AIR QUALITY REPORT

Oakland Alameda Access Project (OAAP)

Caltrans District 4
Alameda County, California

04-ALA-880 PM 30.47 to 31.61, 04-ALA-260 PM R0.78 to R1.90
EA 04-0G360/ Project ID 0400000326

May 2020

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AIR QUALITY REPORT

ALAMEDA COUNTY, CALIFORNIA

CALIFORNIA DEPARTMENT OF TRANSPORTATION DISTRICT 4

EA 04-0G360

EFIS 0400000326

Approved by: Kevin Krewson Date: 6/1/20

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Acronyms and Abbreviations

Term	Definition
ºF	Degrees Fahrenheit
AADT	Average Annual Daily Traffic
AB	Assembly Bill
ACTC	Alameda County Transportation Commission
AQMP	Air Quality Management Plan
ARB	California Air Resource Board
ATM	Active Traffic Management
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practice
CAAQS	California Ambient Air Quality Standards
Cal/EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
County	Alameda
EO	Executive Order
FCAA	Federal Clean Air Act
FHWA	Federal Highway Administration
ft	Feet
FTA	Federal Transit Administration

Term	Definition
FTIP	Federal Transportation Improvement Program
GHG	Greenhouse Gas
IPCC	International Panel on Climate Change
LOS	Level of Service
LRTP	Long Range Transportation Plan
mi	Miles
MOVES	Motor Vehicle Emission Simulator
mph	Miles per Hour
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NATA	National Air Toxics Assessment
NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
NO_2	Nitrogen Dioxide
NOA	Naturally Occurring Asbestos
NO_x	Nitrogen Oxide
OAAP	Oakland Alameda Access Build Alternative
O_3	Ozone
OPR	Office of Planning and Research
PM	Particulate Matter
PM_{10}	Particulate Matter less than 10 microns in diameter
$PM_{2.5}$	Particulate Matter less than 2.5 microns in diameter
ppm	Parts per Million
Protocol	Transportation Build Alternative-Level Carbon Monoxide Protocol
ROGs	Reactive Organic Gases
RTP	Regional Transportation Plan
RTPA	Regional Transportation Planning Agency

Term	Definition
SB	Senate Bill
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TACs	Toxic Air Contaminants
TDM	Transportation Demand Management
TIP	Transportation Improvement Program
TOAR	Transportation Operations Analysis Report
TSM	Transportation System Management
USC	United States Code
USDOT	United States Department of Transportation
U.S. EPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
VOCs	Volatile Organic Compounds

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1. Proposed Project Description

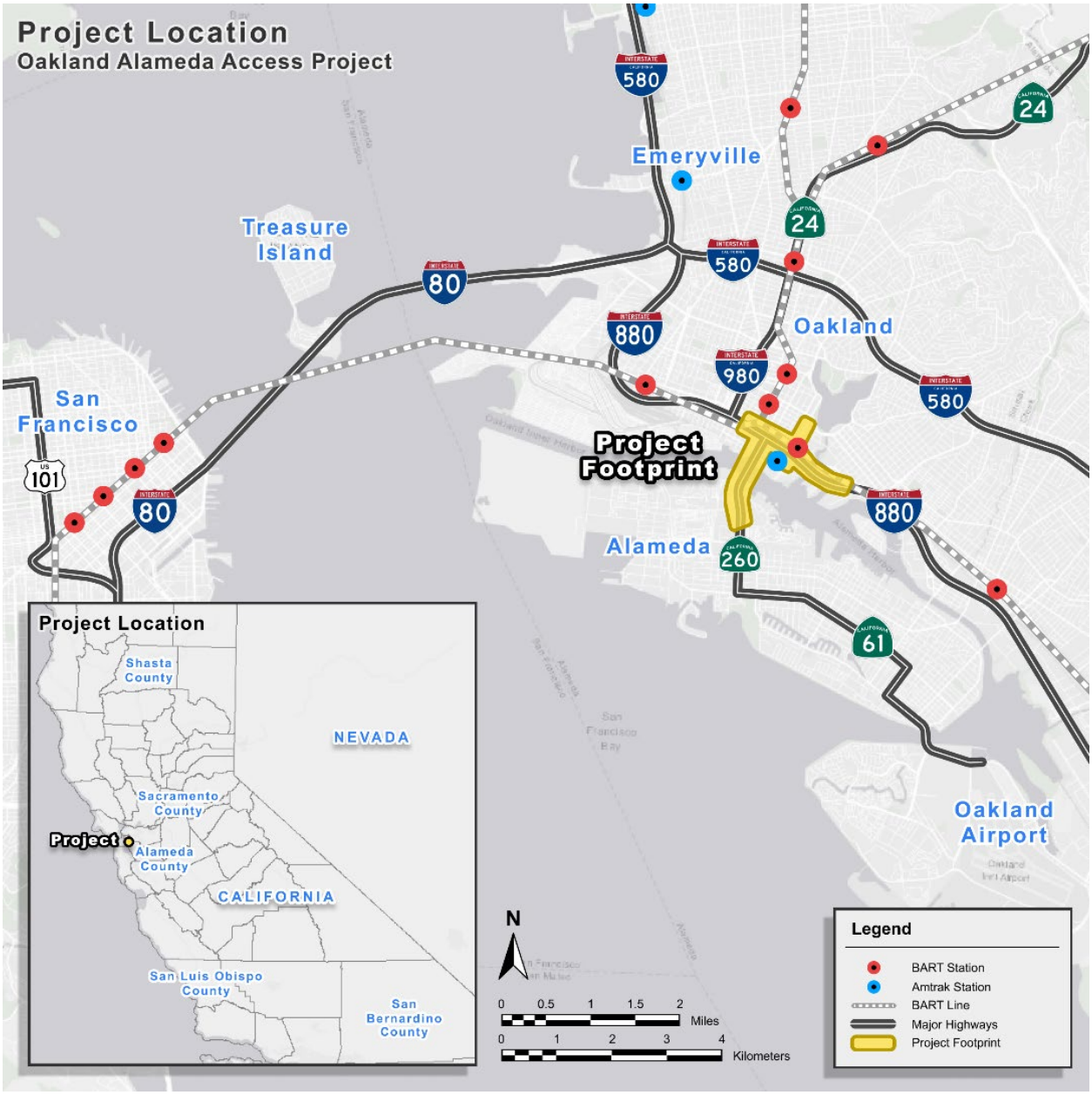
1.1 Introduction

The Alameda County Transportation Commission (ACTC) in partnership with the California Department of Transportation (Caltrans) proposes to improve access along Interstate 880 (I-880), the Posey and Webster Tubes (State Route, SR-260), downtown Oakland, and the City of Alameda. The project footprint is between Post Mile (PM) Alameda (ALA) 30.47 to PM 31.61 and PM ALA R0.78 to R1.90. The total length of the project is approximately 1-mile. The No-Build and Build Alternatives are evaluated in this report. Caltrans is the lead agency under NEPA and CEQA.

