0.000189	0.000212
4	2027 Apron (GA Drainage - Other General Equipment)	Other Con Diesel	175	0.43	11.328	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.000158	0.000471	0.504355	1.37E-06	3.84E-05	3.72E-05	2.72E-05
4	2027 Apron (GA Drainage - Pickup Truck)	Off-high: Diesel	600	0.59	11.328	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.00012	0.000561	2.372877	6.26E-06	3.4E-05	3.3E-05	4.62E-05
4	2027 Apron (GA Drainage - Roller)	Rollers100 Diesel	100	0.59	11.328	0.189521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	0.000125	0.000709	0.439179	1.17E-06	2.27E-05	2.2E-05	1.11E-05
4	2027 Apron (GA Drainage - Dump Truck)	Off-high: Diesel	600	0.59	6.293333	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	6.67E-05	0.000311	1.318265	3.48E-06	1.89E-05	1.83E-05	2.57E-05
4	2027 Apron (GA Drainage - Loader)	Tractors/L Diesel	175	0.59	6.293333	0.655566	1.228319	626.0668	0.00179	0.151301	0.146762	0.164407	0.00047	0.00088	0.448433	1.28E-06	0.000108	0.000105	0.000118
4	2027 Apron (GA Drainage - Other General Equipment)	Other Con Diesel	175	0.43	6.293333	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	8.76E-05	0.000261	0.280197	7.61E-07	2.13E-05	2.07E-05	1.51E-05
4	2027 Apron (GA Drainage - Pickup Truck)	Off-high: Diesel	600	0.59	6.293333	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	6.67E-05	0.000311	1.318265	3.48E-06	1.89E-05	1.83E-05	2.57E-05
4	2027 Apron (GA Drainage - Tractors/Loader/Backhoe)	Tractors/L Diesel	100	0.21	6.293333	1.596653	1.90781	695.3356	0.00199	0.226892	0.220085	0.227907	0.000233	0.000278	0.101298	2.99E-07	3.31E-05	3.21E-05	3.32E-05
4	2027 Apron (GA Dust Contr Water Truck)	Off-high: Diesel	600	0.59	28.80	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.00054	0.003059	3.042753	0.001592	0.000853	0.000839	0.001749
4	2027 Apron (GA Excavator Dozer)	Crawler Tr Diesel	175	0.59	47.51733	0.069639	0.226304	536.7988	0.001421	0.016409	0.015917	0.011077	0.000377	0.001224	2.903808	7.69E-06	8.87E-05	8.61E-05	5.99E-05
4	2027 Apron (GA Excavator Dump Truck (12 cy))	Off-high: Diesel	600	0.59	47.51733	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000504	0.002352	9.953457	2.63E-05	0.000143	0.000138	0.000194
4	2027 Apron (GA Excavator Pickup Truck)	Off-high: Diesel	600	0.59	47.51733	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000504	0.002352	9.953457	2.63E-05	0.000143	0.000138	0.000194
4	2027 Apron (GA Excavator Roller)	Rollers100 Diesel	100	0.59	21.93108	0.169521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	0.000242	0.001373	0.805502	2.26E-06	4.39E-05	4.25E-05	2.15E-05
4	2027 Apron (GA Excavator Dozer)	Crawler Tr Diesel	175	0.59	35.638	0.069639	0.226304	536.7988	0.001421	0.016409	0.015917	0.011077	0.000282	0.000918	1.773116	5.76E-06	6.66E-05	6.46E-05	4.49E-05
4	2027 Apron (GA Excavator Dump Truck (12 cy))	Off-high: Diesel	600	0.59	95.03467	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.001008	0.004704	19.90691	5.25E-05	0.000286	0.000277	0.000388
4	2027 Apron (GA Excavator Excavator)	Excavators Diesel	175	0.59	28.5104	0.059583	0.19603	536.8041	0.001417	0.013754	0.013341	0.009662	0.000193	0.000636	1.74187	4.6E-06	4.4E-05	4.33E-05	3.14E-05
4	2027 Apron (GA Excavator Pickup Truck)	Off-high: Diesel	600	0.59	28.5104	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000302	0.001411	5.972074	1.58E-05	8.57E-05	8.31E-05	0.000116
4	2027 Apron (GA Excavator Roller)	Rollers100 Diesel	100	0.59	28.5104	0.169521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	0.000314	0.001785	1.10533	2.94E-06	5.7E-05	5.53E-05	2.79E-05
4	2027 Apron (GA Excavator Scraper)	Scrapers6 Diesel	600	0.59	35.638	0.131479	0.345281	536.7629	0.001454	0.025045	0.024294	0.023055	0.001828	0.004802	7.464584	2.02E-05	0.000348	0.000338	0.000321
4	2027 Apron (GA Excavator Dozer)	Crawler Tr Diesel	175	0.59	13.41678	0.069639	0.226304	536.7988	0.001421	0.016409	0.015917	0.011077	0.000106	0.000346	0.819703	2.17E-06	2.51E-05	2.43E-05	1.69E-05
4	2027 Apron (GA Fencing Concrete Truck)	Off-high: Diesel	600	0.59	3.822222	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	4.05E-05	0.000189	0.800641	2.11E-06	1.15E-05	1.11E-05	1.56E-05
4	2027 Apron (GA Fencing Dump Truck)	Off-high: Diesel	600	0.59	15.28889	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000162	0.000561	3.202564	8.45E-06	4.59E-05	4.46E-05	6.24E-05
4	2027 Apron (GA Fencing Other General Equipment)	Other Con Diesel	175	0.43	15.28889	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.000213	0.000635	0.805506	1.85E-06	5.18E-05	5.02E-05	3.67E-05
4	2027 Apron (GA Fencing Pickup Truck)	Off-high: Diesel	600	0.59	15.28889	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000162	0.000757	3.202564	8.45E-06	4.59E-05	4.46E-05	6.24E-05
4	2027 Apron (GA Fencing Skid Steer Loader)	Skid Steer Diesel	75	0.21	15.28889	2.567846	3.695226	694.5866	0.002114	0.33683	0.326726	0.479842	0.000682	0.000981	0.18437	5.61E-07	8.94E-05	8.77E-05	0.000127
4	2027 Apron (GA Fencing Tractors/Loader/Backhoe)	Tractors/L Diesel	100	0.21	15.28889	1.596653	1.90781	695.3356	0.00199	0.226892	0.220085	0.227907	0.000565	0.000675	0.604261	7.04E-07	8.03E-05	7.69E-05	8.07E-05
4	2027 Apron (GA Grading Dozer)	Crawler Tr Diesel	175	0.59	9.1948	0.069639	0.226304	536.7988	0.001421	0.016409	0.015917	0.011077	7.29E-05	0.000237	0.56176	1.49E-06	1.72E-05	1.67E-05	1.16E-05
4	2027 Apron (GA Grading Grader)	Graders30 Diesel	300	0.59	9.1948	0.032003	0.140888	536.7963	0.001419	0.008755	0.008492	0.011426	5.74E-05	0.000253					

5	2027 Building - Exterior W Man Lift	Rough Ter Diesel	75	0.21	240	0.350514	2.628267	595.9461	0.001613	0.036999	0.035889	0.069204	0.001461	0.010951	2.483164	6.72E-06	0.000154	0.00015	0.000288
5	2027 Building - Exterior W Tool Truck	Off-high:Diesel	600	0.59	60	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000636	0.00297	12.5682	3.32E-05	0.00018	0.000175	0.000245
5	2027 Building - Exterior W Tractor Trailer- Material Delivery	Off-high:Diesel	600	0.59	24	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000254	0.001188	5.027281	1.33E-05	7.21E-05	6.99E-05	9.79E-05
5	2027 Building - Interior Bu Fork Truck	Other Con Diesel	100	0.59	960	0.389666	1.180819	596.0566	0.00162	0.059454	0.05767	0.03496	0.024329	0.073725	37.21494	0.000010	0.0003712	0.003601	0.002183
5	2027 Building - Interior Bu Man Lift	Rough Ter Diesel	75	0.21	960	0.350514	2.628267	595.9461	0.001613	0.036999	0.035889	0.069204	0.001461	0.010951	2.483164	6.72E-06	0.000154	0.00015	0.000288
5	2027 Building - Interior Bu Tool Truck	Off-high:Diesel	600	0.59	120	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.001272	0.005939	25.1364	6.63E-05	0.000361	0.00035	0.00049
5	2027 Building - Interior Bu Tractor Trailer- Material Delivery	Off-high:Diesel	600	0.59	120	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.001272	0.005939	25.1364	6.63E-05	0.000361	0.00035	0.00049
5	2027 Building - Roofing High Lift	Rough Ter Diesel	100	0.59	120	0.296913	0.832308	596.0803	0.001606	0.047198	0.045782	0.026655	0.002318	0.008454	4.652025	1.25E-05	0.000368	0.000357	0.000208
5	2027 Building - Roofing Man Lift (Fascia Construction)	Rough Ter Diesel	75	0.21	120	0.350514	2.628267	595.9461	0.001613	0.036999	0.035889	0.069204	0.001461	0.010951	2.483164	6.72E-06	0.000154	0.00015	0.000288
5	2027 Building - Roofing Material Deliveries	Off-high:Diesel	600	0.59	8	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	8.48E-05	0.000396	1.67576	4.42E-06	2.4E-05	2.35E-05	3.9E-05
5	2027 Building - Roofing Tractor Trailer- Material Delivery	Off-high:Diesel	600	0.59	12	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000127	0.000594	2.51364	6.63E-06	3.61E-05	3.5E-05	4.2E-05
5	2027 Building - Security & High Lift	Rough Ter Diesel	100	0.59	320	0.296993	0.832308	596.0803	0.001606	0.047198	0.045782	0.026655	0.006181	0.022543	12.40547	3.34E-05	0.000982	0.000953	0.000555
5	2027 Building - Security & Tool Truck	Off-high:Diesel	600	0.59	80	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000848	0.00396	16.7576	4.42E-05	0.00024	0.000233	0.000326
5	2027 Building - Structural 40 Ton Crane	Cranes300Diesel	300	0.43	240	0.052989	0.225446	530.9934	0.001419	0.012453	0.01208	0.016841	0.001808	0.007694	18.1216	4.84E-05	0.000425	0.000412	0.000575
5	2027 Building - Structural Fork Truck	Other Con Diesel	100	0.59	120	0.389666	1.180819	596.0566	0.00162	0.059454	0.05767	0.03496	0.030041	0.009216	4.615867	1.26E-05	0.000464	0.00045	0.000273
5	2027 Building - Structural Tool Truck	Off-high:Diesel	600	0.59	60	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000636	0.00297	12.5682	3.32E-05	0.00018	0.000175	0.000245
5	2027 Building - Structural Tractor Trailer- Steel Deliveries	Off-high:Diesel	600	0.59	16	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.00017	0.000792	3.351521	8.84E-06	4.81E-05	4.66E-05	6.53E-05
6	2027 Access Ro:Asphalt Pl:Asphalt Paver	Pavers175Diesel	175	0.59	2.24775	0.083087	0.250139	536.7939	0.001426	0.020077	0.019475	0.012961	2.13E-05	6.4E-05	0.137326	3.65E-07	5.14E-06	4.98E-06	3.22E-06
6	2027 Access Ro:Asphalt Pl:Dump Truck	Off-high:Diesel	600	0.59	0.8095442	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	8.58E-05	0.000401	1.695752	4.47E-06	2.43E-05	2.36E-05	3.0E-05
6	2027 Access Ro:Asphalt Pl:Other General Equipment	Other Con Diesel	175	0.43	4.4955	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	6.26E-05	0.000187	0.200153	5.44E-07	1.52E-05	1.48E-05	1.8E-05
6	2027 Access Ro:Asphalt Pl:Pickup Truck	Off-high:Diesel	600	0.59	2.24775	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	2.38E-05	0.000111	0.470836	1.24E-06	6.75E-06	6.55E-06	9.17E-06
6	2027 Access Ro:Asphalt Pl:Roller	Rollers100Diesel	100	0.59	2.24775	0.169521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	2.48E-05	0.000141	0.087144	2.32E-07	4.5E-06	4.36E-06	2.2E-06
6	2027 Access Ro:Asphalt Pl:Skid Steer Loader	Skid Steer Diesel	75	0.21	2.24775	2.567846	3.695226	694.5866	0.002114	0.33683	0.326726	0.479842	0.0001	0.000144	0.027106	8.25E-08	1.31E-05	1.28E-05	1.87E-05
6	2027 Access Ro:Asphalt Pl:Surfacing Equipment (Grooving)	Other Con Diesel	25	0.59	2.87712	1.489019	3.762538	595.1512	0.002188	0.170468	0.165354	0.351665	6.97E-05	0.000176	0.027841	1.02E-07	7.97E-06	7.74E-06	1.65E-05
6	2027 Access Ro:Clearing a Chain Saw	Other Con Diesel	11	0.7	6	2.461074	4.183513	593.7557	0.002183	0.238964	0.231795	0.837797	0.000125	0.000213	0.030238	1.11E-07	1.22E-05	1.18E-05	4.47E-05
6	2027 Access Ro:Clearing a Chipper/Stump Grinder	Other Con Diesel	100	0.43	6	0.389666	1.180819	596.0566	0.00162	0.059454	0.05767	0.03496	0.000111	0.000336	1.69517	4.61E-07	1.69E-05	1.64E-05	9.94E-06
6	2027 Access Ro:Clearing a Pickup Truck	Off-high:Diesel	600	0.59	8	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	8.48E-05	0.000396	1.67576	4.42E-06	2.4E-05	2.35E-05	3.2E-05
6	2027 Access Ro:Concrete F Air Compressor	Other Con Diesel	100	0.43	5.9944	0.389666	1.180819	596.0566	0.00162	0.059454	0.05767	0.03496	0.000111	0.000336	1.695159	4.6E-07	1.69E-05	1.64E-05	9.93E-06
6	2027 Access Ro:Concrete F Concrete Saws	Other Con Diesel	40	0.59	5.9944	0.281744	2.531371	595.8804	0.00157	0.021132	0.020498	0.092708	4.39E-05	0.000395	0.092923	2.45E-07	3.3E-06	3.2E-06	1.45E-06
6	2027 Access Ro:Concrete F Concrete Truck	Off-high:Diesel	600	0.59	24.97667	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000265	0.001236	5.231863	1.38E-05	7.5E-05	7.28E-05	0.000102
6	2027 Access Ro:Concrete F Other General Equipment	Other Con Diesel	175	0.43	11.9888	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.000167	0.000498	0.533776	1.45E-06	4.06E-05	3.94E-05	1.87E-05
6	2027 Access Ro:Concrete F Pickup Truck	Off-high:Diesel	600	0.59	19.9832	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000191	0.00089	3.766942	9.94E-06	5.4E-05	5.24E-05	7.34E-05
6	2027 Access Ro:Concrete F Rubber Tired Loader	Tractors/L Diesel	175	0.59	5.9944	0.655566	1.228319	626.0668	0.00179	0.151301	0.146762	0.164407	0.000447	0.000088	0.427133	1.22E-06	0.000103	0.0001	0.000112
6	2027 Access Ro:Concrete F Slip Form Paver	Pavers175Diesel	175	0.59	5.9944	0.083087	0.250139	536.7939	0.001426	0.020077	0.019475	0.012961	6.57E-05	0.000171	0.366227	9.73E-07	1.37E-05	1.33E-05	8.84E-06
6	2027 Access Ro:Concrete F Surfacing Equipment (Grooving)	Other Con Diesel	25	0.59	5.9944	1.489019	3.762538	595.1512	0.002188	0.170468	0.165354	0.351665	0.000145	0.000367	0.058006	2.13E-07	1.66E-05	1.61E-05	3.49E-05
6	2027 Access Ro:Curbing Concrete Truck	Off-high:Diesel	600	0.59	21.6	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000229	0.001069	4.524553	1.19E-05	6.49E-05	6.29E-05	8.81E-05
6	2027 Access Ro:Curbing Curb/Gutter Paver	Pavers175Diesel	175	0.59	21.6	0.083087	0.250139	536.7939	0.001426	0.020077	0.019475	0.012961	0.000204	0.000615	3.196447	3.51E-06	4.94E-05	4.79E-05	3.19E-05
6	2027 Access Ro:Curbing Other General Equipment	Other Con Diesel	175	0.43	21.6	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.000301	0.000898	0.961694	2.61E-06	7.31E-05	7.09E-05	5.18E-05
6	2027 Access Ro:Curbing Pickup Truck	Off-high:Diesel	600	0.59	21.6	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000229	0.001069	4.524553	1.19E-05	6.49E-05	6.29E-05	8.81E-05
6	2027 Access Ro:Drainage - Dozer	Crawler Tr Diesel	175	0.59	17.6	0.069639	0.226304	536.7988	0.001421	0.016409	0.015917	0.011077	0.000139	0.000453	1.075278	2.85E-06	3.29E-05	3.19E-05	2.22E-05
6	2027 Access Ro:Drainage - Dump Truck	Off-high:Diesel	600	0.59	17.6	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000187	0.000871	3.866673	9.73E-06	5.29E-05	5.13E-05	1.78E-05
6	2027 Access Ro:Drainage - Excavator	Excavators Diesel	175	0.59	17.6	0.059583	0.19603	536.8041	0.001417	0.013754	0.013341	0.009662	0.000119	0.000393	1.075289	2.84E-06	2.76E-05	2.67E-05	1.94E-05
6	2027 Access Ro:Drainage - Loader	Tractors/L Diesel	175	0.59	17.6	0.655566	1.228319	626.0668	0.00179	0.151301	0.146762	0.164407	0.000133	0.000246	1.250494	3.59E-06	0.000303	0.000294	0.000329
6	2027 Access Ro:Drainage - Other General Equipment	Other Con Diesel	175	0.43	17.6	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.000245	0.000731	0.783603	2.13E-06	5.96E-05	5.78E-05	4.42E-05
6	2027 Access Ro:Drainage - Pickup Truck	Off-high:Diesel	600	0.59	17.6	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000187	0.000871	3.866673	9.73E-06	5.29E-05	5.13E-05	1.78E-05
6	2027 Access Ro:Drainage - Roller	Rollers100Diesel	100	0.59	17.6	0.169521	0.962846	596.1149	0.001587	0.030751	0.029829	0.01505	0.000194	0.001102	0.682341	1.82E-06	3.52E-05	3.41E-05	7.12E-05
6	2027 Access Ro:Drainage - Dump Truck	Off-high:Diesel	600	0.59	9.777778	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000104	0.000484	2.048151	5.4E-06	2.94E-05	2.85E-05	3.99E-05
6	2027 Access Ro:Drainage - Loader	Tractors/L Diesel	175	0.59	9.777778	0.655566	1.228319	626.0668	0.00179	0.151301	0.146762	0.164407	0.00073	0.001367	0.696719	1.99E-06	0.000168	0.000163	0.000183
6	2027 Access Ro:Drainage - Other General Equipment	Other Con Diesel	175	0.43	9.777778	0.167834	0.50092	536.7479	0.001458	0.040823	0.039598	0.028906	0.000136	0.000406	4.535335	1.18E-06	3.31E-05	3.21E-05	2.34E-05
6	2027 Access Ro:Drainage - Pickup Truck	Off-high:Diesel	600	0.59	9.777778	0.027174	0.126836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000104	0.000484	2.048151	5.4E-06	2.94E-05	2.85E-05	3.99E-05
6	2027 Access Ro:Drainage - Tractors/Loader/Backhoe	Tractors/L Diesel	100	0.21	9.777778	1.596653	1.90781	695.3356											