1.2 Location and Background

The Oakland Alameda Access Project (OAAP) is located in the cities of Oakland and Alameda in Alameda County. This county is in the San Francisco Bay Area Air Basin and falls under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD) and the Metropolitan Transportation Commission (MTC). Ambient air quality standards have been established at both the state and federal levels. The Bay Area meets all federal ambient air quality standards except for ground-level ozone and fine particulate matter ($PM_{2.5}$). At the State level, the region meets all ambient air quality standards except those for ground-level ozone, $PM_{2.5}$, and respirable particulate matter (PM_{10}).

This project is included in the MTC Regional Transportation Plan (RTP), *Plan Bay Area 2040*, as RTP ID 17-01-0030. It is also included in MTC's 2019 Transportation Improvement Program or TIP (Project TIP ID ALA070009). The total cost for this project is estimated to be approximately $244 million. Figure 1 shows the project location and surrounding area.



Source: HNTB

Figure 1. Map of the Project Location

1.3 Purpose and Need

The purpose of the project is to:

- Improve multimodal safety and reduce conflicts between regional and local traffic.
- Enhance bicycle and pedestrian accessibility and connectivity within the project study area.

- Improve mobility and accessibility between the I-880, SR-260 (Tubes), City of Oakland downtown neighborhoods, and City of Alameda.
- Reduce freeway-bound regional traffic and congestion on local roadways and in area neighborhoods.

Access between the freeway and the roadway networks between I-880 and the Tubes is limited and indirect, and access to/from the cities of Oakland and Alameda is circuitous. Existing access to I-880 from Alameda and the Jack London District requires loops through several local streets and intersections, routing vehicles through the downtown Oakland Chinatown neighborhood, which has the following operational impacts on local streets:

- Streets in and around the downtown Oakland Chinatown area have a high volume of pedestrian activity and experience substantial vehicle-pedestrian conflicts, and the I-880 viaduct limits bicycle and pedestrian connectivity between downtown Oakland and the Jack London District.
- SB I-880 traffic heading to Alameda must exit at the Broadway/Alameda off-ramp, then travel south along 5th Street for more than a mile — through nine signalized and unsignalized intersections — before reaching the Webster Tube at 5th Street/Broadway.
- WB I-980 traffic heading to Alameda must exit at the Jackson Street off-ramp and circle back through Chinatown through seven signalized and unsignalized intersections to reach the Webster Tube.
- NB I-880 traffic heading to Alameda must exit at the Broadway off-ramp and form a queue on Broadway between 5th and 6th streets, which backs up onto the ramp. Alternatively, drivers may loop through Chinatown to access the Webster Tube.

1.4 Baseline and Forecasted Conditions for No-Build and Build Alternatives

The proposed alternatives are the No-Build Alternative and the Build Alternative. The years analyzed are the existing year (2015), opening year (2025), RTP horizon year (2040), and design year (2045). These alternatives along with the existing baseline conditions are discussed below in more detail.

1.4.1 Existing Roadways and Traffic Conditions

The existing OAAP project encompasses both freeway (mainline segment, on-and-off-ramps) and local street facilities (arterial segments and intersections). The following roadway conditions are based on the 2019 OAAP Traffic Operations Analysis Report (TOAR) prepared by DKS. In general, I-880 has four mixed-flow lanes in both directions. Auxiliary lanes are provided for northbound (NB) I-880 from

Jackson Avenue on-ramp to the I-980 connector and for southbound (SB) I-880 from the Oak Street on-ramp for approximately 3,000 feet.

The study area consists of many local one-way streets and intersections with high turn volumes that impede bicycle and pedestrian access. Substantial vehicle-pedestrian conflicts occur at the intersections of Harrison Street/7th Street, 7th Street/Jackson Street, and 5th Street/Broadway. There are gaps in sidewalks or substandard sidewalks along 5th and 6th streets and limited connectivity between Alameda and Oakland for both cyclists and pedestrians. There are also connectivity impediments for bicycles and pedestrians between downtown Oakland and the Jack London District due to the large footprint of I-880 structure. However, at the intersections of 8th Street / Webster Street, 8th Street / Franklin Street, 9th Street / Webster Street, and 9th Street / Franklin Street there are "pedestrian scrambles" where vehicles are completely stopped to accommodate pedestrians crossing through the intersection. Bicycle facilities include directional bike lanes on Oak Street, Madison Street, 8th Street, and 9th Street.

The 2019 OAAP TOAR lists the average annual daily traffic (AADT), truck traffic, and level of service (LOS) for the existing roadways with 2015 being the baseline year. The TOAR also lists the No-Build and Build traffic conditions. Table 1 lists the existing AADT for the mainline, the percentage of daily trucks on the mainline and the daily vehicle miles traveled (VMT) within the project area. The daily VMT includes traffic on freeways and local facilities. Figure 1 in Section 1.2 shows the project boundaries and the surrounding area. Figure 2, Figure 3, Figure 4, Figure 5 show the existing roadways with the Build Alternative alignment overlaid.

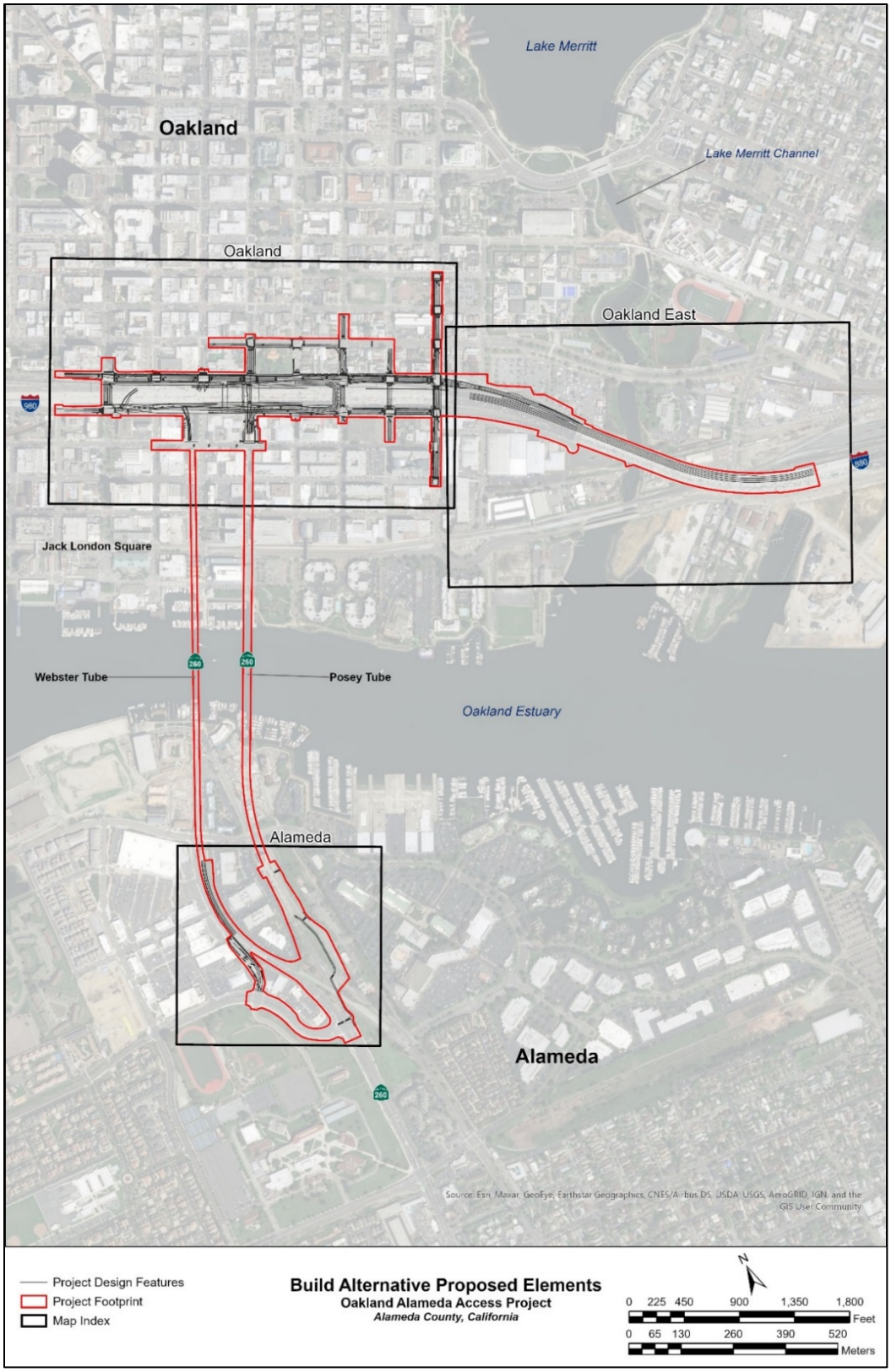


Figure 2. Map of the Build Alternative Proposed Elements and Nearby Roadways.

Source: HNTB, 2020

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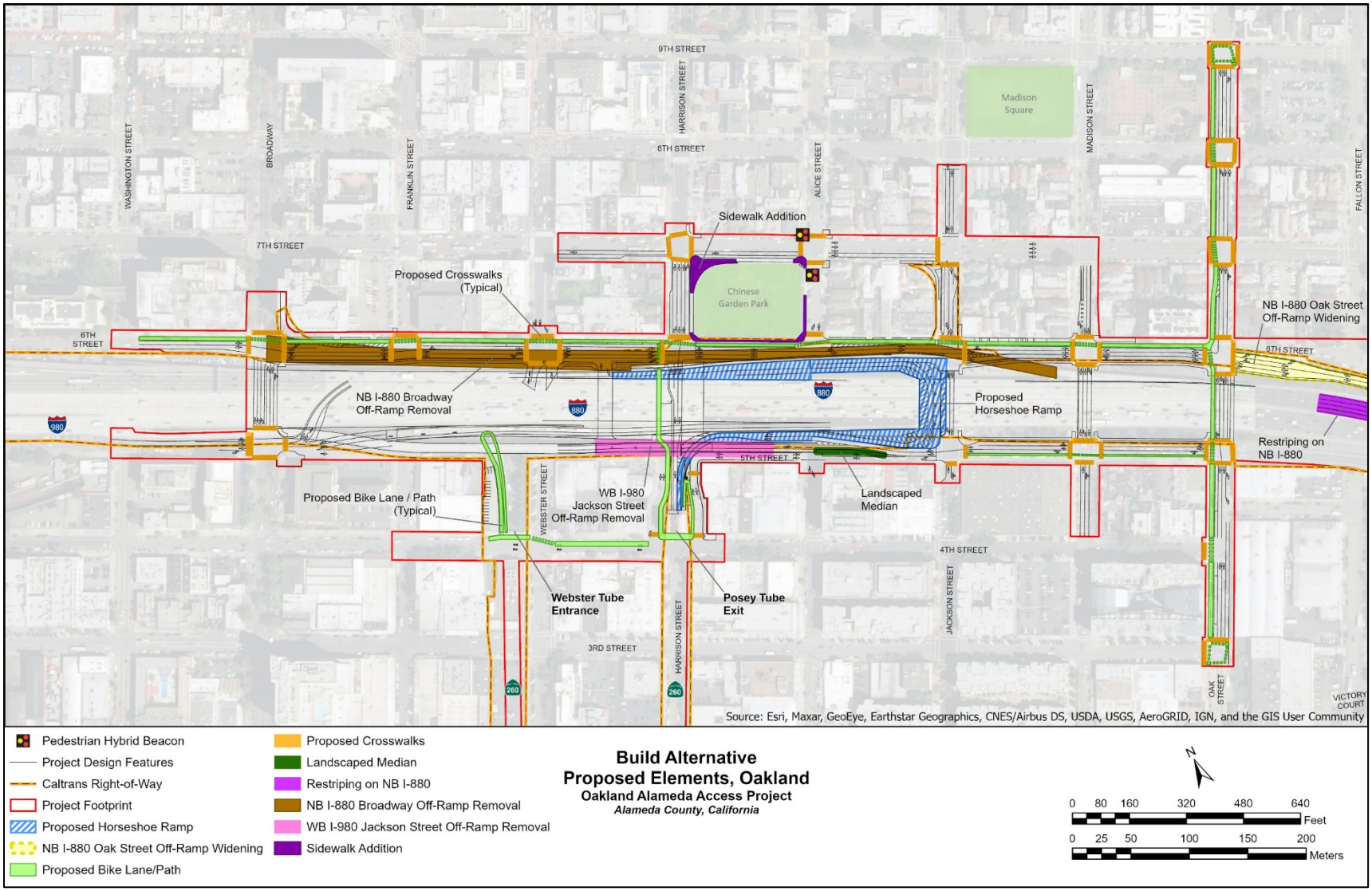