Scenario \Year	Project	Equipment	Category	CO	NOx	SO2	PM10	VOC	0.05	0.005	0.0015	0.00187	0.01115	0.02395	0	0	0	0	0.006	
6	2027 Access Ro: Soil Erosion Pumps	Other Con Diesel		11	0.43	2	2.461074	1.83513	593.7557	0.002183	0.231795	0.837797	2.57E-05	4.36E-05	0.006192	2.28E-08	2.49E-06	8.74E-06	8.74E-06	
6	2027 Access Ro: Soil Erosion Tractors/Loader/Backhoe	Tractors/Diesel		100	0.21	2	1.596653	1.90781	695.3356	0.001999	0.220682	0.227907	7.39E-05	8.83E-05	0.032192	9.21E-08	1.05E-05	1.02E-05	1.06E-05	
6	2027 Access Ro: Street Light Dump Truck	Off-highway Diesel		600	0.59	14.4	0.027174	1.26836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000153	0.000713	3.016368	7.96E-06	4.33E-05	4.22E-05	5.87E-05
6	2027 Access Ro: Street Light Loader	Tractors/Diesel		175	0.59	14.4	0.027174	1.26836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000153	0.000713	3.016368	7.96E-06	4.33E-05	4.22E-05	5.87E-05
6	2027 Access Ro: Street Light Other General Equipment	Other Con Diesel		600	0.43	14.4	0.027174	1.26836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000153	0.000713	3.016368	7.96E-06	4.33E-05	4.22E-05	5.87E-05
6	2027 Access Ro: Street Light Pickup Truck	Off-highway Diesel		600	0.59	14.4	0.027174	1.26836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000153	0.000713	3.016368	7.96E-06	4.33E-05	4.22E-05	5.87E-05
6	2027 Access Ro: Street Light Skid Steer Loader	Skid Steer Diesel		75	0.21	14.4	2.567846	3.695226	694.5866	0.002114	0.33683	0.326726	0.479842	0.000642	0.000924	0.17365	5.28E-07	8.42E-05	8.17E-05	0.00012
6	2027 Access Ro: Street Light Tractors/Loader/Backhoe	Tractors/Diesel		100	0.21	14.4	1.596653	1.90781	695.3356	0.001999	0.220682	0.227907	7.39E-05	8.83E-05	0.032192	9.21E-08	1.05E-05	1.02E-05	1.06E-05	
6	2027 Access Ro: Subbase P Dozer	Crawler Tractor Diesel		600	0.59	37.85694	0.069639	0.226504	536.7988	0.001421	0.016409	0.015917	0.011077	3E-05	9.75E-05	0.231288	6.12E-07	7.07E-06	6.86E-06	4.77E-06
6	2027 Access Ro: Subbase P Dump Truck (12 ft)	Off-highway Diesel		600	0.59	36.64	0.027174	1.26836	536.7995	0.001416	0.007699	0.007468	0.010454	0.000282	0.001319	5.580282	1.47E-05	9E-05	7.6E-05	0.000109
6	2027 Access Ro: Subbase P Pickup Truck	Off-highway Diesel		600	0.59	37.85694	0.027174	1.26836	536.7995	0.001416	0.007699	0.007468	0.010454	4.01E-05	0.000187	0.792987	2.09E-06	1.14E-05	1.1E-05	1.54E-05
6	2027 Access Ro: Topsoil P Roller	Roller/Diesel		100	0.59	3.688615	0.169521	0.926286	596.1149	0.001587	0.030791	0.029829	0.01505	4.07E-05	0.000231	0.149005	3.81E-07	7.38E-06	7.18E-06	3.61E-06
6	2027 Access Ro: Topsoil PH Dozer	Crawler Tractor Diesel		175	0.59	5.426667	0.027174	1.26836	536.7988	0.001421	0.016409	0.015917	0.011077	4.3E-05	0.00014	0.331544	8.78E-07	1.01E-05	9.93E-06	6.84E-06
6	2027 Access Ro: Topsoil PH Dump Truck	Off-highway Diesel		600	0.59	5.426667	0.027174	1.26836	536.7995	0.001416	0.007699	0.007468	0.010454	5.75E-05	0.000269	1.136724	3E-06	1.63E-05	1.58E-05	2.21E-05
6	2027 Access Ro: Tree Plant Flatbed Truck	Other Con Diesel		600	0.59	0	0.167834	0	536.7479	0.001458	0.004083	0.039598	0.028906	0	0	0	0	0	0	0
6	2027 Access Ro: Tree Plant Other General Equipment	Other Con Diesel		175	0.43	0	0.167834	0	536.7479	0.001458	0.004083	0.039598	0.028906	0	0	0	0	0	0	0
6	2027 Access Ro: Tree Plant Pickup Truck	Off-highway Diesel		600	0.59	0	0.027174	1.26836	536.7995	0.001416	0.007699	0.007468	0.010454	0	0	0	0	0	0	0
6	2027 Access Ro: Tree Plant Tractors/Loader/Backhoe	Tractors/Diesel		100	0.21	0	1.596653	1.90781	695.3356	0.001999	0.220682	0.227907	7.39E-05	8.83E-05	0.032192	9.21E-08	1.05E-05	1.02E-05	1.06E-05	

On-Road Sources

Units for Non-Greenhouse Gases Emissions: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

Scenario \Year	Project	Equipment	Category	CO	NOx	SO2	PM10	VOC	0.05	0.005	0.0015	0.00187	0.01115	0.02395	0	0	0	0	0.006	
1	2027 Taxiways	Asphalt IE Combination	Short-haul Truck	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	2027 Taxiways	Cement M Single Unit	Short-haul Truck	12	0.1627	0.01015	0.00187	0.01115	0.00505	0	0	0	0.02395	0	0	0	0	0	0	0
1	2027 Taxiways	Asphalt S1		12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	2027 Taxiways	Material IV		12	0	0	0	0	0	0	0	0	0.07555	0	0	0	0	0	0	0
1	2027 Taxiways	Material IV		12	0	0	0	0	0	0	0	0	0.01905	0	0	0	0	0	0	0
1	2027 Taxiways	Soil Hand		12	0	0	0	0	0	0	0	0	2.71E-08	0	0	0	0	0	0	0
1	2027 Taxiways	Unstabiliz		12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2027 Taxiways	Asphalt Dr		12	0.5556	0.0347	0.0064	0.03805	0.0172	0	0	0	0	0	0	0	0	0	0	0
2	2027 Taxiways	Concrete P		12	0	0	0	0	0	0	0	0	0.1965	0	0	0	0	0	0	0
2	2027 Taxiways	Material IV		12	0	0	0	0	0	0	0	0	0.0419	0	0	0	0	0	0	0
2	2027 Taxiways	Material IV		12	0	0	0	0	0	0	0	0	0.1415	0	0	0	0	0	0	0
2	2027 Taxiways	Soil Hand		12	0	0	0	0	0	0	0	0	0.065	0	0	0	0	0	0	0
2	2027 Taxiways	Unstabiliz		12	0	0	0	0	0	0	0	0	9.27E-08	0	0	0	0	0	0	0
3	2027 Demolition	Material IV		12	0	0	0	0	0	0	0	0	0.006	0	0	0	0	0	0	0
3	2027 Demolition	Material IV		12	0	0	0	0	0	0	0	0	0.01975	0	0	0	0	0	0	0
3	2027 Demolition	Soil Hand		12	0	0	0	0	0	0	0	0	0.0261	0	0	0	0	0	0	0
3	2027 Demolition	Unstabiliz		12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	2027 Apron (GA Asphalt Dr			12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	2027 Apron (GA Asphalt S1			12	0.18645	0.01165	0.002142	0.01275	0.00575	0	0	0	0	0	0	0	0	0	0	0
4	2027 Apron (GA Concrete P			12	0	0	0	0	0	0	0	0	0.06595	0	0	0	0	0	0	0
4	2027 Apron (GA Material IV			12	0	0	0	0	0	0	0	0	0.02395	0	0	0	0	0	0	0
4	2027 Apron (GA Material IV			12	0	0	0	0	0	0	0	0	0.0738	0	0	0	0	0	0	0
4	2027 Apron (GA Soil Hand			12	0	0	0	0	0	0	0	0	0.0218	0	0	0	0	0	0	0
4	2027 Apron (GA Unstabiliz			12	0	0	0	0	0	0	0	0	3.11E-08	0	0	0	0	0	0	0
5	2027 Building - Concrete P			6	0	0	0	0	0	0	0	0	0.00855	0	0	0	0	0	0	0
5	2027 Building - Material IV			6	0	0	0	0	0	0	0	0	0.006	0	0	0	0	0	0	0

Fugitive Sources

Units for Non-Greenhouse Gases Emissions: Short Ton

Scenario \Year	Project	Fugitive S: Number of Months	CO	NOx	SO2	PM10	VOC	0.05	0.005	0.0015	0.00187	0.01115	0.02395	0	0	0	0	0	0.006	
1	2027 Taxiways	Asphalt Dr		12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	2027 Taxiways	Asphalt S1		12	0.1627	0.01015	0.00187	0.01115	0.00505	0	0	0	0.02395	0	0	0	0	0	0	0
1	2027 Taxiways	Material IV		12	0	0	0	0	0	0	0	0	0.07555	0	0	0	0	0	0	0
1	2027 Taxiways	Material IV		12	0	0	0	0	0	0	0	0	0.01905	0	0	0	0	0	0	0
1	2027 Taxiways	Soil Hand		12	0	0	0	0	0	0	0	0	2.71E-08	0	0	0	0	0	0	0
1	2027 Taxiways	Unstabiliz		12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2027 Taxiways	Asphalt Dr		12	0.5556	0.0347	0.0064	0.03805	0.0172	0	0	0	0	0	0	0	0	0	0	0
2	2027 Taxiways	Concrete P		12	0	0	0	0	0	0	0	0	0.1965	0	0	0	0	0	0	0
2	2027 Taxiways	Material IV		12	0	0	0	0	0	0	0	0	0.0419	0	0	0	0	0	0	0
2	2027 Taxiways	Material IV		12	0	0	0	0	0	0	0	0	0.1415	0	0	0	0	0	0	0
2	2027 Taxiways	Soil Hand		12	0	0	0	0	0	0	0	0	0.065	0	0	0	0	0	0	0
2	2027 Taxiways	Unstabiliz		12	0	0	0	0	0	0	0	0	9.27E-08	0	0	0	0	0	0	0
3	2027 Demolition	Material IV		12	0	0	0	0	0	0	0	0	0.006	0	0	0	0	0	0	0
3	2027 Demolition	Material IV		12	0	0	0	0	0	0	0	0	0.01975	0	0	0	0	0	0	0
3	2027 Demolition	Soil Hand		12	0	0	0	0												

Year	SO2	NOX	PM10	PM2.5	VOC	CO2	CH4	N2O	CO2e
2026 Totals	0.94395	0.058948	0.010862	0.98822	0.229214				
2026 NonRoad	0.483435	1.66963	0.012186554	0.108542	0.126745	4601.215	--	--	0.05
2026 OnRoad	19.41565	0.653072	0.015714888	0.018845	0.016829	0.436359	2454.445	0.051536	0.01311
2026 Fugitive	0.94395	0.058948	0.010862	0.98822	0.229214	--	--	--	--
2026 TOTAL	20.84305	2.381649	0.038763442	1.115606	0.122115	7055.66	0.051536	0.01311	7060.578

ASSUMPTIONS

Emission factors were developed from the following models:

- On-Road Vehicles: MOVES3.0.2, revised September 2021
- Non-Road Equipment: MOVES3.0.2 September 2021

In addition to the overall project size dimensions (e.g., Length and width) provided by the user, an additional 10 ft length and 10 ft width is added to account for disturbance areas.

The number of employees is based on the higher of two methods: (1) number of equipment, and (2) multiply the project cost in million by 11.

The average employee travels 30 miles round-trip from home to construction site each day.

The average on-road material delivery round-trip distance per truck is 40 miles per day.

For calculating fugitive, re-entrained PM emissions from on-road and non-road material delivery and handling equipment, a nominal WVT of 5 miles is used for each vehicle per day.

In deriving emission factors from NONROAD, the horsepower for each equipment represents the most popular in each equipment category.

The total length of each modeled scenario is used to define the number of days associated with vehicle/equipment evaporative emissions.

The choice of location and season are assumed to adequately represent differences in fuel characteristics affecting emissions.

Only two seasons (Summer and Winter) are used to represent all seasons.

14 U.S. Counties are used to represent all other counties in the U.S. (all other counties are mapped to the 14).

The default methods assume that all construction equipment use diesel as well as heavy-duty on-road vehicles, while passenger vehicles (including motorcycles) use gasoline.

Fugitive emissions are only modeled for:

- Asphalt drying
- Asphalt storage and batching
- Concrete mixing/batching
- Soil handling
- Unstabilized land and wind erosion
- Material movement (unpaved roads)
- Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the asphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO2, CH4, and N2O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 oy)

MOVES ONROAD Emissions (tpy)												
	9	7	10	13	11	12	14	5	8	9		
N2O	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O			
0.002802	0.002296	0.003946	5.69E-06	5.93E-05	5.45E-05	0.000164	1.704802	2E-05	3.02E-06			
0.003286	0.020928	0.028372	5.64E-05	0.000413	0.00038	0.001421	16.85958	0.000252	5.63E-05			
0.003286	0.00186	0.002521	5.01E-06	3.67E-05	3.37E-05	0.000126	1.498292	2.24E-05	5.01E-06			
0.003286	0.011162	0.015132	3.01E-05	0.00022	0.000203	0.000758	8.991919	0.000135	3E-05			
0.001659	2.193749	0.039509	0.001728	0.001642	0.001452	0.04814	260.1043	0.005588	0.001432			
0.002802	0.00784	0.013471	1.94E-05	0.000202	0.000186	0.00056	5.820082	6.83E-05	1.03E-05			
0.003286	0.071462	0.096882	0.000192	0.001409	0.001297	0.004852	57.5704	0.000862	0.000192			
0.003286	0.006352	0.008611	1.71E-05	0.000125	0.000115	0.000431	5.117176	7.66E-05	1.71E-05			
0.003286	0.038113	0.05167	0.000103	0.000752	0.000691	0.002588	30.70414	0.00046	0.000103			
0.001659	7.725812	0.139142	0.006085	0.005781	0.005114	0.169536	916.0196	0.019681	0.005043			
0.003286	0.007667	0.010394	2.07E-05	0.000151	0.000139	0.000521	6.176388	9.24E-05	2.06E-05			
0.001659	2.956792	0.053252	0.002329	0.002213	0.001957	0.064884	350.5754	0.007532	0.00193			
0.002802	0.00263	0.00452	6.52E-06	6.79E-05	6.25E-05	0.000188	1.952837	2.29E-05	3.45E-06			
0.003286	0.02398	0.03251	6.46E-05	0.000473	0.000435	0.001628	19.31842	0.000289	6.45E-05			
0.003286	0.002132	0.00289	5.74E-06	4.2E-05	3.87E-05	0.000145	1.71729	2.57E-05	5.74E-06			
0.003286	0.01279	0.01734	3.45E-05	0.000252	0.000232	0.000868	10.30374	0.000154	3.44E-05			
0.001659	2.107908	0.037963	0.00166	0.001577	0.001395	0.046256	249.9265	0.00537	0.001376			
0.003286	0.003113	0.00422	8.38E-06	6.14E-05	5.65E-05	0.000211	2.507633	3.75E-05	8.38E-06			
0.003286	0.001659	0.00225	4.47E-06	3.27E-05	3.01E-05	0.000113	1.336754	2E-05	4.47E-06			
0.001659	2.813721	0.050675	0.002216	0.002106	0.001863	0.061745	333.6121	0.007168	0.001837			
0.002802	0.000376	0.000647	9.34E-07	9.72E-06	8.94E-06	2.69E-05	0.279476	3.28E-06	4.94E-07			
0.002802	0.000553	0.00095	1.37E-06	1.43E-05	1.31E-05	3.95E-05	0.41048	4.82E-06	7.26E-07			
0.003286	0.005041	0.006834	1.36E-05	9.94E-05	9.15E-05	0.000342	4.061216	6.08E-05	1.36E-05			
0.003286	0.000448	0.000608	1.21E-06	8.84E-06	8.13E-06	3.04E-05	0.361021	5.4E-06	1.21E-06			
0.003286	0.002689	0.003645	7.24E-06	5.3E-05	4.88E-05	0.000183	2.166127	3.24E-05	7.24E-06			
0.001659	1.394577	0.025116	0.001098	0.001044	0.000923	0.030603	165.3496	0.003553	0.00091			
Totals	19.41565	0.653072	0.015715	0.018845	0.016829	0.436359	2454.445	0.051536	0.01311			