Figure 3. Build Alternative Proposed Elements, Oakland

Source: HNTB, 2020

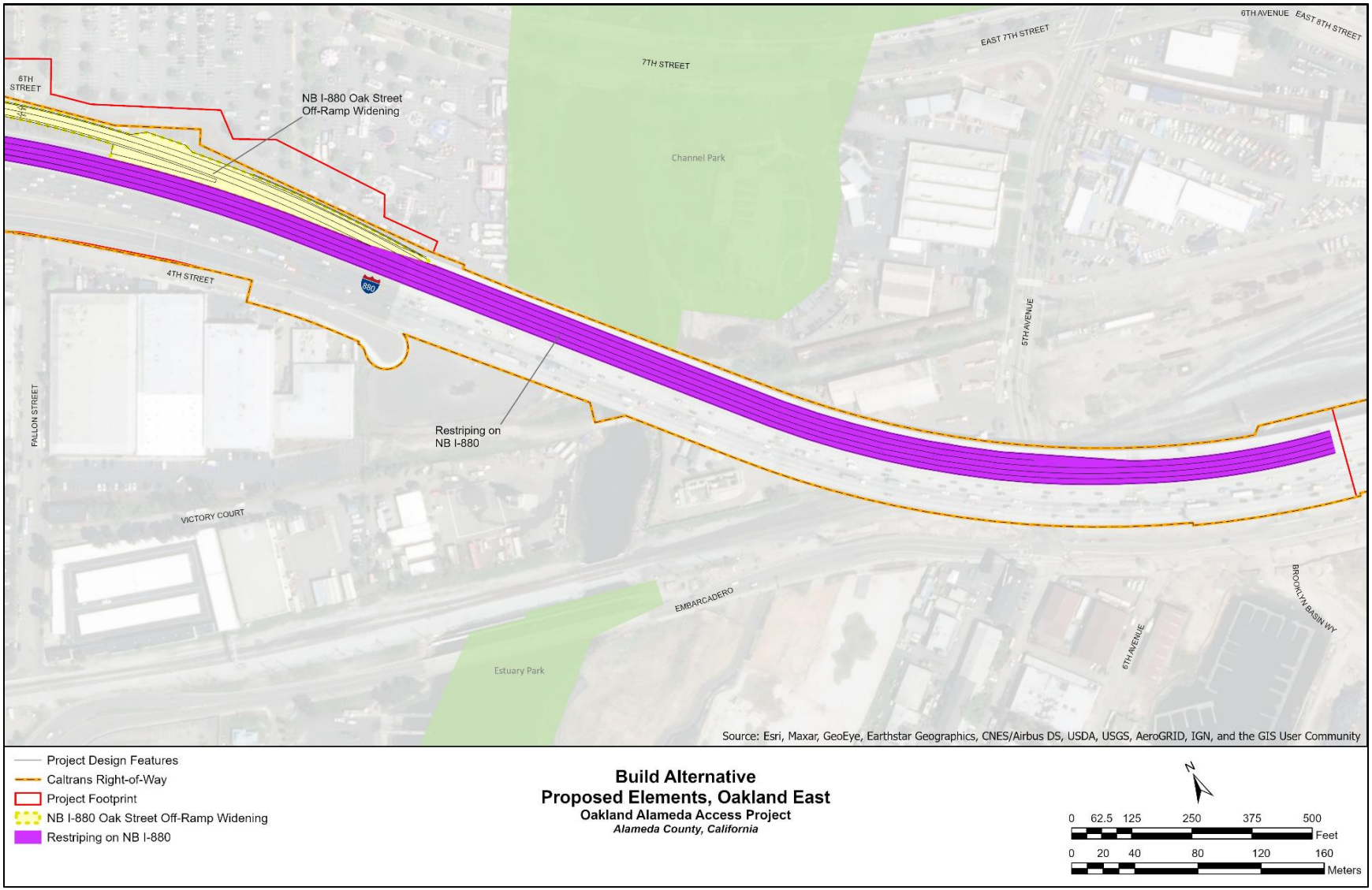

Figure 4. Build Alternative Proposed Elements, Oakland East

Source: HNTB, 2020

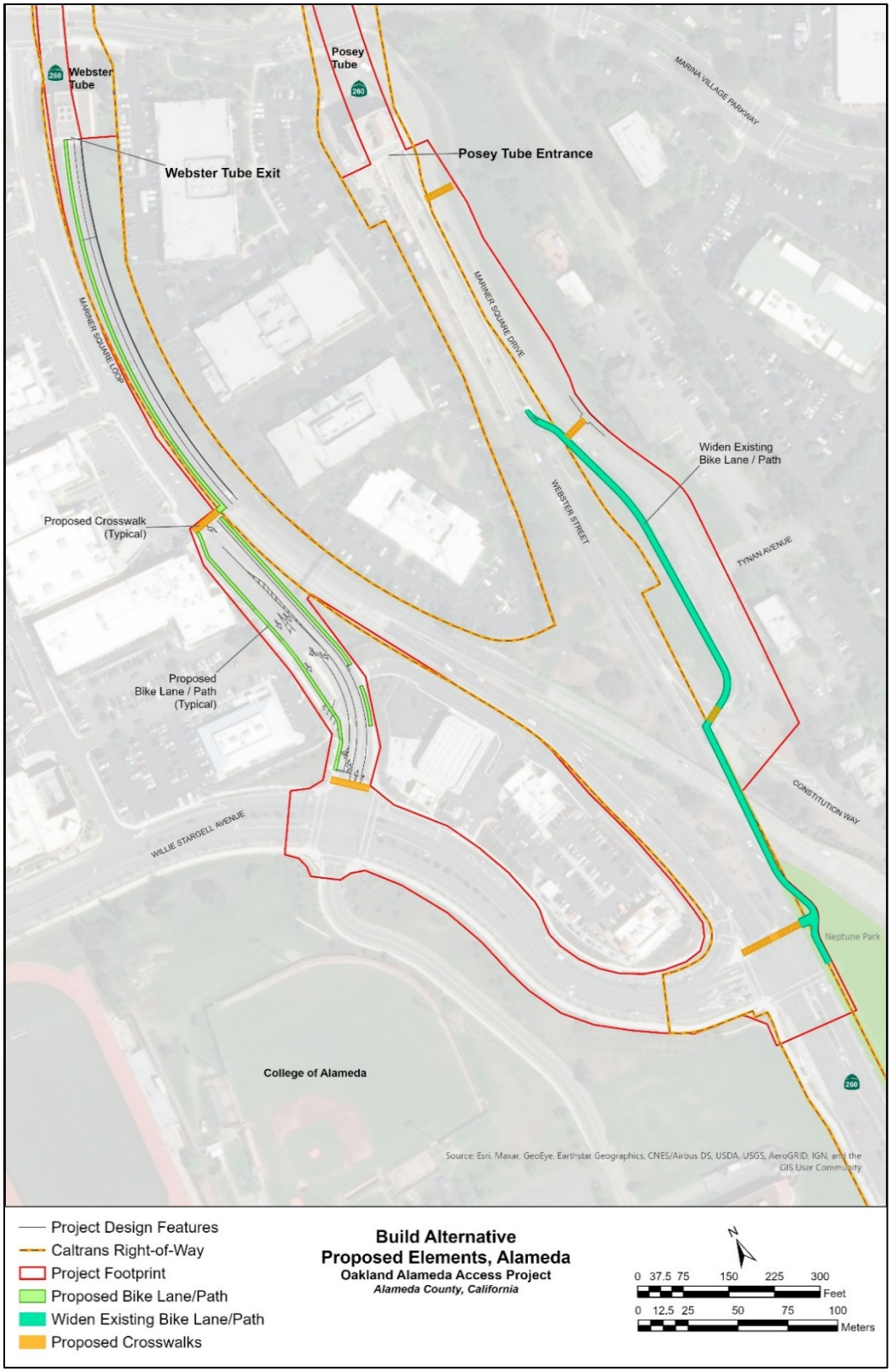

Figure 5. Build Alternative Proposed Elements, Alameda

Source: HNTB, 2020

Table 1. Summary of Existing Traffic Conditions.

Location	Existing (2015) Average Annual Daily Traffic		% Daily Truck Traffic
	Total	Trucks	
I-880			
NB between 23rd Avenue off- and on-ramp	98,219	11,295	11.5
SB between 23rd Avenue/Kennedy Street off- and on-ramp	94,289	11,032	11.7
NB between Union Street on-ramp and 7th Street off-ramp	68,024	8,775	12.9
SB between 7th Street on-ramp and Union Street off-ramp	57,378	6,312	11.0
I-980			
Westbound (WB) between 18th Street off-ramp and 12th Street off-ramp	56,934	1,936	3.4
Eastbound (EB) between 12th Street and 18th Street on-ramps	54,457	1,852	3.4
SR-260			
Webster Tube	28,681	N/A	N/A
Posey Tube	23,111	N/A	N/A
Average Daily VMT			
Existing (2015) VMT	677,973 miles		

Source: DKS Associates, 2015 & 2019

1.4.2 No-Build Alternative

The No-Build (No Action) Alternative consists of those transportation projects that are already planned for construction by or before 2025. Consequently, the No-Build alternative represents future travel conditions in the project study area without the proposed project and is the baseline against which the other alternatives will be assessed to meet NEPA requirements. Under NEPA, the No-Build Alternative can be used as the baseline for comparing environmental impacts; under CEQA, the baseline for environmental impact analysis consists of the existing conditions at the time the Notice of Preparation (NOP) was issued (September 15, 2017). Under the No-Build Alternative, there would be no improvements to bicycle or pedestrian connectivity or safety. Freeway traffic to/from the cities of Oakland and Alameda would continue to use city streets through Oakland and Chinatown, which are areas with a high volume of pedestrian activity. Vehicle-pedestrian or -bicycle conflicts from traffic traveling through city streets would continue. The I-880 viaduct would continue to impede connectivity between downtown Oakland and the Jack London District, and access would not be improved for bicycles and pedestrians traveling between Oakland and Alameda.

Table 2 lists the No-Build AADT for the mainline, the percentage of daily trucks on the mainline and the daily VMT within the project area. Note that the 2040 AADT volumes were interpolated by DKS based on the 2025 and 2045 traffic model forecasts.

Table 2. Summary of Future No-Build Traffic Conditions.

Location	No-Build Average Annual Daily Traffic						
	2025		2040		2045		% Daily Truck Traffic
	AADT (Vehicles)	AADT (Trucks)	AADT (Vehicles)	AADT (Trucks)	AADT (Vehicles)	AADT (Trucks)	
I-880							
NB between 23rd Avenue off- and on-ramp	102,245	11,758	104,889	12,062	105,770	12,164	11.5
SB between 23rd Avenue/Kennedy Street off- and on-ramp	101,033	11,619	104,578	12,026	105,759	12,162	11.7
NB between Union Street on- and 7th Street off-ramp	71,812	9,264	75,849	9,784	77,194	9,958	12.9
SB between 7th Street on- and Union Street off-ramp	61,587	6,775	65,366	7,190	66,626	7,329	11.0
I-980							
WB between 18th Street and 12th Street off-ramps	61,427	2,089	63,412	2,156	64,073	2,178	3.4
EB between 12th Street and 18th Street on-ramp	57,197	1,945	59,319	2,017	60,026	2,041	3.4
SR-260							
Webster Tube	34,742	N/A	40,002	N/A	41,754	N/A	N/A
Posey Tube	28,187	N/A	31,659	N/A	32,816	N/A	N/A
Average Daily VMT							
No-Build VMT	2025		2040		2045		
	758,440 miles		822,125 miles		843,353 miles		

Source: DKS Associates, 2015 & 2019

1.4.3 Build Alternative

Under the Build Alternative, Caltrans and ACTC propose to remove and modify the existing freeway ramps and to modify the Posey Tube exit in Oakland. The Build Alternative would improve access to NB and SB I-880 from the Posey Tube via a right-turn-only lane from the Posey Tube to 5th Street and a new horseshoe connector at Jackson Street below the I-880 viaduct that would connect to the

existing NB I-880/Jackson Street on-ramp. The existing WB I-980/Jackson Street off-ramp would be reconstructed and shifted to the south.

The Webster Tube entrance at 5th Street and Broadway would be shifted to the east to create more space for trucks to make the turn from Broadway into the Webster Tube. A bulb-out would be constructed to extend the sidewalk, reducing the crossing distance and allowing improved visibility of pedestrians on the southeast corner.

The NB I-880/Broadway off-ramp would be removed and the NB I-880/Oak Street off-ramp to 6th Street would be widened. The NB I-880/Oak Street intersection would become the main NB I-880 off-ramp to downtown Oakland and to Alameda. 6th Street would become a one-way through street from Oak Street to Harrison Street and a two-way street from Harrison Street to Broadway.

The proposed project would include the addition of a Class IV two-way cycle track on 6th Street between Oak and Washington streets and on Oak Street between 3rd and 9th streets. Bicycle and pedestrian improvements would be constructed at the Tubes' approaches in Oakland and Alameda, and it the Webster Tube westside walkway would be opened to pedestrians. This would improve connectivity to existing and future planned bicycle paths in the City of Oakland and implement various "complete streets" improvements to create additional opportunities for non-motorized vehicles and pedestrians to cross under I-880 between downtown Oakland, the Jack London District, and Alameda. See Figure 1, Figure 2, Figure 3, Figure 4, and Figure 5 for proposed elements of the Build Alternative.

Additional details on the Build Alternative improvements:

1. Construction of a new horseshoe connector under I-880 at Jackson Street.

Vehicles exiting the Posey Tube would have direct access to NB I-880 via the proposed horseshoe connector. Vehicles heading to NB and SB I-880 would use the right-turn-only lane at the Posey Tube exit to turn onto eastbound 5th Street. Access to a new horseshoe connector would be provided from the left side of 5th Street and would loop below the I-880 viaduct to connect to the existing NB I-880/Jackson Street on-ramp. Traffic heading to SB I-880 would continue eastbound on 5th Street to the SB I-880/Oak Street on-ramp. Figure 3 shows the new horseshoe connector under I-880 at Jackson Street.

Construction of the new right-turn-only lane onto 5th Street would require new retaining walls along the right side of the Posey Tube exit replacing the historic Posey Tube wall. The horseshoe connector would provide a direct route between the Posey Tube and NB I-880/ EB I-980 and SB I-880, substantially improving connectivity and minimizing the need for freeway-bound vehicles to travel through Chinatown to access the ramps. This configuration would also reduce intersection and bicycle-pedestrian conflicts.

Posey Tube traffic heading to Chinatown and downtown Oakland would remain in the left lane and continue onto Harrison Street or turn left onto 6th Street to reach downtown via Broadway. A new left-turn pocket to accommodate the turn onto 6th Street would be constructed requiring removal of a section of the historic Posey Tube western exit wall.

2. **Reconstruction of the existing WB I-980/Jackson Street off-ramp.**

   To provide space for unimpeded movement from the Posey Tube to the new horseshoe connector, the WB I-980/Jackson Street off-ramp would be realigned to the south. Figure 3 shows the relocated Jackson Street off-ramp. The realigned off-ramp would touch down at-grade on 5th Street at the Alice Street intersection. Off-ramp and 5th Street traffic would continue to be separated by a landscaped median past the condominium building at 428 Alice Street. 5th Street would be converted to a two-way street to accommodate condominium residents allowing vehicles to turn left or right onto 5th Street.