1	2028	Taxiways	Soil Erosion Tractors/Loader/Backhoe	Tractors/L/Diesel	100	0.21	4.8	1.39E+00	1.77E+00	6.95E+02	1.97E-03	1.99E-01	1.93E-01	1.96E-01	0.000154	0.000197	0.077272	2.19E-07	2.21E-05	2.15E-05	2.18E-05
1	2028	Taxiways	Subbase P/ Dozer	Crawler Tr Diesel	175	0.59	8.839579	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03E-02	6.44E-05	0.000209	0.54006	1.43E-06	1.5E-05	1.45E-05	1.04E-05
1	2028	Taxiways	Subbase P/ Dump Truck (12 cy)	Off-highway/Diesel	600	0.59	62.20444	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000568	0.002887	13.03	3.44E-05	0.000171	0.000166	0.000243
1	2028	Taxiways	Subbase P/ Pickup Truck	Off-highway/Diesel	600	0.59	8.839579	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	8.07E-05	0.00041	1.851632	4.88E-06	2.43E-05	2.36E-05	3.45E-05
1	2028	Taxiways	Subbase P/ Roller	Rollers100Diesel	100	0.59	8.612923	1.31E-01	9.30E-01	5.96E+02	1.58E-03	2.51E-02	2.43E-02	1.23E-02	7.36E-05	0.000521	0.333922	8.86E-07	1.4E-05	1.36E-05	6.91E-06
1	2028	Taxiways	Topsoil P/ Dozer	Crawler Tr Diesel	175	0.59	12.87733	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03E-02	9.38E-05	0.000305	0.78675	2.08E-06	2.18E-05	2.12E-05	1.51E-05
1	2028	Taxiways	Topsoil P/ Dump Truck	Off-highway/Diesel	600	0.59	12.87733	6.40E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000118	0.000598	2.697423	7.11E-06	3.54E-05	3.44E-05	5.03E-05
1	2028	Taxiways	Topsoil P/ Pickup Truck	Off-highway/Diesel	600	0.59	12.87733	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000118	0.000598	2.697423	7.11E-06	3.54E-05	3.44E-05	5.03E-05
2	2028	Taxiways	Asphalt P/ Asphalt Paver	Pavers175 Diesel	175	0.59	17.922	2.78E-02	2.27E-01	5.37E+02	1.42E-03	1.73E-02	1.67E-02	1.15E-02	0.000149	0.000462	1.094948	2.9E-06	3.52E-05	3.42E-05	2.35E-05
2	2028	Taxiways	Asphalt P/ Dump Truck	Off-highway/Diesel	600	0.59	64.54744	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000589	0.002996	13.52079	3.56E-05	0.000178	0.000172	0.000252
2	2028	Taxiways	Asphalt P/ Other General Equipment	Other Con Diesel	175	0.43	35.844	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	0.000434	0.001253	1.595913	4.31E-06	0.000106	0.000103	7.7E-05
2	2028	Taxiways	Asphalt P/ Pickup Truck	Off-highway/Diesel	600	0.59	17.922	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000164	0.000832	3.754133	9.9E-06	4.93E-05	4.78E-05	7.7E-05
2	2028	Taxiways	Asphalt P/ Roller	Rollers100Diesel	100	0.59	17.922	1.31E-01	9.30E-01	5.96E+02	1.58E-03	2.51E-02	2.43E-02	1.23E-02	0.000153	0.001084	0.694843	1.84E-06	2.92E-05	2.85E-05	1.44E-05
2	2028	Taxiways	Asphalt P/ Skid Steer Loader	Skid Steer Diesel	75	0.21	17.922	2.44E+00	3.62E+00	6.95E+02	2.10E-03	3.16E-01	3.07E-01	4.51E-01	0.000758	0.001127	0.216149	6.54E-07	9.84E-05	9.53E-05	0.00014
2	2028	Taxiways	Asphalt P/ Surfacing Equipment (Grooving)	Other Con Diesel	25	0.59	22.94016	1.49E+00	3.76E+00	6.95E+02	2.19E-03	1.70E-01	1.65E-01	3.52E-01	0.000555	0.001403	0.221984	8.16E-07	6.35E-05	6.16E-05	0.000131
2	2028	Taxiways	Clearing w/ Chain Saw	Other Con Diesel	11	0.7	50.4	2.46E+00	4.18E+00	5.94E+02	2.18E-03	2.39E-01	2.32E-01	8.38E-01	0.001052	0.00179	0.254001	9.34E-07	0.000102	9.9E-05	0.000358
2	2028	Taxiways	Clearing w/ Chipper/Stump Grinder	Other Con Diesel	100	0.43	50.4	3.26E-01	1.11E+00	5.96E+02	1.61E-03	5.06E-02	4.91E-02	2.94E-02	0.000779	0.002651	1.423983	3.85E-06	0.000121	0.000117	7.02E-05
2	2028	Taxiways	Clearing w/ Pickup Truck	Off-highway/Diesel	600	0.59	67.2	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000674	0.003119	14.07643	3.71E-05	0.000185	0.000179	0.000262
2	2028	Taxiways	Concrete F/ Air Compressor	Other Con Diesel	100	0.43	47.792	3.26E-01	1.11E+00	5.96E+02	1.61E-03	5.06E-02	4.91E-02	2.94E-02	0.000738	0.002514	1.350298	3.65E-06	0.000115	0.000111	6.6E-05
2	2028	Taxiways	Concrete F/ Concrete Saws	Other Con Diesel	40	0.59	47.792	2.79E-01	2.53E+00	5.96E+02	1.57E-03	2.05E-02	1.98E-02	9.25E-02	0.000347	0.003144	0.740856	1.95E-06	2.54E-05	2.47E-05	0.000115
2	2028	Taxiways	Concrete F/ Concrete Trucks	Off-highway/Diesel	600	0.59	199.1333	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.001818	0.009242	41.71258	0.00011	0.000548	0.000531	0.000778
2	2028	Taxiways	Concrete F/ Other General Equipment	Other Con Diesel	175	0.43	95.584	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	0.000158	0.003342	4.255767	1.15E-05	0.000282	0.000273	0.000197
2	2028	Taxiways	Concrete F/ Pickup Truck	Off-highway/Diesel	600	0.59	143.376	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.001309	0.006654	30.03306	7.92E-05	0.000394	0.000383	0.00056
2	2028	Taxiways	Concrete F/ Rubber Tired Loader	Tractors/L/Diesel	175	0.59	47.792	5.68E-01	1.09E+00	6.26E+02	1.77E-03	1.32E-01	1.28E-01	1.42E-01	0.000389	0.005943	3.405786	9.63E-06	0.000719	0.000697	0.000773
2	2028	Taxiways	Concrete F/ Slip Form Paver	Pavers175 Diesel	175	0.59	47.792	2.78E-02	2.27E-01	5.37E+02	1.42E-03	1.73E-02	1.67E-02	1.15E-02	0.000396	0.001233	2.919862	1.74E-06	9.39E-05	9.11E-05	6.27E-05
2	2028	Taxiways	Concrete F/ Surfacing Equipment (Grooving)	Other Con Diesel	25	0.59	47.792	1.49E+00	3.76E+00	6.95E+02	2.19E-03	1.70E-01	1.65E-01	3.52E-01	0.001156	0.002924	0.462467	1.7E-06	0.000132	0.000128	0.000273
2	2028	Taxiways	Drainage - Dozer	Crawler Tr Diesel	175	0.59	172.544	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03E-02	0.001256	0.004089	10.5417	2.78E-05	0.000292	0.000284	0.000202
2	2028	Taxiways	Drainage - Dump Truck	Off-highway/Diesel	600	0.59	172.544	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.001575	0.008008	36.1429	9.53E-05	0.000475	0.00046	0.000674
2	2028	Taxiways	Drainage - Excavator	Excavators Diesel	175	0.59	172.544	5.52E-02	1.81E-01	5.37E+02	1.42E-03	1.26E-02	1.22E-02	9.05E-03	0.001084	0.00356	10.54177	2.78E-05	0.000247	0.000239	0.000355
2	2028	Taxiways	Drainage - Loader	Tractors/L/Diesel	175	0.59	172.544	6.8E-01	1.09E+00	6.26E+02	1.77E-03	1.32E-01	1.28E-01	1.42E-01	0.001151	0.021457	12.29595	3.48E-05	0.000259	0.000251	0.0002791
2	2028	Taxiways	Drainage - Other General Equipment	Other Con Diesel	175	0.43	172.544	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	0.000287	0.006033	7.682322	2.08E-05	0.000509	0.000494	0.000355
2	2028	Taxiways	Drainage - Pickup Truck	Off-highway/Diesel	600	0.59	172.544	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.001575	0.008008	36.1429	9.53E-05	0.000475	0.00046	0.000674
2	2028	Taxiways	Drainage - Roller	Rollers100Diesel	100	0.59	172.544	1.31E-01	9.30E-01	5.96E+02	1.58E-03	2.51E-02	2.43E-02	1.23E-02	0.001474	0.010433	6.689514	1.77E-05	0.000281	0.000273	0.000138
2	2028	Taxiways	Drainage - Dump Truck	Off-highway/Diesel	600	0.59	95.85778	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000875	0.004449	20.07939	5.29E-05	0.000464	0.000256	0.000374
2	2028	Taxiways	Drainage - Loader	Tractors/L/Diesel	175	0.59	95.85778	5.68E-01	1.09E+00	6.26E+02	1.77E-03	1.32E-01	1.28E-01	1.42E-01	0.000619	0.011192	6.831082	1.93E-05	0.001442	0.001398	0.00155
2	2028	Taxiways	Drainage - Other General Equipment	Other Con Diesel	175	0.43	95.85778	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	0.001159	0.003352	4.267957	1.15E-05	0.000283	0.000274	0.000197
2	2028	Taxiways	Drainage - Pickup Truck	Off-highway/Diesel	600	0.59	95.85778	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000875	0.004449	20.07939	5.29E-05	0.000284	0.000256	0.000374
2	2028	Taxiways	Drainage - Tractors/Loader/Backhoe	Tractors/L/Diesel	100	0.21	95.85778	1.39E+00	1.77E+00	6.95E+02	1.97E-03	1.99E-01	1.93E-01	1.96E-01	0.003082	0.003933	1.543144	4.37E-06	0.000442	0.000428	0.000435
2	2028	Taxiways	Dust Contr Water Truck	Off-highway/Diesel	600	0.59	2160	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.019722	0.10025	452.4566	0.001193	0.005942	0.005764	0.008437
2	2028	Taxiways	Excavator Dozer	Crawler Tr Diesel	175	0.59	79.65333	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03E-02	0.000578	0.001888	8.866477	1.29E-05	0.000135	0.000131	9.33E-05
2	2028	Taxiways	Excavator Dump Truck (12 cy)	Off-highway/Diesel	600	0.59	79.65333	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000727	0.003697	16.68503	4.4E-05	0.000219	0.000213	0.000311
2	2028	Taxiways	Excavator Pickup Truck	Off-highway/Diesel	600	0.59	79.65333	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000727	0.003697	16.68503	4.4E-05	0.000219	0.000213	0.000311
2	2028	Taxiways	Excavator Roller	Rollers100Diesel	100	0.59	36.76308	1.31E-01	9.30E-01	5.96E+02	1.58E-03	2.51E-02	2.43E-02	1.23E-02	0.000314	0.002223	1.425301	3.78E-06	5.99E-05	5.81E-05	2.95E-05
2	2028	Taxiways	Excavator Dozer	Crawler Tr Diesel	175	0.59	59.74	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03							

4	2028 Apron (GA Asphalt Pl: Asphalt Paver	Pavers175 Diesel	175	0.59	6.014	7.28E-02	2.27E-01	5.37E+02	1.42E-03	1.73E-02	1.67E-02	1.15E-02	4.99E-05	0.000155	0.367427	9.74E-07	1.18E-05	1.15E-05	7.89E-06
4	2028 Apron (GA Asphalt Pl: Dump Truck	Off-high: Diesel	600	0.59	21.65988	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000198	0.001005	4.537108	1.2E-05	5.96E-05	5.78E-05	8.46E-05
4	2028 Apron (GA Asphalt Pl: Other General Equipment	Other Con Diesel	175	0.43	12.028	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	0.000145	0.000421	0.535533	1.45E-06	3.55E-05	3.44E-05	2.47E-05
4	2028 Apron (GA Asphalt Pl: Pickup Truck	Off-high: Diesel	600	0.59	6.014	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	5.49E-05	0.000279	1.259756	3.32E-06	1.65E-05	1.6E-05	2.35E-05
4	2028 Apron (GA Asphalt Pl: Roller	Rollers100 Diesel	100	0.59	6.014	1.31E-01	9.30E-01	5.96E+02	1.58E-03	2.51E-02	2.43E-02	1.23E-02	5.14E-05	0.000364	0.233162	6.19E-07	9.8E-06	9.51E-06	4.83E-06
4	2028 Apron (GA Asphalt Pl: Skid Steer Loader	Skid Steer Diesel	75	0.21	6.014	2.44E+00	3.62E+00	6.95E+02	2.10E-03	3.16E-01	3.07E-01	4.51E-01	0.000254	0.000378	0.072532	2.19E-07	3.3E-05	3.2E-05	4.71E-05
4	2028 Apron (GA Asphalt Pl: Surfacing Equipment (Grooving)	Other Con Diesel	25	0.59	7.69792	1.49E+00	3.76E+00	6.95E+02	2.19E-03	1.70E-01	1.65E-01	3.52E-01	0.000186	0.000471	0.07449	2.74E-07	2.13E-05	2.07E-05	4.4E-05
4	2028 Apron (GA Clearing a Chain Saw	Other Con Diesel	11	0.7	13.2	2.46E+00	4.18E+00	5.94E+02	2.18E-03	2.39E-01	2.32E-01	8.38E-01	0.000276	0.000469	0.066524	2.45E-07	2.67E-05	2.97E-05	9.39E-05
4	2028 Apron (GA Clearing a Chipper/Stump Grinder	Other Con Diesel	100	0.43	13.2	2.36E-01	1.11E+00	5.96E+02	1.61E-03	5.06E-02	4.91E-02	2.94E-02	0.000204	0.000694	0.372948	1.01E-06	3.17E-05	3.07E-05	1.84E-05
4	2028 Apron (GA Clearing a Pickup Truck	Off-high: Diesel	600	0.59	17.6	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000161	0.000817	3.866883	9.72E-06	4.84E-05	4.7E-05	6.87E-05
4	2028 Apron (GA Concrete Fair Compressor	Other Con Diesel	100	0.43	16.0376	3.26E-01	1.11E+00	5.96E+02	1.61E-03	5.06E-02	4.91E-02	2.94E-02	0.000248	0.000844	0.453121	1.22E-06	3.85E-05	3.73E-05	2.23E-05
4	2028 Apron (GA Concrete F Concrete Saws	Other Con Diesel	40	0.59	16.0376	2.79E-01	2.53E+00	5.96E+02	1.57E-03	2.05E-02	1.98E-02	9.25E-02	0.000116	0.001055	0.248609	6.55E-07	8.54E-06	8.28E-06	3.86E-05
4	2028 Apron (GA Concrete F Concrete Truck	Off-high: Diesel	600	0.59	66.82333	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.00061	0.003101	13.99753	3.69E-05	0.000184	0.000178	0.000261
4	2028 Apron (GA Concrete F Other General Equipment	Other Con Diesel	175	0.43	32.0752	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	0.000388	0.001122	1.428111	3.86E-06	9.46E-05	9.17E-05	6.59E-05
4	2028 Apron (GA Concrete F Pickup Truck	Off-high: Diesel	600	0.59	48.1128	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000439	0.002233	10.07822	2.66E-05	0.000132	0.000128	0.000188
4	2028 Apron (GA Concrete F Rubber Tired Loader	Tractors/L Diesel	175	0.59	16.0376	5.68E-01	1.09E+00	6.26E+02	1.77E-03	1.32E-01	1.28E-01	1.42E-01	0.001036	0.001994	1.142882	3.23E-06	0.000241	0.000234	0.000259
4	2028 Apron (GA Concrete F Slip Form Paver	Pavers175 Diesel	175	0.59	16.0376	7.28E-02	2.27E-01	5.37E+02	1.42E-03	1.73E-02	1.67E-02	1.15E-02	0.000133	0.000414	0.979821	2.6E-06	3.15E-05	3.06E-05	2.1E-05
4	2028 Apron (GA Concrete F Surfacing Equipment (Grooving)	Other Con Diesel	25	0.59	16.0376	1.49E+00	3.76E+00	6.95E+02	2.19E-03	1.70E-01	1.65E-01	3.52E-01	0.000388	0.000981	0.159519	5.71E-07	4.44E-05	4.31E-05	1.97E-05
4	2028 Apron (GA Drainage - Dozer	Crawler Tr Diesel	175	0.59	8.576	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03E-02	6.24E-05	0.000203	0.523957	1.39E-06	1.45E-05	1.41E-05	1E-05
4	2028 Apron (GA Drainage - Dump Truck	Off-high: Diesel	600	0.59	8.576	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	7.83E-05	0.000398	1.79642	4.74E-06	2.36E-05	2.29E-05	3.35E-05
4	2028 Apron (GA Drainage - Excavator	Excavators Diesel	175	0.59	8.576	5.52E-02	1.81E-01	5.37E+02	1.42E-03	1.26E-02	1.22E-02	9.05E-03	5.39E-05	0.000177	0.52396	1.38E-06	1.23E-05	1.19E-05	8.83E-06
4	2028 Apron (GA Drainage - Loader	Tractors/L Diesel	175	0.59	8.576	5.68E-01	1.09E+00	6.26E+02	1.77E-03	1.32E-01	1.28E-01	1.42E-01	0.000554	0.001066	0.611149	1.73E-06	0.000129	0.000125	0.000139
4	2028 Apron (GA Drainage - Other General Equipment	Other Con Diesel	175	0.43	8.576	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	0.000104	0.0003	0.381836	1.03E-06	2.53E-05	2.45E-05	1.76E-05
4	2028 Apron (GA Drainage - Pickup Truck	Off-high: Diesel	600	0.59	8.576	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	7.83E-05	0.000398	1.79642	4.74E-06	2.36E-05	2.29E-05	3.35E-05
4	2028 Apron (GA Drainage - Roller	Rollers100 Diesel	100	0.59	8.576	1.31E-01	9.30E-01	5.96E+02	1.58E-03	2.51E-02	2.43E-02	1.23E-02	7.33E-05	0.000519	0.332491	8.82E-07	1.4E-05	1.36E-05	6.88E-06
4	2028 Apron (GA Drainage - Dump Truck	Off-high: Diesel	600	0.59	4.764444	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	4.35E-05	0.000221	0.998011	2.63E-06	1.31E-05	1.27E-05	1.86E-05
4	2028 Apron (GA Drainage - Loader	Tractors/L Diesel	175	0.59	4.764444	5.68E-01	1.09E+00	6.26E+02	1.77E-03	1.32E-01	1.28E-01	1.42E-01	0.000308	0.000592	0.339527	9.6E-07	1.71E-05	6.95E-05	7.71E-05
4	2028 Apron (GA Drainage - Other General Equipment	Other Con Diesel	175	0.43	4.764444	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	5.76E-05	0.000167	0.212131	5.73E-07	1.4E-05	1.36E-05	9.8E-06
4	2028 Apron (GA Drainage - Pickup Truck	Off-high: Diesel	600	0.59	4.764444	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	4.35E-05	0.000221	0.998011	2.63E-06	1.31E-05	1.27E-05	1.86E-05
4	2028 Apron (GA Drainage - Tractors/Loader/Backhoe	Tractors/L Diesel	100	0.21	4.764444	1.39E+00	1.77E+00	6.95E+02	1.97E-03	1.99E-01	1.93E-01	1.96E-01	0.000153	0.000295	0.076699	2.17E-07	2.2E-05	2.13E-05	2.16E-05
4	2028 Apron (GA Dust Contr Water Truck	Off-high: Diesel	600	0.59	21.60	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.019722	0.00125	452.4566	0.001193	0.005942	0.005764	0.008437
4	2028 Apron (GA Excavator Dozer	Crawler Tr Diesel	175	0.59	26.72933	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03E-02	0.000195	0.000633	1.633048	4.32E-06	4.53E-05	4.39E-05	3.13E-05
4	2028 Apron (GA Excavator Dump Truck (12 cy)	Off-high: Diesel	600	0.59	26.72933	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000244	0.001241	5.59901	1.48E-05	7.35E-05	7.13E-05	0.000104
4	2028 Apron (GA Excavator Pickup Truck	Off-high: Diesel	600	0.59	26.72933	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000244	0.001241	5.59901	1.48E-05	7.35E-05	7.13E-05	0.000104
4	2028 Apron (GA Excavator Roller	Rollers100 Diesel	100	0.59	12.33662	1.31E-01	9.30E-01	5.96E+02	1.58E-03	2.51E-02	2.43E-02	1.23E-02	0.000107	0.000746	0.478289	1.27E-06	2.01E-05	1.95E-05	9.9E-06
4	2028 Apron (GA Excavator Dozer	Crawler Tr Diesel	175	0.59	20.047	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03E-02	0.000146	0.000475	1.224786	3.24E-06	3.4E-05	3.3E-05	2.35E-05
4	2028 Apron (GA Excavator Dump Truck (12 cy)	Off-high: Diesel	600	0.59	53.45867	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000488	0.002481	11.19802	2.95E-05	0.000147	0.000143	0.000209
4	2028 Apron (GA Excavator Excavator	Excavators Diesel	175	0.59	16.0376	5.52E-02	1.81E-01	5.37E+02	1.42E-03	1.26E-02	1.22E-02	9.05E-03	0.000101	0.000331	0.979835	2.58E-06	2.29E-05	2.22E-05	1.65E-05
4	2028 Apron (GA Excavator Pickup Truck	Off-high: Diesel	600	0.59	16.0376	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000146	0.000744	3.394066	8.86E-06	4.41E-05	4.28E-05	6.26E-05
4	2028 Apron (GA Excavator Roller	Rollers100 Diesel	100	0.59	16.0376	1.31E-01	9.30E-01	5.96E+02	1.58E-03	2.51E-02	2.43E-02	1.23E-02	0.000137	0.00097	0.621776	1.65E-06	2.61E-05	2.53E-05	1.29E-05
4	2028 Apron (GA Excavator Scraper	Scrapers6 Diesel	600	0.59	20.047	1.10E-01	3.00E-01	5.37E+02	1.45E-03	2.15E-02	2.09E-02	2.04E-02	0.00086	0.002347	4.199018	1.13E-05	0.000168	0.000163	0.00016
4	2028 Apron (GA Excavator Dozer	Crawler Tr Diesel	175	0.59	7.54698	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03E-02	5.5E-05	0.000179	0.461088	1.22E-06	1.28E-05	1.24E-05	8.84E-06
4	2028 Apron (GA Fencing Concrete Truck	Off-high: Diesel	600	0.59	2.866667	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	2.62E-05	0.000133	0.600482	1.58E-06	7.89E-06	7.65E-06	1.12E-05
4	2028 Apron (GA Fencing Dump Truck	Off-high: Diesel	600	0.59	11.46667	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000105	0.000532	2.40193	6.33E-06	3.15E-05	3.06E-05	4.48E-05
4	2028 Apron (GA Fencing Other General Equipment	Other Con Diesel	175	0.43	11.46667	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	0.000139	0.000401	0.51054	1.38E-06	3.38E-05	3.28E-05	2.36E-05
4	2028 Apron (GA Fencing Pickup Truck	Off-high: Diesel	600	0.59	11.46667	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000105	0.000532	2.40193	6.33E-06	3.15E-05	3.06E-05	4.48E-05
4	2028 Apron (GA Fencing Skid Steer Loader	Skid Steer Diesel	75	0.21	11.46667	2.44E+00	3.62E+00	6.95E+02	2.10E-03	3.16E-01	3.07E-01	4.51E-01	0.000485	0.000721	0.138294	4.18E-07	6.3E-05	6.11E-05	8.98E-05
4	2028 Apron (GA Fencing Tractors/Loader/Backhoe	Tractors/L Diesel	100	0.21	11.46667	1.39E+00	1.77E+00	6.95E+02	1.97E-03	1.99E-01	1.93E-01	1.96E-01	0.000369	0.00047	0.184593	5.23E-07	5.28E-05	5.13E-05	5.2E-05
4	2028 Apron (GA Grading Dozer	Crawler Tr Diesel	175	0.59	5.2951	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03E-02	3.86E-05	0.000125	0.323508	8.55E-07	8.97E-06	8.7E-06	6.2E-06
4	2028 Apron (GA Grading Grader	Graders30 Diesel	300	0.59	5.2951	2.80E-02	1.31E-01	5.37E+02	1.42E-03	8.01E-03	7.77E-03	1.08E-02	2.89E-05	0.000135	0.55458				

5	2028 Building - Exterior W Man Lift	Rough Ter Diesel	75	0.21	240	3.06E-01	2.61E+00	5.96E+02	1.60E-03	3.19E-02	3.10E-02	6.42E-02	0.001275	0.010856	2.483229	6.68E-06	0.000133	0.000129	0.000268	
5	2028 Building - Exterior W Tool Truck	Off-highway/Diesel	600	0.59	60	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000548	0.002785	12.56824	3.31E-05	0.000165	0.00016	0.000234	
5	2028 Building - Exterior W Tractor Trailer- Material Delivery	Off-highway/Diesel	600	0.59	24	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000219	0.001114	5.027295	1.33E-05	6.6E-05	6.4E-05	9.37E-05	
5	2028 Building - Interior Bu Fork Truck	Other Con Diesel	100	0.59	960	3.26E-01	1.11E+00	5.96E+02	1.61E-03	5.06E-02	4.91E-02	2.94E-02	0.020351	0.069284	37.21596	0.000101	0.000319	0.000364	0.001835	
5	2028 Building - Interior Bu Man Lift	Rough Ter Diesel	75	0.21	960	3.06E-01	2.61E+00	5.96E+02	1.60E-03	3.19E-02	3.10E-02	6.42E-02	0.000508	0.043425	9.932917	2.67E-05	0.000532	0.000516	0.00107	
5	2028 Building - Interior Bu Tool Truck	Off-highway/Diesel	600	0.59	120	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.001096	0.005569	25.13648	6.63E-05	0.00033	0.00032	0.000469	
5	2028 Building - Interior Bu Tractor Trailer- Material Delivery	Off-highway/Diesel	600	0.59	120	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.001096	0.005569	25.13648	6.63E-05	0.00033	0.00032	0.000469	
5	2028 Building - Roofing High Lift	Rough Ter Diesel	100	0.59	120	2.25E-01	1.02E+00	5.96E+02	1.60E-03	3.74E-02	3.63E-02	2.09E-02	0.001758	0.007947	4.65219	1.25E-05	0.000292	0.000283	0.000163	
5	2028 Building - Roofing Man Lift (Fascia Construction)	Rough Ter Diesel	75	0.21	120	3.06E-01	2.61E+00	5.96E+02	1.60E-03	3.19E-02	3.10E-02	6.42E-02	0.000637	0.005428	1.241615	3.34E-06	6.65E-05	6.24E-05	0.000134	
5	2028 Building - Roofing Material Deliveries	Off-highway/Diesel	600	0.59	8	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	7.3E-05	0.000371	1.675765	4.42E-06	2.2E-05	2.12E-05	3.12E-05	
5	2028 Building - Roofing Tractor Trailer- Material Delivery	Off-highway/Diesel	600	0.59	12	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.00011	0.000557	2.513648	6.63E-06	3.3E-05	3.23E-05	4.69E-05	
5	2028 Building - Security & High Lift	Rough Ter Diesel	100	0.59	320	2.25E-01	1.02E+00	5.96E+02	1.60E-03	3.74E-02	3.63E-02	2.09E-02	0.004687	0.021192	12.40584	3.32E-05	0.000778	0.000755	0.000436	
5	2028 Building - Security & Tool Truck	Off-highway/Diesel	600	0.59	80	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.00073	0.003713	16.75765	4.42E-05	0.00022	0.000213	0.000312	
5	2028 Building - Structural 40 Ton Crane	Cranes300Diesel	300	0.43	240	4.06E-02	1.86E-01	5.31E+02	1.41E-03	1.00E-02	9.74E-03	1.40E-02	0.001385	0.006331	18.12187	4.81E-05	0.000343	0.000332	0.000478	
5	2028 Building - Structural Fork Truck	Other Con Diesel	100	0.59	120	3.26E-01	1.11E+00	5.96E+02	1.61E-03	5.06E-02	4.91E-02	2.94E-02	0.020544	0.008661	4.651995	1.26E-05	0.000395	0.000383	0.000229	
5	2028 Building - Structural Tool Truck	Off-highway/Diesel	600	0.59	60	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000548	0.002785	12.56824	3.31E-05	0.000165	0.00016	0.000234	
5	2028 Building - Structural Tractor Trailer- Steel Deliveries	Off-highway/Diesel	600	0.59	16	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000146	0.000743	3.35153	8.84E-06	4.4E-05	4.27E-05	6.25E-05	
6	2028 Access Ro:Asphalt Pl:Asphalt Paver	Pavers175 Diesel	175	0.59	2.898375	7.28E-02	2.27E-01	5.37E+02	1.42E-03	1.73E-02	1.67E-02	1.15E-02	2.4E-05	7.48E-05	0.177077	4.69E-07	5.7E-06	5.52E-06	3.8E-06	
6	2028 Access Ro:Asphalt Pl:Dump Truck	Off-highway/Diesel	600	0.59	10.43872	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	9.51E-05	0.000484	2.186605	5.76E-06	2.87E-05	2.79E-05	1.09E-05	
6	2028 Access Ro:Asphalt Pl:Other General Equipment	Other Con Diesel	175	0.43	5.79675	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	7.03E-05	0.000203	0.258094	6.97E-07	1.71E-05	1.66E-05	4.18E-05	
6	2028 Access Ro:Asphalt Pl:Pickup Truck	Off-highway/Diesel	600	0.59	2.898375	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	2.65E-05	0.000135	6.07124	1.6E-06	7.97E-06	7.73E-06	1.13E-06	
6	2028 Access Ro:Asphalt Pl:Roller	Rollers100Diesel	100	0.59	2.898375	1.31E-01	9.30E-01	5.96E+02	1.58E-03	2.51E-02	2.43E-02	1.23E-02	2.48E-05	0.000175	0.11237	2.98E-07	4.72E-06	4.58E-06	2.36E-06	
6	2028 Access Ro:Asphalt Pl:Skid Steer Loader	Skid Steer Diesel	75	0.21	2.898375	2.44E+00	3.62E+00	6.95E+02	2.10E-03	3.16E-01	3.07E-01	4.51E-01	0.000123	0.000182	0.034956	1.06E-07	1.59E-05	1.54E-05	2.27E-05	
6	2028 Access Ro:Asphalt Pl:Surfacing Equipment (Grooving)	Other Con Diesel	25	0.59	3.70992	1.49E+00	3.76E+00	5.95E+02	2.19E-03	1.70E-01	1.65E-01	3.52E-01	8.98E-05	0.000227	0.0359	1.32E-07	1.03E-05	9.96E-06	2.12E-05	
6	2028 Access Ro:Clearing a Chain Saw	Other Con Diesel	11	0.7	7.2	2.46E+00	4.18E+00	5.94E+02	2.18E-03	2.39E-01	2.32E-01	8.38E-01	0.00015	0.000256	0.036286	1.33E-07	1.46E-05	1.41E-05	5.12E-05	
6	2028 Access Ro:Clearing a Chipper/Stump Grinder	Other Con Diesel	100	0.43	7.2	3.26E-01	1.11E+00	5.96E+02	1.61E-03	5.06E-02	4.91E-02	2.94E-02	0.000111	0.000379	20.20426	5.5E-07	1.73E-05	1.67E-05	1E-05	
6	2028 Access Ro:Clearing a Pickup Truck	Off-highway/Diesel	600	0.59	9.6	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	8.77E-05	0.000446	2.010918	5.3E-06	2.64E-05	2.56E-05	3.75E-05	
6	2028 Access Ro:Concrete F Air Compressor	Other Con Diesel	100	0.43	7.7288	3.26E-01	1.11E+00	5.96E+02	1.61E-03	5.06E-02	4.91E-02	2.94E-02	0.000119	0.000407	0.218367	5.9E-07	1.85E-05	1.8E-05	1.8E-05	
6	2028 Access Ro:Concrete F Concrete Saws	Other Con Diesel	40	0.59	7.7288	2.79E-01	2.53E+00	5.96E+02	1.57E-03	2.05E-02	1.98E-02	9.25E-02	5.61E-05	0.000509	0.119809	3.15E-07	4.11E-06	3.99E-06	1.06E-05	
6	2028 Access Ro:Concrete F Concrete Truck	Off-highway/Diesel	600	0.59	32.0333	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000294	0.001495	6.745653	1.78E-05	8.86E-05	8.59E-05	0.000126	
6	2028 Access Ro:Concrete F Other General Equipment	Other Con Diesel	175	0.43	15.4576	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	7.03E-05	0.000187	0.000453	6.888232	1.86E-06	4.56E-05	4.42E-05	3.18E-05
6	2028 Access Ro:Concrete F Pickup Truck	Off-highway/Diesel	600	0.59	23.1864	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000212	0.001076	4.85687	1.28E-05	6.38E-05	6.19E-05	9.06E-05	
6	2028 Access Ro:Concrete F Rubber Tired Loader	Tractors/L Diesel	175	0.59	7.7288	5.68E-01	1.09E+00	6.26E+02	1.77E-03	1.32E-01	1.28E-01	1.42E-01	0.000499	0.000961	0.550775	1.56E-06	0.000116	0.000113	0.000125	
6	2028 Access Ro:Concrete F Slip Form Paver	Pavers175 Diesel	175	0.59	7.7288	7.28E-02	2.27E-01	5.37E+02	1.42E-03	1.73E-02	1.67E-02	1.15E-02	2.4E-05	7.48E-05	0.177077	4.69E-07	5.7E-06	5.52E-06	3.8E-06	
6	2028 Access Ro:Concrete F Surfacing Equipment (Grooving)	Other Con Diesel	25	0.59	7.7288	1.49E+00	3.76E+00	5.95E+02	2.19E-03	1.70E-01	1.65E-01	3.52E-01	8.98E-05	0.000187	0.000473	0.074789	2.75E-07	1.24E-05	1.07E-05	4.42E-05
6	2028 Access Ro:Curbing Concrete Truck	Off-highway/Diesel	600	0.59	25.32	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000231	0.001175	5.303796	1.4E-05	6.97E-05	6.76E-05	8.98E-05	
6	2028 Access Ro:Curbing Curb/Gutter Paver	Pavers175 Diesel	175	0.59	25.32	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000231	0.001175	5.303796	1.4E-05	6.97E-05	6.76E-05	8.98E-05	
6	2028 Access Ro:Curbing Other General Equipment	Other Con Diesel	175	0.43	25.32	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	7.03E-05	0.000306	0.000885	1.127344	3.05E-06	7.47E-05	7.43E-05	5.21E-05
6	2028 Access Ro:Curbing Pickup Truck	Off-highway/Diesel	600	0.59	25.32	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000231	0.001175	5.303796	1.4E-05	6.97E-05	6.76E-05	8.98E-05	
6	2028 Access Ro:Drainage - Dozer	Crawler Tr Diesel	175	0.59	20.576	6.40E-02	2.08E-01	5.37E+02	1.42E-03	1.49E-02	1.44E-02	1.03E-02	0.00015	0.000488	1.257105	3.32E-06	3.49E-05	3.38E-05	2.81E-05	
6	2028 Access Ro:Drainage - Dump Truck	Off-highway/Diesel	600	0.59	20.576	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000188	0.000955	4.310668	1.14E-05	5.66E-05	5.49E-05	8.24E-05	
6	2028 Access Ro:Drainage - Excavator	Excavators Diesel	175	0.59	20.576	5.52E-02	1.81E-01	5.37E+02	1.42E-03	1.26E-02	1.22E-02	9.05E-03	0.000129	0.000425	1.257114	3.32E-06	2.94E-05	2.85E-05	2.10E-05	
6	2028 Access Ro:Drainage - Loader	Tractors/L Diesel	175	0.59	20.576	5.68E-01	1.09E+00	6.26E+02	1.77E-03	1.32E-01	1.28E-01	1.42E-01	0.000133	0.000259	1.466301	4.15E-06	6.00709	0.0003	0.000333	
6	2028 Access Ro:Drainage - Other General Equipment	Other Con Diesel	175	0.43	20.576	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	7.03E-05	0.000249	0.000719	0.916123	2.47E-06	0.07E-05	5.89E-05	4.23E-05
6	2028 Access Ro:Drainage - Pickup Truck	Off-highway/Diesel	600	0.59	20.576	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000188	0.000955	4.310668	1.14E-05	5.66E-05	5.49E-05	8.04E-05	
6	2028 Access Ro:Drainage - Roller	Rollers100Diesel	100	0.59	20.576	1.31E-01	9.30E-01	5.96E+02	1.58E-03	2.51E-02	2.43E-02	1.23E-02	2.48E-05	0.000176	0.001244	4.790773	1.12E-06	3.35E-05	3.25E-05	1.65E-05
6	2028 Access Ro:Drainage - Dump Truck	Off-highway/Diesel	600	0.59	11.43111	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000104	0.000531	2.394482	6.31E-06	3.14E-05	3.05E-05	4.46E-05	
6	2028 Access Ro:Drainage - Loader	Tractors/L Diesel	175	0.59	11.43111	5.68E-01	1.09E+00	6.26E+02	1.77E-03	1.32E-01	1.28E-01	1.42E-01	0.000739	0.001422	0.814612	2.3E-06	0.000172	0.000167	0.000185	
6	2028 Access Ro:Drainage - Other General Equipment	Other Con Diesel	175	0.43	11.43111	1.46E-01	4.22E-01	5.37E+02	1.45E-03	3.55E-02	3.45E-02	2.48E-02	0.000138	0.0004	0.508957	1.37E-06	3.37E-05	3.27E-05	2.35E-05	
6	2028 Access Ro:Drainage - Pickup Truck	Off-highway/Diesel	600	0.59	11.43111	2.34E-02	1.19E-01	5.37E+02	1.42E-03	7.05E-03	6.84E-03	1.00E-02	0.000104	0.000531	2.394482	6.31E-06	3.14E-05	3.05E-05	4.46E-05	