3. **Removal of the existing NB I-880/Broadway off-ramp viaduct structure including the bridge deck and supporting columns.**

   Removing the NB I-880/Broadway off-ramp structure would provide the space for complete street improvements on 6th Street. It would also restore an element of the City of Oakland's street grid system by providing a continuous 6th Street between Oak Street and Broadway. Figure 3 Shows where the existing NB I-880/Broadway off-ramp would be removed. This would provide for a more efficient street network, and it would allow traffic to be more evenly distributed on Oakland city streets. Also, it would improve traffic operations at the Broadway/6th Street and Broadway/5th Street intersections by eliminating the stream of traffic exiting the Broadway off-ramp and heading to the Webster Tube entrance. Instead, this traffic would use 6th Street and turn left at Webster Street to access the Webster Tube.

4. **Widening of the NB I-880/Oak Street off-ramp.**

   The existing Oak Street off-ramp would be widened from a one- to a two-lane exit by restriping the NB I-880 mainline and reconfiguring the ramp terminus. Figure 4 shows the proposed widening at the NB I-880/Oak Street off-ramp and restriping on NB I-880. At the Oak Street intersection, the ramp would be further widened from one left-turn-only pocket lane, one through and left-turn lane, and one through and right-turn lane to provide one left-turn-only (SB) pocket lane, one through westbound (WB) lane, one through (WB) and right-turn (NB) lane, and one right-turn-only (NB) lane. Two new retaining walls would be constructed along the widened ramp's new edge of the shoulder. In advance of the Oak Street exit, NB I-880 would be restriped from four to five lanes, including a standard 1,400-foot-long auxiliary lane to accommodate the additional traffic resulting from the Broadway off-ramp removal.

5. **Modification of 5th Street/Broadway access to the Webster Tube.**

   The 5th Street/Broadway entrance to the Webster Tube would be moved slightly east (refer to Figure 3. Also, the 5th Street crosswalk on the east side of Broadway would be shifted east and considerably shortened, and the signal phasing would be modified to include a pedestrian-led signal phase for eastbound pedestrian traffic. This would improve safety by giving pedestrians priority over turning traffic. Also, this would improve truck access to the Webster Tube and minimize conflicts with other vehicular traffic.

6. Construction of a new through 6th Street connecting Oak Street to Broadway.

Improvements to 6th Street would be accomplished by turning the street into a one-way street in the westbound direction from Oak Street to Harrison Street and a two-way street from Harrison Street to Broadway (refer to Figure 3). The lanes would be a minimum of 11 feet wide. There would be a minimum of two through lanes with additional turn pockets at intersections in the westbound direction. There would be one lane in the eastbound direction from Harrison Street to Broadway.

A new sidewalk would be constructed along the south side between Broadway and Oak Street. Segments of the existing sidewalk along the north side between Oak Street and Broadway would be reconstructed to a minimum of 10 feet wide between Harrison and Alice streets to provide continuity for pedestrians. A continuous Class IV two-way cycle track would also be provided between Oak and Washington streets. Parking spaces would be provided along portions of this roadway.

7. Construction of a two-way bicycle/pedestrian path and walkway from Webster Street in Alameda to 6th Street in Oakland through the Posey Tube and from 4th Street in Oakland through the Webster Tube to Mariner Square Loop in Alameda.

The path would begin at Webster Street and Constitution Way in Alameda, would continue through the Posey Tube on the existing eastside walkway, and would exit the Tube via a new ramp with a hairpin turn at 5th Street. Figure 5 shows the proposed bicycle and pedestrian improvements. The path in Alameda connecting to the Posey Tube would be realigned and widened. The path in Oakland would wrap around the back of the Portal building on 4th Street and continue onto Harrison Street. It would continue onto a Class I two-way bicycle/pedestrian path under I-880 just west of Harrison Street and connect to the Class IV two-way cycle track on 6th Street between Oak and Washington streets. The new bicycle and pedestrian ramp exit from the Posey Tube would require removal of the existing historic Posey Tube staircase to provide street level ADA-compliant access from the Tube.

The proposed project would improve access between Oakland and Alameda by opening the Webster Tube maintenance walkway to bicycle and pedestrian travel. The walkway would connect to the proposed path under I-880 at 4th Street (near the Posey Tube Portal building).It would continue onto 4th Street to Webster Street, and it would turn north through the existing parking lot on the west side of the Webster Tube entrance before making a hairpin turn to connect to the westside walkway inside the Tube.

On the Alameda side, the walkway would connect to existing bicycle and pedestrian facilities at Mariner Square Loop and Willie Stargell Avenue. The existing sidewalk within Neptune Park would be widened to match the proposed sidewalk to the north. Improvements inside the Tube would include widening the existing walkway, upgrading the existing railings, and relocating call boxes and fire extinguishers.

8. Modification of 5th, 7th, Madison, Jackson, Harrison, Webster, Oak, and Franklin streets.

The street modifications (refer to Figure 3) would include replacing the dual right turns at the 7th Street/Harrison Street intersection with a single right-turn-only lane and removing the free right turn (where the island allows cars to turn right without stopping) at the 7th Street/ Jackson Street intersection. These would no longer be needed because Alameda traffic bound for NB/SB I-880 would be better served by the right turns from the Posey Tube to 5th Street. With the removal of the free right turns, vehicles would observe the traffic signal before turning right. With the curb extension proposed at this location, the pedestrian crossing distance would be shortened, which would decrease vehicle-pedestrian conflicts. In addition, a PHB beacon would be installed on 7th Street across the street from the Chinese Garden Park. There would also be restrictive right-turn movements to reduce bicycle and vehicle conflicts at the 5th/Broadway, 6th/Webster, 6th/Harrison, 6th/Jackson, 6th/Madison, 5th/Jackson, 8th/Oak, and 7th/Oak intersections.

A continuous sidewalk would be installed along the perimeter of Chinese Garden Park. Additional improvements, including landscaping modifications, could occur adjacent to the southern boundary of the park and would be coordinated through the City of Oakland.

Jackson Street between 5th and 6th streets would be converted from two- to one-way travel lanes in the northbound direction, and it would provide an emergency-only access lane.

Table 3 lists the No-Build AADT for the mainline, the percentage of daily trucks on the mainline and the daily VMT within the project area. 2040 AADT volumes were interpolated by DKS.

Table 3. Summary of Build Traffic Conditions.