5	2028 Building - :Material N	12	0	0	0	0.03535	0
6	2028 Access Ro: Asphalt Dr	9	0	0	0	0	0.05
6	2028 Access Ro: Asphalt St	9	0.05055	0.003156	0.000581	0.003461	0.001565
6	2028 Access Ro: Concrete P	9	0	0	0	0.01785	0
6	2028 Access Ro: Material N	9	0	0	0	0.0179	0
6	2028 Access Ro: Material N	9	0	0	0	0.05455	0
6	2028 Access Ro: Soil Handli	9	0	0	0	0.0059	0
6	2028 Access Ro: Unstabiliz	9	0	0	0	6.32E-09	0
	totals		0.55945	0.034906	0.006428	0.69574	0.217348

2028 Totals

Year	Emission	SCO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO2e	
2028	NonRoad	0.322691	1.198882		0.009113367	0.073912	0.071695	0.0889	3445.847	--	--	
2028	OnRoad	27.81477	0.611901		0.022915986	0.023636	0.020986	0.603719	3502.121	0.070847	0.019239	
2028	Fugitive	0.55945	0.034906		0.0064275	0.69574	--	0.217348	--	--	--	
2028	TOTAL	28.69691	1.845689		0.038456854	0.793289	0.092681	0.909967	6947.967	0.070847	0.019239	6955.05

ASSUMPTIONS

Emission factors were developed from the following models:

On-Road Vehicles: MOVES3.0.2, revised September 2021

Non-Road Equipment: MOVES3.0.2 September 2021

In addition to the overall project size dimensions (e.g., Length and width) provided by the user, an additional 10 ft length and 10 ft width is added to account for disturbance areas.

The number of employees is based on the higher of two methods: (1) number of equipment, and (2) multiply the project cost in million by 11.

The average employee travels 30 miles round-trip from home to construction site each day.

The average on-road material delivery round-trip distance per truck is 40 miles per day.

For calculating fugitive, re-entrained PM emissions from on-road and non-road material delivery and handling equipment, a nominal VMT of 5 miles is used for each vehicle per day.

In deriving emission factors from NONROAD, the horsepower for each equipment represents the most popular in each equipment category.

The total length of each modeled scenario is used to define the number of days associated with vehicle/equipment evaporative emissions.

The choice of location and season are assumed to adequately represent differences in fuel characteristics affecting emissions.

Only two seasons (Summer and Winter) are used to represent all seasons.

14 U.S. Counties are used to represent all other counties in the U.S. (all other counties are mapped to the 14).

The default methods assume that all construction equipment use diesel as well as heavy-duty on-road vehicles, while passenger vehicles (including motorcycles) use gasoline.

Fugitive emissions are only modeled for:

- Asphalt drying
- Asphalt storage and batching
- Concrete mixing/batching
- Soil handling
- Unstabilized land and wind erosion
- Material movement (unpaved roads)
- Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the asphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO2, CH4, and N2O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 cy)

MOVES ONROAD Emissions (tpy)										
9	7	10	13	11	12	14	5	8	9	
N2O	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	
0.002802	0.001275	0.002166	3.14E-06	3.06E-05	2.81E-05	8.82E-05	0.941577	1.1E-05	1.7E-06	
0.003286	0.011591	0.015423	3.12E-05	0.000184	0.000169	0.000722	9.322254	0.000138	3.17E-05	
0.003286	0.001031	0.001372	2.77E-06	1.63E-05	1.5E-05	6.42E-05	0.829166	1.23E-05	2.82E-06	
0.003286	0.006182	0.008225	1.66E-05	9.79E-05	9.01E-05	0.000385	4.971798	7.37E-05	1.69E-05	
0.001638	1.163066	0.0182	0.000948	0.000902	0.000798	0.025017	142.6991	0.002912	0.000794	
0.002802	0.004352	0.007392	1.07E-05	0.000104	9.61E-05	0.000301	3.214054	3.75E-05	5.79E-06	
0.003286	0.039582	0.052667	0.000106	0.000627	0.000577	0.002467	31.83443	0.000472	0.000108	
0.003286	0.003518	0.004681	9.46E-06	5.57E-05	5.13E-05	0.000219	2.829608	4.19E-05	9.62E-06	
0.003286	0.021111	0.028089	5.67E-05	0.000334	0.000308	0.001316	16.97872	0.000252	5.77E-05	
0.001638	4.096016	0.064096	0.003338	0.003178	0.002811	0.088102	502.5489	0.010254	0.002795	
0.003286	0.004246	0.005649	1.14E-05	6.73E-05	6.19E-05	0.000265	3.414714	5.06E-05	1.16E-05	
0.001638	1.567611	0.024531	0.001278	0.001216	0.001076	0.033718	192.3335	0.003924	0.00107	
0.002802	0.001461	0.002481	3.6E-06	3.5E-05	3.22E-05	0.000101	1.078783	1.26E-05	1.94E-06	
0.003286	0.013282	0.017673	3.57E-05	0.00021	0.000194	0.000828	10.68217	0.000158	3.63E-05	
0.003286	0.001181	0.001571	3.17E-06	1.87E-05	1.72E-05	7.36E-05	0.949597	1.41E-05	3.23E-06	
0.003286	0.007084	0.009426	1.9E-05	0.000112	0.000103	0.000441	5.697584	8.44E-05	1.94E-05	
0.001638	1.164599	0.018224	0.000949	0.000904	0.000799	0.02505	142.8871	0.002915	0.000795	
0.003286	0.003065	0.004078	8.24E-06	4.86E-05	4.47E-05	0.000191	2.465116	3.65E-05	8.38E-06	
0.003286	0.001634	0.002174	4.39E-06	2.59E-05	2.38E-05	0.000102	1.314089	1.95E-05	4.47E-06	
0.001638	7.90906	0.123764	0.006446	0.006136	0.005428	0.170118	970.3794	0.019799	0.005397	
0.002802	0.000372	0.000631	9.16E-07	8.91E-06	8.2E-06	2.57E-05	0.274412	3.21E-06	4.94E-07	
0.002802	0.000704	0.001195	1.74E-06	1.69E-05	1.55E-05	4.87E-05	0.519668	6.07E-06	9.36E-07	
0.003286	0.006402	0.008518	1.72E-05	0.000101	9.33E-05	0.000399	5.148715	7.63E-05	1.75E-05	
0.003286	0.000568	0.000756	1.53E-06	9.01E-06	8.29E-06	3.54E-05	0.457214	6.78E-06	1.55E-06	
0.003286	0.003414	0.004542	9.18E-06	5.41E-05	4.98E-05	0.000213	2.745413	4.07E-05	9.33E-06	
0.001638	11.78237	0.184376	0.009603	0.009141	0.008087	0.25343	1445.604	0.029495	0.00804	
Totals	27.81477	0.611901	0.022916	0.023636	0.020986	0.603719	3502.121	0.070847	0.019239	

STUDY

Study Name

Austin Airport

Study Description

2029 Construction Schedule

EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton

Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

Scenario	Year	Project	Constructi	Equipment	Moves/Loaders/Bac	Fuel	HP Averag	Load Facto	Hours of ACO	NONROAD Emission Factors g/-hp-hr											NONROAD Emissions (TPY)				
										3	6	2	9	7	8	11	CO (tpy)	NOx (tpy)	CO2 (tpy)	SO2 (tpy)	PM10 (tpy)	PM2.5 (tpy)	VOC Exhaust (tpy)		
1	2029	Building	-	Concrete F Backhoe	Tractors/Loaders/Bac	Diesel	100	0.21	320	1.204004	1.655201	695.5091	0.00195	0.173153	0.167959	0.168602	0.008919	0.012261	5.152033	1.44E-05	0.001283	0.001244	0.001249		
1	2029	Building	-	Concrete F Concrete Ready Mix Trucks	Off-highway Trucks60	Diesel	600	0.59	60	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000492	0.002686	12.56826	3.31E-05	0.000155	0.00015	0.000227		
1	2029	Building	-	Concrete F Fork Truck	Other Construction Ec	Diesel	100	0.59	320	0.257143	1.051294	596.0884	0.0016	0.041189	0.039953	0.023925	0.005352	0.021879	12.40564	3.33E-05	0.000857	0.000831	0.000498		
1	2029	Building	-	Concrete F Tool Truck	Off-highway Trucks60	Diesel	600	0.59	80	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000655	0.003581	16.75768	4.41E-05	0.000206	0.0002	0.000303		
1	2029	Building	-	Concrete F Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	16	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000131	0.000716	3.351535	8.83E-06	4.13E-05	4E-05	6.06E-05		
1	2029	Building	-	Constructi Survey Crew Trucks	Off-highway Trucks60	Diesel	600	0.59	10	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	8.19E-05	0.000448	2.09471	5.52E-06	2.58E-05	2.5E-05	3.79E-05		
1	2029	Building	-	Constructi Tractor Trailers Temp Fac.	Off-highway Trucks60	Diesel	600	0.59	4	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	3.28E-05	0.000179	0.837884	2.21E-06	1.03E-05	1E-05	1.52E-05		
1	2029	Building	-	Exterior W Fork Truck	Other Construction Ec	Diesel	100	0.59	240	0.257143	1.051294	596.0884	0.0016	0.041189	0.039953	0.023925	0.004014	0.016409	9.30423	2.5E-05	0.000643	0.000624	0.000373		
1	2029	Building	-	Exterior W Man Lift	Rough Terrain Forklift	Diesel	75	0.21	240	0.26762	2.585271	595.9726	0.001593	0.027378	0.026556	0.059924	0.001115	0.010772	2.483274	6.64E-06	0.000114	0.000111	0.00025		
1	2029	Building	-	Exterior W Tool Truck	Off-highway Trucks60	Diesel	600	0.59	60	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000492	0.002686	12.56826	3.31E-05	0.000155	0.00015	0.000227		
1	2029	Building	-	Exterior W Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	24	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000197	0.001074	5.027303	1.32E-05	6.19E-05	6.01E-05	9.09E-05		
1	2029	Building	-	Interior Bu Fork Truck	Other Construction Ec	Diesel	100	0.59	960	0.257143	1.051294	596.0884	0.0016	0.041189	0.039953	0.023925	0.016055	0.065638	37.21692	9.99E-05	0.002572	0.002494	0.001494		
1	2029	Building	-	Interior Bu Man Lift	Rough Terrain Forklift	Diesel	75	0.21	960	0.26762	2.585271	595.9726	0.001593	0.027378	0.026556	0.059924	0.00446	0.043089	9.933096	2.66E-05	0.000456	0.000443	0.000999		
1	2029	Building	-	Interior Bu Tool Truck	Off-highway Trucks60	Diesel	600	0.59	120	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000983	0.005372	25.13651	6.62E-05	0.00031	0.0003	0.000455		
1	2029	Building	-	Interior Bu Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	120	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000983	0.005372	25.13651	6.62E-05	0.00031	0.0003	0.000455		
1	2029	Building	-	Roofing High Lift	Rough Terrain Forklift	Diesel	100	0.59	120	0.170347	0.968289	596.1103	0.001587	0.029969	0.029069	0.016298	0.001329	0.007557	4.652286	1.24E-05	0.000234	0.000227	0.000127		
1	2029	Building	-	Roofing Man Lift (Fascia Construction)	Rough Terrain Forklift	Diesel	75	0.21	120	0.26762	2.585271	595.9726	0.001593	0.027378	0.026556	0.059924	0.000558	0.005386	1.241637	3.32E-06	5.7E-05	5.53E-05	0.000125		
1	2029	Building	-	Roofing Material Deliveries	Off-highway Trucks60	Diesel	600	0.59	8	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	6.55E-05	0.000358	1.675768	4.41E-06	2.06E-05	2E-05	3.03E-05		
1	2029	Building	-	Roofing Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	12	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	9.83E-05	0.000537	2.513651	6.62E-06	3.1E-05	3E-05	4.55E-05		
1	2029	Building	-	Security & High Lift	Rough Terrain Forklift	Diesel	100	0.59	320	0.170347	0.968289	596.1103	0.001587	0.029969	0.029069	0.016298	0.003545	0.020152	12.4061	3.3E-05	0.000624	0.000605	0.000339		
1	2029	Building	-	Security & Tool Truck	Off-highway Trucks60	Diesel	600	0.59	80	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000655	0.003581	16.75768	4.41E-05	0.000206	0.0002	0.000303		
1	2029	Building	-	Structural 40 Ton Crane	Cranes300	Diesel	300	0.43	240	0.033092	0.160772	531.0059	0.001406	0.0086	0.008342	0.012334	0.001129	0.005487	18.12203	4.8E-05	0.000293	0.000285	0.000421		
1	2029	Building	-	Structural Fork Truck	Other Construction Ec	Diesel	100	0.59	120	0.257143	1.051294	596.0884	0.0016	0.041189	0.039953	0.023925	0.002007	0.008205	4.652115	1.25E-05	0.000321	0.000312	0.000187		
1	2029	Building	-	Structural Tool Truck	Off-highway Trucks60	Diesel	600	0.59	60	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000492	0.002686	12.56826	3.31E-05	0.000155	0.00015	0.000227		
1	2029	Building	-	Structural Tractor Trailer- Steel Deliveries	Off-highway Trucks60	Diesel	600	0.59	16	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000131	0.000716	3.351535	8.83E-06	4.13E-05	4E-05	6.06E-05		
2	2029	Building	-	Concrete F Backhoe	Tractors/Loaders/Bac	Diesel	100	0.21	320	1.204004	1.655201	695.5091	0.00195	0.173153	0.167959	0.168602	0.008919	0.012261	5.152033	1.44E-05	0.001283	0.001244	0.001249		
2	2029	Building	-	Concrete F Concrete Ready Mix Trucks	Off-highway Trucks60	Diesel	600	0.59	60	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000492	0.002686	12.56826	3.31E-05	0.000155	0.00015	0.000227		
2	2029	Building	-	Concrete F Fork Truck	Other Construction Ec	Diesel	100	0.59	320	0.257143	1.051294	596.0884	0.0016	0.041189	0.039953	0.023925	0.005352	0.021879	12.40564	3.33E-05	0.000857	0.000831	0.000498		
2	2029	Building	-	Concrete F Tool Truck	Off-highway Trucks60	Diesel	600	0.59	80	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000655	0.003581	16.75768	4.41E-06	0.000206	0.0002	0.000303		
2	2029	Building	-	Concrete F Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	16	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000131	0.000716	3.351535	8.83E-06	4.13E-05	4E-05	6.06E-05		
2	2029	Building	-	Constructi Survey Crew Trucks	Off-highway Trucks60	Diesel	600	0.59	10	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	8.19E-05	0.000448	2.09471	5.52E-06	2.58E-05	2.5E-05	3.79E-05		
2	2029	Building	-	Constructi Tractor Trailers Temp Fac.	Off-highway Trucks60	Diesel	600	0.59	4	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	3.28E-05	0.000179	0.837884	2.21E-06	1.03E-05	1E-05	1.52E-05		
2	2029	Building	-	Exterior W Fork Truck	Other Construction Ec	Diesel	100	0.59	240	0.257143	1.051294	596.0884	0.0016	0.041189	0.039953	0.023925	0.004014	0.016409	9.30423	2.5E-05	0.000643	0.000624	0.000373		
2	2029	Building	-	Exterior W Man Lift	Rough Terrain Forklift	Diesel	75	0.21	240	0.26762	2.585271	595.9726	0.001593	0.027378	0.026556	0.059924	0.001115	0.010772	2.483274	6.64E-06	0.000114	0.000111	0.00025		
2	2029	Building	-	Exterior W Tool Truck	Off-highway Trucks60	Diesel	600	0.59	60	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000492	0.002686	12.56826	3.31E-05	0.000155	0.00015	0.000227		
2	2029	Building	-	Exterior W Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	24	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000197	0.001074	5.027303	1.32E-05	6.19E-05	6.01E-05	9.09E-05		
2	2029	Building	-	Interior Bu Fork Truck	Other Construction Ec	Diesel	100	0.59	960	0.257143	1.051294	596.0884	0.0016	0.041189	0.039953	0.023925	0.016055	0.065638	37.21692	9.99E-05	0.002572	0.002494	0.001494		
2	2029	Building	-	Interior Bu Man Lift	Rough Terrain Forklift	Diesel	75	0.21	960	0.26762	2.585271	595.9726	0.001593	0.027378	0.026556	0.059924	0.00446	0.043089	9.933096	2.66E-05	0.000456	0.000443	0.000999		
2	2029	Building	-	Interior Bu Tool Truck	Off-highway Trucks60	Diesel	600	0.59	120	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000983	0.005372	25.13651	6.62E-05	0.00031	0.0003	0.000455		
2	2029	Building	-	Interior Bu Tractor Trailer- Material Delivery	Off-highway Trucks60	Diesel	600	0.59	120	0.020997	0.114717	536.8019	0.001414	0.006612	0.006413	0.00971	0.000983	0.005372	25.13651	6.62E-05	0.00031	0.0003	0.000455		
2	2029	Building	-	Roofing High Lift	Rough Terrain Forklift	Diesel	100	0.59																	

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the asphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO₂, CH₄, and N₂O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 cy)

MOVES ONROAD Emissions (tpy)

8 9 7 10 13 11 12 14 5 8 9

CH4	N2O	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O
0.014721	0.003286	0.003113	0.00422	8.38E-06	6.14E-05	5.65E-05	0.000211	2.507633	3.75E-05	8.38E-06
0.014721	0.003286	0.001659	0.00225	4.47E-06	3.27E-05	3.01E-05	0.000113	1.336754	2E-05	4.47E-06
0.006472	0.001659	11.25489	0.202701	0.008865	0.008422	0.00745	0.246979	1334.448	0.028671	0.007347
0.018588	0.002802	0.000376	0.000647	9.34E-07	9.72E-06	8.94E-06	2.69E-05	0.279476	3.28E-06	4.94E-07
0.014721	0.003286	0.003113	0.00422	8.38E-06	6.14E-05	5.65E-05	0.000211	2.507633	3.75E-05	8.38E-06
0.014721	0.003286	0.001659	0.00225	4.47E-06	3.27E-05	3.01E-05	0.000113	1.336754	2E-05	4.47E-06
0.006472	0.001659	0.190761	0.003436	0.00015	0.000143	0.000126	0.004186	22.61777	0.000486	0.000125
0.018588	0.002802	0.000376	0.000647	9.34E-07	9.72E-06	8.94E-06	2.69E-05	0.279476	3.28E-06	4.94E-07
0.018588	0.002802	0.001153	0.001981	2.86E-06	2.98E-05	2.74E-05	8.23E-05	0.855894	1E-05	1.51E-06
0.014721	0.003286	0.010506	0.014244	2.83E-05	0.000207	0.000191	0.000713	8.463939	0.000127	2.83E-05
0.014721	0.003286	0.000934	0.001266	2.52E-06	1.84E-05	1.69E-05	6.34E-05	0.752398	1.13E-05	2.51E-06
0.014721	0.003286	0.005604	0.007597	1.51E-05	0.000111	0.000102	0.00038	4.51439	6.76E-05	1.51E-05
0.006472	0.001659	11.02086	0.198486	0.00868	0.008247	0.007296	0.241844	1306.701	0.028075	0.007194
Totals		22.495	0.443943	0.017772	0.017386	0.0154	0.49495	2686.601	0.05757	0.01474

===== STUDY

Study Name

Austin Airport

Study Description

2030 Construction Schedule

===== EMISSIONS INVENTORY - DETAILS:

Non-Road Sources

Units for Non-Greenhouse Gases Emission: Short Ton
Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

Scenario	Year	Project	Constructi Equipment	Moves/Loo Fuel	HP	Averag Load	Facto	Hours of ACO	NONROAD Emission Factors g/hp-hr										NONROAD Emissions (TPY)				
									3	6	2	9	7	8	11	CO (tpy)	NOx (tpy)	CO2 (tpy)	SO2 (tpy)	PM10 (tpy)	PM2.5 (tpy)	VOC Exhaust (tpy)	
1	2030	Building - Concrete F Backhoe	Tractors/L Diesel	100	0.21	320	1.038687	1.547273	695.5805	0.001933	0.149671	0.145181	0.144229	0.007694	0.011462	5.152561	1.43E-05	0.001109	0.001075	0.001068			
1	2030	Building - Concrete F Concrete Ready Mix Trucks	Off-highw:Diesel	600	0.59	60	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000464	0.002637	12.56826	3.31E-05	0.00015	0.000145	0.000224			
1	2030	Building - Concrete F Fork Truck	Other Con Diesel	100	0.59	320	0.195476	0.994937	596.1029	0.001591	0.032726	0.031744	0.019038	0.004068	0.020706	12.40594	3.31E-05	0.000681	0.000661	0.000396			
1	2030	Building - Concrete F Tool Truck	Off-highw:Diesel	600	0.59	80	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000618	0.0003516	16.75768	4.41E-05	0.000199	0.000193	0.000298			
1	2030	Building - Concrete F Tractor Trailer- Material Delivery	Off-highw:Diesel	600	0.59	16	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000124	0.000703	3.351536	8.83E-06	3.99E-05	3.87E-05	5.97E-05			
1	2030	Building - Constructi Survey Crew Trucks	Off-highw:Diesel	600	0.59	10	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	7.73E-05	0.00044	2.09471	5.52E-06	2.49E-05	2.42E-05	3.73E-05			
1	2030	Building - Constructi Tractor Trailers Temp Fac.	Off-highw:Diesel	600	0.59	4	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	3.09E-05	0.000176	0.837884	2.21E-06	9.97E-06	9.67E-06	1.49E-05			
1	2030	Building - Exterior W Fork Truck	Other Con Diesel	100	0.59	240	0.195476	0.994937	596.1029	0.001591	0.032726	0.031744	0.019038	0.003051	0.01553	9.304457	2.48E-05	0.000511	0.000495	0.000297			
1	2030	Building - Exterior W Man Lift	Rough Ter Diesel	75	0.21	240	0.237794	2.569426	595.9823	0.001586	0.023765	0.023052	0.056571	0.000991	0.010706	2.483314	6.61E-06	9.9E-05	9.61E-05	0.000236			
1	2030	Building - Exterior W Tool Truck	Off-highw:Diesel	600	0.59	60	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000464	0.002637	12.56826	3.31E-05	0.00015	0.000145	0.000224			
1	2030	Building - Exterior W Tractor Trailer- Material Delivery	Off-highw:Diesel	600	0.59	24	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000185	0.001055	5.027304	1.32E-05	5.98E-05	5.8E-05	8.95E-05			
1	2030	Building - Interior Bu Fork Truck	Other Con Diesel	100	0.59	960	0.195476	0.994937	596.1029	0.001591	0.032726	0.031744	0.019038	0.012205	0.062119	37.21783	9.93E-05	0.002043	0.001982	0.001189			
1	2030	Building - Interior Bu Man Lift	Rough Ter Diesel	75	0.21	960	0.237794	2.569426	595.9823	0.001586	0.023765	0.023052	0.056571	0.003963	0.042825	9.933257	2.64E-05	0.000396	0.000384	0.000943			
1	2030	Building - Interior Bu Tool Truck	Off-highw:Diesel	600	0.59	120	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000927	0.005275	25.13652	6.62E-05	0.000299	0.00029	0.000448			
1	2030	Building - Interior Bu Tractor Trailer- Material Delivery	Off-highw:Diesel	600	0.59	120	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000927	0.005275	25.13652	6.62E-05	0.000299	0.00029	0.000448			
1	2030	Building - Roofing High Lift	Rough Ter Diesel	100	0.59	120	0.130506	0.931858	596.1206	0.001581	0.024524	0.023789	0.012905	0.001019	0.007273	4.652366	1.23E-05	0.000191	0.000186	0.000101			
1	2030	Building - Roofing Man Lift (Fascia Construction)	Rough Ter Diesel	75	0.21	120	0.237794	2.569426	595.9823	0.001586	0.023765	0.023052	0.056571	0.000495	0.003533	1.241657	3.3E-06	4.95E-05	4.8E-05	0.000118			
1	2030	Building - Roofing Material Deliveries	Off-highw:Diesel	600	0.59	8	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	6.18E-05	0.000352	1.675768	4.41E-06	1.99E-05	1.93E-05	2.98E-05			
1	2030	Building - Roofing Tractor Trailer- Material Delivery	Off-highw:Diesel	600	0.59	12	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	9.27E-05	0.000527	2.513652	6.62E-06	2.99E-05	2.9E-05	4.48E-05			
1	2030	Building - Security & High Lift	Rough Ter Diesel	100	0.59	320	0.130506	0.931858	596.1206	0.001581	0.024524	0.023789	0.012905	0.002716	0.019394	12.40631	3.29E-05	0.00051	0.000495	0.000269			
1	2030	Building - Security & Tool Truck	Off-highw:Diesel	600	0.59	80	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000618	0.003516	16.75768	4.41E-05	0.000199	0.000193	0.000298			
1	2030	Building - Structural 40 Ton Crane	Cranes300 Diesel	300	0.43	240	0.028647	0.145715	531.0089	0.001404	0.007779	0.007545	0.011403	0.000978	0.049973	18.12213	4.79E-05	0.000265	0.000258	0.000389			
1	2030	Building - Structural Fork Truck	Other Con Diesel	100	0.59	120	0.195476	0.994937	596.1029	0.001591	0.032726	0.031744	0.019038	0.001526	0.007765	4.652229	1.24E-05	0.000255	0.000248	0.000149			
1	2030	Building - Structural Tool Truck	Off-highw:Diesel	600	0.59	60	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000464	0.002637	12.56826	3.31E-05	0.00015	0.000145	0.000224			
1	2030	Building - Structural Tractor Trailer- Steel Deliveries	Off-highw:Diesel	600	0.59	16	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000124	0.000703	3.351536	8.83E-06	3.99E-05	3.87E-05	5.97E-05			
2	2030	Building - Concrete F Backhoe	Tractors/L Diesel	100	0.21	320	1.038687	1.547273	695.5805	0.001933	0.149671	0.145181	0.144229	0.007694	0.011462	5.152561	1.43E-05	0.001109	0.001075	0.001068			
2	2030	Building - Concrete F Concrete Ready Mix Trucks	Off-highw:Diesel	600	0.59	60	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000464	0.002637	12.56826	3.31E-05	0.00015	0.000145	0.000224			
2	2030	Building - Concrete F Fork Truck	Other Con Diesel	100	0.59	320	0.195476	0.994937	596.1029	0.001591	0.032726	0.031744	0.019038	0.004068	0.020706	12.40594	3.31E-05	0.000681	0.000661	0.000396			
2	2030	Building - Concrete F Tool Truck	Off-highw:Diesel	600	0.59	80	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000618	0.0003516	16.75768	4.41E-06	0.000199	0.000193	0.000298			
2	2030	Building - Concrete F Tractor Trailer- Material Delivery	Off-highw:Diesel	600	0.59	16	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000124	0.000703	3.351536	8.83E-06	3.99E-05	3.87E-05	5.97E-05			
2	2030	Building - Constructi Survey Crew Trucks	Off-highw:Diesel	600	0.59	10	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	7.73E-05	0.00044	2.09471	5.52E-06	2.49E-05	2.42E-05	3.73E-05			
2	2030	Building - Constructi Tractor Trailers Temp Fac.	Off-highw:Diesel	600	0.59	4	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	3.09E-05	0.000176	0.837884	2.21E-06	9.97E-06	9.67E-06	1.49E-05			
2	2030	Building - Exterior W Fork Truck	Other Con Diesel	100	0.59	240	0.195476	0.994937	596.1029	0.001591	0.032726	0.031744	0.019038	0.003051	0.01553	9.304457	2.48E-05	0.000511	0.000495	0.000297			
2	2030	Building - Exterior W Man Lift	Rough Ter Diesel	75	0.21	240	0.237794	2.569426	595.9823	0.001586	0.023765	0.023052	0.056571	0.000991	0.010706	2.483314	6.61E-06	9.9E-05	9.61E-05	0.000236			
2	2030	Building - Exterior W Tool Truck	Off-highw:Diesel	600	0.59	60	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000464	0.002637	12.56826	3.31E-05	0.00015	0.000145	0.000224			
2	2030	Building - Exterior W Tractor Trailer- Material Delivery	Off-highw:Diesel	600	0.59	24	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000185	0.001055	5.027304	1.32E-05	5.98E-05	5.8E-05	8.95E-05			
2	2030	Building - Interior Bu Fork Truck	Other Con Diesel	100	0.59	960	0.195476	0.994937	596.1029	0.001591	0.032726	0.031744	0.019038	0.012205	0.062119	37.21783	9.93E-05	0.002043	0.001982	0.001189			
2	2030	Building - Interior Bu Man Lift	Rough Ter Diesel	75	0.21	960	0.237794	2.569426	595.9823	0.001586	0.023765	0.023052	0.056571	0.003963	0.042825	9.933257	2.64E-05	0.000396	0.000384	0.000943			
2	2030	Building - Interior Bu Tool Truck	Off-highw:Diesel	600	0.59	120	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000927	0.005275	25.13652	6.62E-05	0.000299	0.00029	0.000448			
2	2030	Building - Interior Bu Tractor Trailer- Material Delivery	Off-highw:Diesel	600	0.59	120	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	0.000927	0.005275	25.13652	6.62E-05	0.000299	0.00029	0.000448			
2	2030	Building - Roofing High Lift	Rough Ter Diesel	100	0.59	120	0.130506	0.931858	596.1206	0.001581	0.024524	0.023789	0.012905	0.001019	0.007273	4.652366	1.23E-05	0.000191	0.000186	0.000101			
2	2030	Building - Roofing Man Lift (Fascia Construction)	Rough Ter Diesel	75	0.21	120	0.237794	2.569426	595.9823	0.001586	0.023765	0.023052	0.056571	0.000495	0.003533	1.241657	3.3E-06	4.95E-05	4.8E-05	0.000118			
2	2030	Building - Roofing Material Deliveries	Off-highw:Diesel	600	0.59	8	0.019804	0.112642	536.802	0.001414	0.006387	0.006196	0.009561	6.18E-05	0.000352	1.675768	4.41E-06	1.99E-05	1.93E-05	2.98E-			

Scenario (Year)	Project	Equipment Category	On-road A Lookup	Fuel	Round Trip Distance (ft)	Number of Project Let	Open Spar	Number of Activity	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	
1	2030 Building - Cement M Single Unit Short-haul Truck		Material D Diesel/Urbs Diesel	Urban Urr	40	5	1	1	2313	1.175267	1.508038	0.00313	0.013855	0.012747	0.063055	937.2914	0.013757
1	2030 Building - Dump Tru Single Unit Short-haul Truck		Material D Diesel/Urbs Diesel	Urban Urr	40	5	1	1	1233	1.175267	1.508038	0.00313	0.013855	0.012747	0.063055	937.2914	0.013757
1	2030 Building - Passenger Car		Employee GasolineU Gasoline	Urban Urr	30	5	257.4	257.4	996138	2.101065	0.025519	0.001879	0.001741	0.001541	0.045149	282.8728	0.00522
1	2030 Building - Tractor Tr Combination Short-haul Truck		Material D Diesel/Urbs Diesel	Urban Urr	40	5	1	1	160	1.070068	3.444103	0.059311	0.043863	0.040954	0.135046	1507.344	0.017672
2	2030 Building - Cement M Single Unit Short-haul Truck		Material D Diesel/Urbs Diesel	Urban Urr	40	5	1	1	2313	1.175267	1.508038	0.00313	0.013855	0.012747	0.063055	937.2914	0.013757
2	2030 Building - Dump Tru Single Unit Short-haul Truck		Material D Diesel/Urbs Diesel	Urban Urr	40	5	1	1	1233	1.175267	1.508038	0.00313	0.013855	0.012747	0.063055	937.2914	0.013757
2	2030 Building - Passenger Car		Employee GasolineU Gasoline	Urban Urr	30	5	17.6	17.6	68112	2.101065	0.025519	0.001879	0.001741	0.001541	0.045149	282.8728	0.00522
2	2030 Building - Tractor Tr Combination Short-haul Truck		Material D Diesel/Urbs Diesel	Urban Urr	40	5	1	1	160	2.070068	3.444103	0.059311	0.043863	0.040954	0.135046	1507.344	0.017672
3	2030 Access Ro Asphalt 18 Combination Short-haul Truck		Material D Diesel/Urbs Diesel	Urban Urr	40	5	1	1	122	2.070068	3.444103	0.059311	0.043863	0.040954	0.135046	1507.344	0.017672
3	2030 Access Ro Cement M Single Unit Short-haul Truck		Material D Diesel/Urbs Diesel	Urban Urr	40	5	1	1	1952	1.175267	1.508038	0.00313	0.013855	0.012747	0.063055	937.2914	0.013757
3	2030 Access Ro Dump Tru Single Unit Short-haul Truck		Material D Diesel/Urbs Diesel	Urban Urr	40	5	1	1	173	1.175267	1.508038	0.00313	0.013855	0.012747	0.063055	937.2914	0.013757
3	2030 Access Ro Single Unit Short-haul Truck		Material D Diesel/Urbs Diesel	Urban Urr	40	5	1	1	1041	1.175267	1.508038	0.00313	0.013855	0.012747	0.063055	937.2914	0.013757
3	2030 Access Ro Passenger Car		Employee GasolineU Gasoline	Urban Urr	30	5	510.4	510.4	1975248	2.101065	0.025519	0.001879	0.001741	0.001541	0.045149	282.8728	0.00522