Location	Build Average Annual Daily Traffic						
	AADT (Vehicles)	AADT (Trucks)	AADT (Vehicles)	AADT (Trucks)	AADT (Vehicles)	AADT (Trucks)	% Daily Truck Traffic
	2025		2040		2045		
I-880							
NB between 23rd Avenue off- and on-ramps	102,459	11,783	105,211	12,099	106,128	12,205	11.5
SB between 23rd Avenue/Kennedy Street off- and on-ramps	101,101	11,627	104,652	12,035	105,835	12,171	11.5
NB between Union Street on-ramp and 7th Street off-ramp	72,208	9,315	75,828	9,782	77,034	9,937	12.9
SB between 7th Street on-ramp and Union Street off-ramp	61,625	6,779	65,441	7,199	66,713	7,338	11.0
I-980							
WB between 18th Street and 12th Street off-ramps	61,625	2,081	65,441	2,147	63,797	2,169	3.4
EB between 12th Street and 18th Street on-ramps	61,195	1,942	63,147	2,031	60,620	2,061	3.4
S-R-260							
Webster Tube	35,346	N/A	40,583	N/A	42,328	N/A	N/A
Posey Tube	28,625	N/A	32,048	N/A	33,189	N/A	N/A
Average Daily VMT							
Build VMT	2025		2040		2045		
	757,430 miles		821,198 miles		842,454 miles		

Source: DKS Associates, 2015 & 2019

1.4.4 Comparison of Existing/Baseline and Build Alternative

Under CEQA, existing conditions (CEQA baseline) are compared to future Build scenarios. The difference between future No-Build and Build show how the Build Alternative will affect traffic conditions within the project study area. Table 4 details the design features and traffic conditions for the baseline year (2015), opening year (2025), RTP horizon year 2040, and design year 2045 for the No-Build and the Build Alternative. The Build Alternative average daily VMT for all future years was compared to the existing/baseline average daily VMT.

Table 4. Summary of Long-Term Operational Impacts on Traffic Conditions of Existing, No-Build, and Build Alternatives.

Scenario/ Analysis Year	Location	Design Features and Operational Impacts on Traffic Conditions	Daily VMT	Change in VMT from Baseline
Baseline (Existing) 2015	Oakland/ Alameda	This is the baseline year. The traffic conditions from the No-Build and Build Alternative are compared to the baseline conditions.	677,973 miles	N/A
No-Build (Opening Year) 2025		No OAAP improvements would be constructed. The traffic conditions along I-880, SR-260 (Posey and Webster Tubes), and between Oakland and Alameda would not change.	758,440 miles	+80,467 miles
Build Alternative (Opening Year) 2025		Under the Build Alternative, two major changes would occur: the construction of a new horseshoe ramp that would connect to the existing northbound I-880/Jackson Street on-ramp from the Posey Tube and the removal of the northbound Broadway off-ramp and re-construction of a through portion of 6th Street for multi-modal access. Compared to the No-Build, VMT would decrease slightly under the Build Alternative. VMT would increase compared to the existing year. However, the Build Alternative is designed to alleviate the traffic congestion and improve connectivity between Oakland and Alameda for vehicular and multimodal travel	757,430 miles	+79,457 miles
No-Build (RTP Horizon Year) 2040		No OAAP Improvements.	822,125 miles	+144,152 miles
Build Alternative (RTP Horizon Year) 2040		The design features would have been constructed and VMT in the area would continue to increase compared to the existing year.	821,198 miles	+143,225 miles
No-Build (Design Year) 2045		No OAAP Improvements.	843,353 miles	+165,380 miles
Build Alternative (Design Year) 2045		The design features would have been constructed and VMT in the area would continue to increase compared to the existing year.	842,454 miles	+164,481 miles

Source: DKS Associates, 2015 & 2019 and HNTB, 2020

1.5 Construction Activities and Schedule

Construction activities would last approximately 36 months. Construction is expected to begin in mid-2023. There would be two major stages with several phases in each. The first stage would include construction of the Jackson Street horseshoe and associated improvements on the southside of I-880 as well as the widening of the walkway in the Webster Tube. The second stage would include widening of the NB I-880/Oak Street off-ramp, removal of the Broadway NB I-880 off-ramp, and construct 6th Street improvements with associated elements on the northside of I-880.

Construction equipment would be staged in areas underneath I-880 that are owned by Caltrans and currently leased as parking lots. Construction activities would be completed during the day; however, nighttime work would be needed to minimize impacts to traffic, especially in the Webster Tube. Caltrans would continue to coordinate with the cities of Oakland and Alameda to develop and implement a Transportation Management Plan (TMP) and other measures to minimize construction impacts on the human and natural environment. As part of the TMP, a shuttle may be needed to transport bicyclists and pedestrians between Oakland and Alameda during construction.

The proposed project contains a number of standardized project measures which are employed on most, if not all, Caltrans projects. They were not developed in response to any specific environmental impacts resulting from the proposed project.

Closeout activities are anticipated to end in late 2025. Table 5 lists the construction stages and phases that are anticipated. Note that it was assumed that there would be 20 workdays per month. Although construction is planned to last approximately three years, no construction activities are anticipated to last more than five years at any individual site. Emissions from construction-related activities are thus considered temporary as defined in 40 Code of Federal Regulations (CFR) 93.123(C)(5); and are not required to be included in any PM hot-spot analyses to meet conformity requirements.

Table 5. Construction Activities and Schedule.

Construction Phase	Description/List of Activities		Begin Date	Completion Date	Duration
Stage 1 – South of I-880					
1A (Construction Webster Tube Bicycle/ Pedestrian Walkway)	1Aa	Mobilization, clean and grub	1/2/2023	2/24/2023	2 months
	1Ab	Construct 5th Street entrance to Webster Tube	2/27/2023	4/21/2023	2 months
	1Ad	Construct Webster Tube bicycle/pedestrian walkway	2/27/2023	8/11/2023	6 months
	1Ae	Restripe Webster Tube	7/17/2023	8/11/2023	1 months
1B (Construct Horseshoe)	1Ba	Construction of retaining wall (RW) 4	1/30/2023	4/21/2023	3 months
	1Bb	Close Broadway to Jackson off-ramp connection	4/24/2023	8/11/2023	4 months
		Construction of RWs 2 and 3			
	1Bc	Construct Horseshoe and re-construct Jackson Street off-=ramp	7/17/2023	2/23/2024	1 month
		Remove Jackson Street off-ramp.			2 months
		Partial construction of RWs 1, 8r, 8L, and Jackson Street off-ramp abutment			4 months
	1Bd	Re-construct Jackson off-ramp.	12/4/2023	3/22/2024	6 months
		Complete Posey Tube connection to the horseshoe.			
		Complete RWs 1 and 6			4 months
1C	Construct 5th Street curb/gutter, sidewalk and pavement		2/26/2024	3/22/2024	1 months
1D (Posey Tube/ Harrison Street)	1Da	Restripe Posey Tube	2/26/2024	3/22/2024	1 month
	1Db	Overhead guide signs	3/25/2024	4/19/2024	1 month
	1Dc	Construct RW 9, pavement, and stripe Harrison Street	4/22/2024	6/14/2024	2 months
Stage 2 – North of I-880					
2A (Widen Oak Street Off-Ramp and Prepare 6th Street)	2Aa	Construct RWs 7 and 10 at Oak Street off-ramp	2/26/2024	12/27/2024	5 months
	2Ab	Construct auxiliary lane	7/15/2024	9/6/2024	2 months
	2Ac	Close Jackson Street on-ramp to Broadway off-ramp connection	9/9/2024	12/27/2024	4 months
		Construct RW 5 at Jackson Street on-ramp	9/9/2024	12/27/2024	