Fugitive Sources
Units for Non-greenhouse Gases Emission: Short Ton

Scenario (Year)	Project	Fugitive S: Number of Months	CO	NOx	SO2	PM10	VOC	CH4	N2O	CO2e
1	2030 Building - Concrete I	6	0	0	0	0.00855	0			
1	2030 Building - Material Iv	6	0	0	0	0.006	0			
1	2030 Building - Concrete Iv	6	0	0	0	0.01765	0			
2	2030 Building - Concrete I	6	0	0	0	0.00855	0			
2	2030 Building - Material Iv	6	0	0	0	0.006	0			
2	2030 Building - Concrete Iv	6	0	0	0	0.01765	0			
3	2030 Access Ro Asphalt Dr	6	0.0204	0.001275	0.000235	0.001399	0.000633			
3	2030 Access Ro Concrete I	6	0	0	0	0.0072	0			
3	2030 Access Ro Material Iv	6	0	0	0	0.01135	0			
3	2030 Access Ro Material Iv	6	0	0	0	0.03625	0			
3	2030 Access Ro Soil Handl	6	0	0	0	0.002389	0			
3	2030 Access Ro Unstabiliz	6	0	0	0	1.70E-09	0			
Totals			0.0204	0.001275	0.000235	0.123588	0.050633			

Year	Emission SCO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O	CO2e
2030 NonRoad	0.108467	0.569752		0.002402459	0.021287	0.020649	0.023338	908.8425		
2030 OnRoad	7.053896	0.104231		0.006333893	0.006013	0.005325	0.152051	959.0956	0.017652	0.005329
2030 Fugitive	0.0204	0.001275		0.0002345	0.123588	0.050633				
2030 TOTAL	7.182763	0.675257		0.008970851	0.025974	0.226022	1.867398	0.017652	0.005329	0.005329

ASSUMPTIONS

Emission factors were developed from the following models:

- On-Road Vehicles: MOVES3.0.2, revised September 2021
- Non-Road Equipment: MOVES3.0.2 September 2021

In addition to the overall project size dimensions (e.g., Length and width) provided by the user, an additional 10 ft length and 10 ft width is added to account for disturbance areas.

The number of employees is based on the higher of two methods: (1) number of equipment, and (2) multiply the project cost in million by 11.

The average employee travels 30 miles round-trip from home to construction site each day.

The average on-road material delivery round-trip distance per truck is 40 miles per day.

For calculating fugitive, re-entrained PM emissions from on-road and non-road material delivery and handling equipment, a nominal VMT of 5 miles is used for each vehicle per day.

In deriving emission factors from NONROAD, the horsepower for each equipment represents the most popular in each equipment category.

The total length of each modeled scenario is used to define the number of days associated with vehicle/equipment evaporative emissions.

The choice of location and season are assumed to adequately represent differences in fuel characteristics affecting emissions.

Only two seasons (Summer and Winter) are used to represent all seasons.

14 U.S. Counties are used to represent all other counties in the U.S. (all other counties are mapped to the 14).

The default methods assume that all construction equipment use diesel as well as heavy-duty on-road vehicles, while passenger vehicles (including motorcycles) use gasoline.

Fugitive emissions are only modeled for:

- Asphalt drying
- Asphalt storage and batching
- Concrete mixing/batching
- Soil handling
- Unstabilized land and wind erosion
- Material movement (unpaved roads)
- Material movement (paved roads)

On-Road vehicle speeds are not explicitly modeled. The associated emission factors for each modeled vehicle from MOVES represent averages over the driving cycles, the roadway type, and daily temperature variations.

The default equipment hours-of-use data are developed based on the overall size of the project provided by the user and activity rates based on expert engineering judgment.

Under the Construction Activity Type list (Activity Tab), when a choice between asphalt and concrete materials occurs, asphalt is always selected as default. To choose concrete, de-select the asphalt item and select the corresponding concrete item.

Two trips per day were assumed for each on-road material handling trucks.

Only CO₂, CH₄, and N₂O are used to represent greenhouse gas emissions. Other potential greenhouse gases including air conditioning refrigerants were not included.

The following equipment are always modeled using diesel emission factors since gasoline-based emission factors are not available:

- Asphalt Deliveries/Ten Wheelers
- Bulldozer
- Concrete Ready Mix Trucks
- Concrete Ready Trucks Mix for Cores
- Concrete Truck
- Crack Filler (Trailer Mounted)
- Delivery of Tanks (3)
- Distributing Tanker
- Dozer
- Dump Truck
- Dump Truck (12 cy)

MOVES ONROAD Emissions (tpy)

9 7 10 13 11 12 14 5 8 9

N2O	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O
0.003286	0.002997	0.003845	7.98E-06	3.53E-05	3.25E-05	0.000161	2.389774	3.51E-05	8.38E-06
0.003286	0.001597	0.00205	4.25E-06	1.88E-05	1.73E-05	8.57E-05	1.273926	1.87E-05	4.47E-06
0.001579	2.307095	0.028021	0.002063	0.001912	0.001692	0.049577	310.6113	0.005731	0.001734
0.002802	0.000365	0.000607	8.87E-07	7.74E-06	7.12E-06	2.38E-05	0.265851	3.12E-06	4.94E-07
0.003286	0.002997	0.003845	7.98E-06	3.53E-05	3.25E-05	0.000161	2.389774	3.51E-05	8.38E-06
0.003286	0.001597	0.00205	4.25E-06	1.88E-05	1.73E-05	8.57E-05	1.273926	1.87E-05	4.47E-06
0.001579	0.15775	0.001916	0.000141	0.000131	0.000116	0.00339	21.23838	0.000392	0.000119
0.002802	0.000365	0.000607	8.87E-07	7.74E-06	7.12E-06	2.38E-05	0.265851	3.12E-06	4.94E-07
0.002802	0.000278	0.000463	6.77E-07	5.9E-06	5.43E-06	1.82E-05	0.202712	2.38E-06	3.77E-07
0.003286	0.002529	0.003245	6.73E-06	2.98E-05	2.74E-05	0.000136	2.016791	2.96E-05	7.07E-06
0.003286	0.000224	0.000288	5.97E-07	2.64E-06	2.43E-06	1.2E-05	0.178742	2.62E-06	6.27E-07
0.003286	0.001349	0.00173	3.59E-06	1.59E-05	1.46E-05	7.24E-05	1.075553	1.58E-05	3.77E-06
0.001579	4.574753	0.055563	0.004092	0.003792	0.003354	0.098306	615.913	0.011365	0.003438
Totals	7.053896	0.104231	0.006334	0.006013	0.005325	0.152051	959.0956	0.017652	0.005329

Operation Mode	Fuel (ST)	Distance (Duration)	CO (ST)	THC (ST)	TOG (ST)	VOC (ST)	NMHC (ST)	NOx (ST)	nvPM Mas	nvPM	Nur	PM50 (ST)	CO2 (ST)	H2O (ST)	SOx (ST)	PM 2.5 (ST)	PM 10 (ST)
AUS_2019 Startup	0	00:00.0	0.00E+00	2.45E+01	2.83E+01	2.82E+01	2.83E+01	0.00E+00	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AUS_2019 Taxi Out	14042.73	0 20311:44:	3.79E+02	5.75E+01	6.64E+01	6.59E+01	6.63E+01	5.75E+01	4.15E+05	2.32E+22	6.07E-01	3.29E-01	4.43E+04	1.74E+04	1.64E+01	1.39E+00	1.39E+00
AUS_2019 Climb Gro	20949.5	68465.81 21166:37:	3.87E+02	8.28E+01	9.56E+01	9.50E+01	9.55E+01	2.20E+02	1.02E+06	2.77E+22	9.05E-01	4.10E-01	6.61E+04	2.59E+04	2.45E+01	2.44E+00	2.44E+00
AUS_2019 Climb Belo	24853.42	183659.7 21904:24:	4.01E+02	8.33E+01	9.62E+01	9.56E+01	9.61E+01	3.12E+02	1.38E+06	3.03E+22	1.07E+00	4.65E-01	7.84E+04	3.07E+04	2.91E+01	3.06E+00	3.06E+00
AUS_2019 Climb Belo	34222.39	520382.4 23739:02:	4.32E+02	8.47E+01	9.77E+01	9.70E+01	9.76E+01	5.30E+02	2.27E+06	3.71E+22	1.48E+00	5.74E-01	1.08E+05	4.23E+04	4.01E+01	4.55E+00	4.55E+00
AUS_2019 Climb Belo	58847.18	1987118 29494:10:	5.40E+02	8.86E+01	1.02E+02	1.01E+02	1.02E+02	1.09E+03	4.42E+06	5.32E+22	2.37E+00	1.30E+00	1.86E+05	7.28E+04	6.89E+01	8.54E+00	8.54E+00
AUS_2019 Above 100	72.51349	12961.1 19:02.8	1.81E+00	1.07E-01	1.24E-01	1.23E-01	1.24E-01	5.41E-01	1.98E+03	8.73E+16	2.61E-03	2.18E-03	2.29E+02	8.97E+01	8.49E-02	6.97E-03	6.97E-03
AUS_2019 Descend B	23279.27	2576355 11750:06:	4.06E+02	4.13E+01	4.75E+01	4.70E+01	4.73E+01	1.67E+02	1.01E+06	4.72E+22	9.82E-01	5.14E-01	7.34E+04	2.88E+04	2.73E+01	2.60E+00	2.60E+00
AUS_2019 Descend B	20148.04	1440464 58:59.5	3.07E+02	3.46E+01	3.98E+01	3.94E+01	3.97E+01	1.51E+02	9.20E+05	4.34E+22	8.69E-01	4.20E-01	6.36E+04	2.49E+04	2.36E+01	2.30E+00	2.30E+00
AUS_2019 Descend B	10317.63	295139.5 56:01.5	2.07E+02	2.74E+01	3.15E+01	3.13E+01	3.14E+01	6.65E+01	3.75E+05	1.89E+22	4.45E-01	2.39E-01	3.26E+04	1.28E+04	1.21E+01	1.10E+00	1.10E+00
AUS_2019 Descend G	7692.85	51157.19 44:40.1	1.73E+02	2.59E+01	2.99E+01	2.97E+01	2.99E+01	4.10E+01	2.65E+05	1.39E+22	3.32E-01	1.65E-01	2.43E+04	9.52E+03	9.01E+01	7.89E-01	7.89E-01
AUS_2019 Taxi In	6225.238	0 19:18.0	1.68E+02	2.55E+01	2.94E+01	2.92E+01	2.94E+01	2.47E+01	1.84E+05	1.03E+22	2.69E-01	1.46E-01	1.96E+04	7.70E+03	7.29E+00	6.17E-01	6.17E-01
AUS_2019 Full Flight	82198.96	4576434 41284:35:	9.48E+02	1.30E+02	1.50E+02	1.48E+02	1.49E+02	1.26E+03	5.43E+06	1.00E+23	3.35E+00	1.81E+00	2.59E+05	1.02E+05	9.63E+01	1.12E+01	1.12E+01
AUS_2019 GSE LTO	0	0 227439:44	2.03E+02	0.00E+00	8.07E+00	7.41E+00	7.09E+00	2.27E+01	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.12E-01	1.06E+00	1.13E+00
AUS_2019 APU	0	0 24026:10:	2.35E+01	1.30E+00	1.51E+00	1.50E+00	1.51E+00	2.90E+01	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.86E+00	3.05E+00	3.05E+00
	54370.43	1960847	965.071	145.0449	175.3661	173.5071	174.131	732.288			2.34672	0.99374	171537	67256	67.64756	10.969	11.0348

CO	VOC	NOx	PM2.5	PM10	CO2
965.071	173.5071	732.288	10.969	11.0348	171537

Operation Mode	Fuel (ST)	Distance (Duration)	CO (ST)	THC (ST)	TOG (ST)	VOC (ST)	NMHC (ST)	NOx (ST)	nvPM Mas	nvPM N	nvPM S	PM10 (ST)	CO2 (ST)	H2O (ST)	SOx (ST)	PM 2.5 (ST)
AUS_2027 Startup	0	00:00.0	0.00E+00	3.04E+01	3.51E+01	3.50E+01	3.51E+01	0.00E+00	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AUS_2027 Taxi Out	17353.97	0	20038:45.1	4.50E+02	6.14E+01	7.08E+01	7.07E+01	6.95E+01	4.99E+05	2.82E+22	7.50E-01	3.51E-01	5.48E+04	2.15E+04	2.03E+01	1.65E+00
AUS_2027 Climb Ground	26069.82	83179.86	20879:00.1	4.59E+02	9.27E+01	1.07E+02	1.06E+02	2.82E+02	1.25E+06	3.39E+22	1.13E+00	4.44E-01	8.23E+04	3.22E+04	3.05E+01	2.95E+00
AUS_2027 Climb 1000 ft AFE	30893.35	209787	21608:59.1	4.73E+02	9.33E+01	1.08E+02	1.07E+02	3.97E+02	1.68E+06	3.71E+22	1.33E+00	5.06E-01	9.75E+04	3.82E+04	3.62E+01	3.69E+00
AUS_2027 Climb Below Mixing Height	42590.77	602038.4	23422:51.1	5.05E+02	9.48E+01	1.09E+02	1.09E+02	6.74E+02	2.76E+06	4.54E+22	1.84E+00	6.33E-01	1.34E+05	5.27E+04	4.99E+01	5.51E+00
AUS_2027 Climb Below 10000 ft AFE	73342.17	2310966	29118:36.1	6.20E+02	9.93E+01	1.14E+02	1.14E+02	1.38E+03	5.39E+06	6.53E+22	2.95E+00	1.53E+00	2.31E+05	9.07E+04	8.59E+01	1.04E+01
AUS_2027 Above 10000 ft AFE	46.97204	8406.77	19:02.8	1.16E+00	6.88E-02	7.95E-02	7.95E-02	3.54E-01	1.29E+03	8.80E+16	1.69E-03	1.41E-03	1.48E+02	5.81E+01	5.50E-02	4.52E-03
AUS_2027 Descend Below 10000 ft AFE	28785.44	3047243	11632:52.1	4.64E+02	4.46E+01	5.13E+01	5.08E+01	5.11E+01	2.08E+02	5.75E+22	1.22E+00	5.56E-01	9.08E+04	3.56E+04	3.37E+01	3.12E+00
AUS_2027 Descend Below Mixing Height	25005.23	1713496	56:54.9	3.54E+02	3.72E+01	4.29E+01	4.25E+01	4.27E+01	1.88E+02	1.12E+06	5.30E+22	1.08E+00	4.43E-01	7.89E+04	2.93E+01	2.76E+00
AUS_2027 Descend Below 1000 ft AFE	12680.54	329934.3	49:44.4	2.40E+02	2.91E+01	3.35E+01	3.32E+01	3.34E+01	8.18E+01	4.52E+05	2.28E+22	5.47E-01	2.50E-01	4.00E+04	1.57E+04	1.29E+00
AUS_2027 Descend Ground	9528.544	62894.28	52:02.0	2.05E+02	2.76E+01	3.19E+01	3.17E+01	3.19E+01	5.12E+01	3.21E+05	1.69E+22	4.12E-01	1.76E-01	3.01E+04	1.18E+04	1.12E+01
AUS_2027 Taxi In	7693.271	0	02:42.0	1.99E+02	2.72E+01	3.14E+01	3.12E+01	3.08E+01	2.21E+05	1.25E+22	3.32E-01	1.55E-01	2.43E+04	9.52E+03	9.01E+00	7.31E-01
AUS_2027 Full Flight	102174.6	5366616	40791:47.1	1.09E+03	1.44E+02	1.66E+02	1.65E+02	1.59E+03	6.62E+06	1.23E+23	4.17E+00	2.09E+00	3.22E+05	1.26E+05	1.20E+02	1.36E+01
AUS_2027 GSE LTO	0	0	224096:10	1.70E+02	0.00E+00	7.18E+00	6.63E+00	6.33E+00	1.58E+01	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-01	9.69E-01
AUS_2027 APU	0	0	23712:00.1	2.73E+01	1.59E+00	1.84E+00	1.83E+00	3.70E+01	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.85E+00	3.76E+00
Total			1.06E+03	1.34E+02	1.61E+02	1.59E+02	1.60E+02	9.15E+02	#VALUE!	2.92E+00	1.08E+00	2.13E+05	8.36E+04	8.42E+01	1.30E+01	1.31E+01

Operation Mode	Fuel (ST)	Distance (Duration)	CO (ST)	THC (ST)	TOG (ST)	VOC (ST)	NMHC (ST)	NOx (ST)	nvPM Mas	nvPM Num	PM10 (ST)	PM2.5 (ST)	SOx (ST)	H2O (ST)	CO2 (ST)	PMF0 (ST)	CO2 (ST)	H2O (ST)	SOx (ST)	PM 2.5 (ST)	PM 10 (ST)	
2032_NA_Startup	0	00:00.0	0.00E+00	3.17E+01	3.66E+01	3.64E+01	3.66E+01	0.00E+00	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2032_NA_Taxi Out	18051.12	0 19574:39.1	4.72E+02	6.42E+01	7.41E+01	7.36E+01	7.40E+01	7.23E+01	5.22E+05	3.00E+22	7.80E-01	3.67E-01	5.70E+04	2.23E+04	2.11E+01	1.72E+00	1.72E+00	2.23E+04	2.11E+01	1.72E+00	1.72E+00	1.72E+00
2032_NA_Climb Gro	27168.82	86411.47 20392:19.1	4.81E+02	9.68E+01	1.12E+02	1.11E+02	1.12E+02	2.97E+02	1.29E+06	3.59E+22	1.17E+00	4.62E-01	8.57E+04	3.36E+04	3.18E+01	3.05E+00	3.05E+00	3.36E+04	3.18E+01	3.05E+00	3.05E+00	3.05E+00
2032_NA_Climb Belo	32161.29	216857.5 21108:38.1	4.95E+02	9.74E+01	1.12E+02	1.12E+02	1.12E+02	4.16E+02	1.72E+06	3.93E+22	1.13E+00	5.25E-01	1.01E+05	3.98E+04	3.77E+01	3.81E+00	3.81E+00	3.98E+04	3.77E+01	3.81E+00	3.81E+00	3.81E+00
2032_NA_Climb Belo	44307.27	622583.8 22882:54.1	5.28E+02	9.90E+01	1.14E+02	1.13E+02	1.14E+02	7.06E+02	2.82E+06	4.78E+22	1.91E+00	6.53E-01	1.40E+05	5.48E+04	5.19E+01	5.68E+00	5.68E+00	5.48E+04	5.19E+01	5.68E+00	5.68E+00	5.68E+00
2032_NA_Climb Belo	76298.72	2390437 28478:34.1	6.45E+02	1.04E+02	1.19E+02	1.18E+02	1.19E+02	1.45E+03	5.51E+06	6.85E+22	3.07E+00	1.59E+00	2.41E+05	9.44E+04	8.94E+01	1.07E+01	1.07E+01	9.44E+04	8.94E+01	1.07E+01	1.07E+01	1.07E+01
2032_NA_Above 100	47.04548	8420.11 19:02.8	1.16E+00	6.89E-02	7.96E-02	7.92E-02	7.96E-02	3.55E-01	1.29E+03	9.13E+16	1.69E-03	1.41E-03	1.48E+02	5.82E+01	5.51E-02	4.52E-03	4.52E-03	5.82E+01	5.51E-02	4.52E-03	4.52E-03	4.52E-03
2032_NA_Descend B	29906.19	3166366 11350:07.1	4.85E+02	4.69E+01	5.39E+01	5.34E+01	5.38E+01	2.16E+02	1.27E+06	6.00E+22	1.26E+00	5.74E-01	9.44E+04	3.70E+04	3.50E+01	3.24E+00	3.24E+00	3.70E+04	3.50E+01	3.24E+00	3.24E+00	3.24E+00
2032_NA_Descend B	26030.79	1782323 57:14.9	3.70E+02	3.91E+01	4.50E+01	4.46E+01	4.49E+01	1.96E+02	1.17E+06	5.53E+22	1.12E+00	4.58E-01	8.21E+04	3.22E+04	3.05E+01	2.87E+00	2.87E+00	3.22E+04	3.05E+01	2.87E+00	2.87E+00	2.87E+00
2032_NA_Descend B	13149.85	340742.3 24:06.5	2.50E+02	3.04E+01	3.50E+01	3.48E+01	3.50E+01	8.47E+01	4.69E+05	2.39E+22	5.67E-01	2.59E-01	4.15E+04	1.63E+04	1.54E+01	1.34E+00	1.34E+00	1.63E+04	1.54E+01	1.34E+00	1.34E+00	1.34E+00
2032_NA_Descend G	9907.72	65731.89 01:56.4	2.15E+02	2.89E+01	3.34E+01	3.32E+01	3.34E+01	5.31E+01	3.35E+05	1.79E+22	4.28E-01	1.84E-01	3.13E+04	1.23E+04	1.16E+01	9.81E-01	9.81E-01	1.23E+04	1.16E+01	9.81E-01	9.81E-01	9.81E-01
2032_NA_Taxi In	8002.336	0 40:21.0	2.09E+02	2.85E+01	3.28E+01	3.26E+01	3.28E+01	3.21E+01	2.32E+05	1.33E+22	3.46E-01	1.63E-01	2.52E+04	9.90E+03	9.37E+00	7.64E-01	7.64E-01	9.90E+03	9.37E+00	7.64E-01	7.64E-01	7.64E-01
2032_NA_Full Flight	106252	5565224 39869:00.1	1.13E+03	1.51E+02	1.73E+02	1.72E+02	1.73E+02	1.66E+03	6.78E+06	1.28E+23	4.34E+00	2.17E+00	3.35E+05	1.31E+05	1.24E+02	1.40E+01	1.40E+01	1.31E+05	1.24E+02	1.40E+01	1.40E+01	1.40E+01
2032_NA_GSE LTO	0	0 214708:48	1.71E+02	0.00E+00	7.28E+00	6.73E+00	6.42E+00	1.49E+01	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E-01	1.44E-01	0.00E+00	0.00E+00	1.44E-01	1.44E-01	1.44E-01
2032_NA_APU	0	0 22878:42.1	2.77E+01	1.62E+00	1.87E+00	1.86E+00	1.87E+00	3.88E+01	N/A	N/A	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.85E+00	3.85E+00	0.00E+00	0.00E+00	3.85E+00	3.85E+00	3.85E+00
	70338.06	2404907	1097.712	139.6562	168.3265	166.601	167.2028	956.318			3.037	1.11048	221917	87008	87.58144	13.36351	13.4362					

Operation Mode	Fuel (ST)	Distance (r Duration)	CO (ST)	THC (ST)	TOG (ST)	VOC (ST)	NMHC (ST NOx (ST)	nvPM Mas nvPM Nurt PM10 (ST)	CO2 (ST)	H2O (ST)	SOx (ST)	PM 2.5 (ST PM 10 (ST)
AUS_2032_Startup	0	00:00.0	0.00E+00	3.50E+01	4.05E+01	4.03E+01	4.05E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AUS_2032_Taxi Out	19801.11	0	19379:00:1	5.12E+02	6.78E+01	7.82E+01	7.77E+01	7.95E+01	3.87E-01	6.25E+04	2.32E+01	1.87E+00
AUS_2032_Climb Groi	29941.48	94946.33	20196:39:1	5.21E+02	1.04E+02	1.19E+02	1.20E+02	3.30E+02	4.92E-01	9.45E+04	3.70E+04	3.35E+00
AUS_2032_Climb Belo	35484.31	234764.5	20912:58:3	5.36E+02	1.05E+02	1.21E+02	1.20E+02	4.63E+02	1.53E+00	1.12E+05	4.39E+04	4.20E+00
AUS_2032_Climb Belo	48963.89	673523.9	22687:14:1	5.70E+02	1.06E+02	1.23E+02	1.22E+02	7.85E+02	3.12E+00	1.54E+05	6.06E+04	6.26E+00
AUS_2032_Climb Belo	84467.72	2586507	28282:54:3	6.89E+02	1.11E+02	1.28E+02	1.27E+02	1.61E+03	6.11E+06	7.56E+22	3.40E+00	1.19E+01
AUS_2032_Above 100	47.04548	8420.11	19:02.8	1.16E+00	6.89E-02	7.96E-02	7.92E-02	3.55E-01	1.29E+03	9.13E+16	1.69E-03	4.52E-03
AUS_2032_Descend B	32940.74	3447014	11248:58:1	5.16E+02	4.94E+01	5.68E+01	5.63E+01	5.67E+01	2.39E+02	1.40E+06	6.62E+22	3.86E+01
AUS_2032_Descend B	28680.28	1945111	48:59.9	3.95E+02	4.11E+01	4.73E+01	4.69E+01	4.71E+01	2.17E+02	1.29E+06	6.10E+22	1.24E+00
AUS_2032_Descend B	14388.57	365547.7	15:51.5	2.67E+02	3.18E+01	3.66E+01	3.63E+01	3.66E+01	9.33E+01	5.15E+05	2.62E+22	6.21E-01
AUS_2032_Descend G	10814.69	72436.55	53:41.4	2.31E+02	3.03E+01	3.49E+01	3.47E+01	3.49E+01	5.83E+01	3.67E+05	1.95E+22	4.67E-01
AUS_2032_Taxi In	8694.676	0	32:06.0	2.24E+02	2.98E+01	3.43E+01	3.41E+01	3.43E+01	3.49E+01	2.52E+05	1.44E+22	3.76E-01
AUS_2032_Full Flight	117455.5	6041941	39572:12:3	1.21E+03	1.61E+02	1.85E+02	1.83E+02	1.85E+02	7.51E+06	1.42E+23	4.79E+00	2.35E+00
AUS_2032_GSE LTO	0	0	214708:48	1.90E+02	0.00E+00	8.06E+00	7.46E+00	7.11E+00	1.65E+01	N/A	N/A	0.00E+00
AUS_2032_APU	0	0	222878:42:1	3.00E+01	1.80E+00	2.08E+00	2.06E+00	2.08E+00	4.32E+01	N/A	N/A	0.00E+00

77644.17 2618635

1184.35 149.008 179.9342 178.0873 178.7184 1062.186

3.3527 1.17975 244966 96045 96.70424 14.7418 14.8223

Action CO VOC NOx PM2.5 PM10 CO2 SO2
1184.35 178.0873 1062.186 14.7418 14.8223 244966 96.70424

No Action 1097.712 166.601 956.318 13.36351 13.4362 221917 87.58144

Net Chang 86.638 11.4863 105.868 1.37829 1.3861 23049 9.1228

**DOA Air Emissions
Existing CUP Natural Gas Usage For 2019
from Boilers and Water Heaters**

Hundred cubic feet	cubic feet	MM cubic feet	Building Size (sq.ft.)	Usage per Sq. ft. (MM cubic ft. of NG)
195,440	19,544,000	19.5440	1,000,000	0.00002

Air Emissions Sources	Annual Fuel Usage (MMscf/Year)	Max Heat Input (MMBTU/Hr)	VOC		NO _x			
			EF (lb/10 ⁶ scf)	EMISSION RATE (lb/yr)	EF (lb/10 ⁶ scf)	EMISSION RATE (ton/yr)		
Boiler# 193548 - Large terminal - bldg 7360 (B1) - 9815 Service Rd	9.7720	12.25	5.5	53.7460	0.0269	50	488.6000	
Boiler# 193549 - Large terminal - bldg 7360 (B2) - 9815 Service Rd	9.7720	12.25	5.5	53.7460	0.0269	50	488.6000	
TOTAL Actual emissions from boilers							0.0537	0.4886

Estimated Natural Gas Usage for New CUP (based on 2019 usage but projected to 2.5 million sq/ft)

Hundred cubic feet	cubic feet	MM cubic feet	Building Size (sq.ft.)	Usage per Sq. ft. (MM cubic ft. of NG)
488,600	48,860,000	48.8600	2,500,000	0.00002

Air Emissions Sources	Annual Fuel Usage (MMscf/Year)	Max Heat Input (MMBTU/Hr)	VOC		NO _x			
			EF (lb/10 ⁶ scf)	EMISSION RATE (lb/yr)	EF (lb/10 ⁶ scf)	EMISSION RATE (ton/yr)		
Boiler# 1 New CUP	9.7720	12.5	5.5	53.7460	0.0269	50	488.6000	
Boiler# 2 New CUP	9.7720	12.5	5.5	53.7460	0.0269	50	488.6000	
Boiler# 3 New CUP	9.7720	12.5	5.5	53.7460	0.0269	50	488.6000	
Boiler# 4 New CUP	9.7720	12.5	5.5	53.7460	0.0269	50	488.6000	
Boiler# 5 New CUP	9.7720	12.5	5.5	53.7460	0.0269	50	488.6000	
TOTAL Actual emissions from boilers							0.1344	1.2215

- Assumption:
- Boiler is operating 100% percent of the time at 100% of it's capacity, since calculating for PTE not actual operations
- Notes: AP-42,
- Tables 1.4-1 and 1.4-2, Controlled - Low NO_x burners
 - noted tables, July 1998
 - heating value of natural gas = 1020 BTU/scf

**DOA Air Emissions
From Boilers and Water Heaters**

SO ₂		CO		PM (total)		TOC		CO ₂		Methane	
EF	EMISSION RATE	EF	EMISSION RATE	EF	EMISSION RATE	EF	EMISSION RATE	EF	EMISSION RATE	EF	EMISS
(lb/10 ⁶ scf)	(lb/Yr)	(lb/10 ⁶ scf)	(lb/Yr)	(lb/10 ⁶ scf)	(lb/Yr)	(lb/10 ⁶ scf)	(lb/Yr)	(lb/10 ⁶ scf)	(lb/Yr)	(lb/10 ⁶ scf)	(lb/Yr)
0.6	5.8632	84	820.8480	7.6	74.2672	11	107.4920	120000	1172640.0000	2.3	22.4756
0.6	5.8632	84	820.8480	7.6	74.2672	11	107.4920	120000	1172640.0000	2.3	22.4756
	0.0059		0.8208		0.0743		0.1075		1063.8014		

SO ₂		CO		PM (total)		TOC		CO ₂		Methane	
EF	EMISSION RATE	EF	EMISSION RATE	EF	EMISSION RATE	EF	EMISSION RATE	EF	EMISSION RATE	EF	EMISS
(lb/10 ⁶ scf)	(lb/Yr)	(lb/10 ⁶ scf)	(lb/Yr)	(lb/10 ⁶ scf)	(lb/Yr)	(lb/10 ⁶ scf)	(lb/Yr)	(lb/10 ⁶ scf)	(lb/Yr)	(lb/10 ⁶ scf)	(lb/Yr)
0.6	5.8632	84	820.8480	7.6	74.2672	11	107.4920	120000	1172640.0000	2.3	22.4756
0.6	5.8632	84	820.8480	7.6	74.2672	11	107.4920	120000	1172640.0000	2.3	22.4756
0.6	5.8632	84	820.8480	7.6	74.2672	11	107.4920	120000	1172640.0000	2.3	22.4756
0.6	5.8632	84	820.8480	7.6	74.2672	11	107.4920	120000	1172640.0000	2.3	22.4756
	0.0147		2.0521		0.1857		0.2687		2659.5301		

Net Change 1,596

Data comes from texas gas service

DOA Air Emissions
From Boilers and Water Heaters

		Nitrous Oxide		CO2 Equivalent (Metric Tons)
TON RATE	EF	EMISSION RATE		
(metric ton/yr)	(lb/10 ⁶ scf)	(lb/yr)	(metric ton/yr)	
0.0112	0.64	6.2541	0.0031	
0.0112	0.64	6.2541	0.0031	
0.0204			0.0057	1,066.0

		Nitrous Oxide		CO2 Equivalent (Metric Tons)
TON RATE	EF	EMISSION RATE		
(metric ton/yr)	(lb/10 ⁶ scf)	(lb/yr)	(metric ton/yr)	
0.0112	0.64	6.2541	0.0031	
0.0112	0.64	6.2541	0.0031	
0.0161	1.64	16.0261	0.0080	
0.0210	2.64	25.7981	0.0129	
0.0259	3.64	35.5701	0.0178	
0.0776			0.0408	2,673.6

0.06

0.04

1,608

AUS Ground Access Vehicles

Segment	No Project		Preferred Alternative		Delta		
	2032	VMT	2032	VMT	(Build-No Build)	Daily Delta	VMT
Incoming	2,396	2,396	2,719	2,719	323	3230	3230
Outgoing	2,409	2,650	2,735	3,009	326	3260	3586
Idle	2,409		2,735	0	326	3260	3260

Average Speeds assuming 30 mph
 Idling assumings 5 minutes per hour per vehicle
 ADT assumes Peak PM values represent 10 percent of daily traffic

AUS Ground Access Vehicles

CO	MOVES3 2032 Emission Factors									
	NOx	PM10	PM2.5	VOC	Sox	CH4	N2O	CO2		
2.63	0.0145	0.0015	0.00138	0.0113	0.001798	0.00596	0.001317	270.662		
2.63	0.0145	0.0015	0.00138	0.0113	0.001798	0.00596	0.001317	270.662		
8.81	0.031	0.00745	0.00659	0.0373	0.0105	0.0195	0.0158	1587		

Totals

AUS New Parking Area

MOVES3 2032 Emissions TPY								
CO	NOx	PM10	PM2.5	VOC	SO2	CH4	N2O	CO2
2.660542	0.012312	0.001698	0.001415	0.010614	0.001896	0.005661	0.002123	286.2913
2.66	0.012	0.002	0.001	0.011	0.002	0.005	0.002	259.91
GWP						0.143895	0.510697	259.9095
								260.5641

Notes

1. Assumes the vehicles travel 15 mph and assumes vehicles enter halfway in and halfway out
2. Assumes parking area is filled every day for 365 days per year.
3. GHG emissions totals are Metric Tons

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