Construction Phase	Description/List of Activities		Begin Date	Completion Date	Duration
		Remove raised gore and curb at on-ramp entrance. Restripe entrance ramp	12/2/2024	12/27/2024	1 month
2B	Remove Broadway off-ramp structure and approach		9/9/2024	11/29/2024	3 months
2C (Construct 6th Street)	2Ca	Construct 6th Street curb/gutter, sidewalk, fences	12/2/2024	5/16/2025	6 months
	2Cb	Construct 6th Street from Oak Street to Jackson Street	1/27/2025	3/21/2025	2 months
	2Cc	Construct 6th Street between Jackson and Harrison streets	3/24/2025	5/16/2025	2 months
	2Cd	Construct 6th Street between Harrison and Broadway streets	5/19/2025	7/11/2025	2 months
	2Ce	Mill and overlay 6th Street between Broadway and Washington Street	6/16/2025	7/11/2025	1 month
2D (Construct Bicycle Path and Cycle Tracks on Local Streets)	2Da	Construct bicycle paths and cycle tracks, local street paving	7/14/2025	9/5/2025	2 months
	2Db	Reconstruct Harrison/7th and 7th/Jackson intersections	9/8/2025	10/31/2025	2 months
	2Dc	Traffic signal installation and modification	9/8/2025	10/31/2025	2 months
2E	Landscaping		11/3/2025	1/23/2025	3 months

Source: HNTB, 2020

2. Regulatory Setting

Many statutes, regulations, plans, and policies have been adopted at the federal, state, and local levels to address air quality issues related to transportation and other sources. The proposed project is subject to air quality regulations at each of these levels. This section introduces the pollutants governed by these regulations and describes the regulation and policies that are relevant to the proposed project.

2.1 Pollutant-Specific Overview

Air pollutants are governed by multiple federal and state standards to regulate and mitigate health impacts. At the federal level, there are six criteria pollutants for which National Ambient Air Quality Standards (NAAQS) have been established: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter ($PM_{2.5}$ and PM_{10}), and sulfur dioxide (SO_2). The U.S. EPA has also identified nine priority mobile source air toxics (MSATs): 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter (POM).

(https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/). In California, sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride are also regulated.

2.1.1 Criteria Pollutants

The Clean Air Act requires the U.S. EPA to set NAAQS for six criteria air contaminants: O_3, CO, NO_2, Pb, SO_2. It also permits states to adopt additional or more protective air quality standards if needed. California has set standards for certain pollutants. Table 6 documents the current air quality standards and summarizes the sources and health effects of the criteria pollutants and pollutants regulated in the state of California.

Table 6. State and Federal Criteria Air Pollutant Standards, Effects, and Sources.

Pollutant	Averaging Time	State[1] Standard	Federal[2] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Ozone (O_3)[3]	1 hour	0.09 ppm[4]	---	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NOx) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.	Nonattainment	---
	8 hours	0.070 ppm	0.070 ppm (4^{th} highest in 3 years)			Nonattainment	Nonattainment (Marginal)
Carbon Monoxide (CO)[5]	1 hour	20 ppm	35 ppm	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Attainment	Attainment/ Maintenance
	8 hours	9.0 ppm	9 ppm			Attainment	Attainment/ Maintenance
	8 hours (Lake Tahoe)	6 ppm	---			Attainment	---
Respirable Particulate Matter (PM_{10})[6]	24 hours	50 µg/m^3 [7]	150 µg/m^3 (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic & other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke & vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Nonattainment	Unclassifiable/ Attainment
	Annual	20 µg/m^3	---[6]			Nonattainment	---
Fine Particulate Matter ($PM_{2.5}$)[8]	24 hours	---	35 µg/m^3 [6]	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size range. Many toxic & other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants including NOx, sulfur oxides (SOx), ammonia, and ROG.	---	Nonattainment (Moderate)
	Annual	12 µg/m^3	12.0 µg/m^3			Nonattainment	Nonattainment (Moderate)

Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	0.100 ppm[1]	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain & nitrate contamination of stormwater. Part of the "NOx" group of ozone precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.	Attainment	Unclassifiable/ Attainment
	Annual	0.030 ppm	0.053 ppm			Attainment	Unclassifiable/ Attainment
Sulfur Dioxide (SO_2)[2]	1 hour	0.25 ppm	0.075 ppm (99^{th} percentile over 3 years)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	Attainment	Unclassifiable/ Attainment
	3 hours	---	0.5 ppm[3]			---	Unclassifiable/ Attainment
	24 hours	0.04 ppm	0.14 ppm (for certain areas)			Attainment	Unclassifiable/ Attainment
	Annual	---	0.030 ppm (for certain areas)			---	Unclassifiable/ Attainment
Lead (Pb)[4]	Monthly	1.5 µg/m^3	---	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline use may exist in soils along major roads.	Attainment	---
	Calendar Quarter	---	1.5 µg/m^3 (for certain areas)			---	Unclassifiable/ Attainment
	Rolling 3-month average	---	0.15 µg/m^3 [5]			---	Unclassifiable/ Attainment
Sulfates	24 hours	25 µg/m^3	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Attainment	N/A
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	Unclassified	N/A
Visibility Reducing Particles (VRP)[6]	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	---	Reduces visibility. Produces haze. NOTE: not directly related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas. However, some issues and measurement methods are similar.	See particulate matter above. May be related more to aerosols than to solid particles.	Unclassified	N/A

Adapted from the California ARB Air Quality Standards chart (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf).

Greenhouse Gases and Climate Change: Greenhouse gases do not have concentration standards for that purpose. Conformity requirements do not apply to greenhouse gases.

[1] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations

[2] Federal standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[3] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. Transportation conformity applies in newly designated nonattainment areas for the 2015 national 8-hour ozone primary and secondary standards on and after August 4th, 2019 (see Transportation Conformity Guidance for 2015 Ozone NAAQS Nonattainment Areas).

[4] ppm = parts per million

[5] Transportation conformity requirements for CO no longer apply after June 1, 2018 for the following California Carbon Monoxide Maintenance Areas (see U.S. EPA CO Maintenance Letter).

[6] On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12 µg/m3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[7] $\mu g/m^3$ = micrograms per cubic meter

[8] The 65 $\mu g/m^3$ $PM_{2.5}$ (24-hr) NAAQS was not revoked when the 35 $\mu g/m^3$ NAAQS was promulgated in 2006. The 15 $\mu g/m^3$ annual $PM_{2.5}$ standard was not revoked when the 12 $\mu g/m^3$ standard was promulgated in 2012. Therefore, for areas designated nonattainment or nonattainment/maintenance for the 1997 and or 2006 $PM_{2.5}$ NAAQS, conformity requirements still apply until the NAAQS are fully revoked.

[9] Final 1-hour NO_2 NAAQS published in the Federal Register on 2/9/2010, effective 3/9/2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause re-designation to nonattainment in some areas after 2016.

[10] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[11] Secondary standard, the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant rather than health. Conformity and environmental analysis address both primary and secondary NAAQS.

[12] The ARB has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and U.S. EPA have identified lead and various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There are no exposure criteria for adverse health effect due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

[13] Lead NAAQS are not considered in Transportation Conformity analysis.

[14] In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

2.1.2 Mobile Source Air Toxics

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. EPA regulate 188 air toxics, also known as hazardous air pollutants. The U.S. EPA has assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are part of U.S. EPA's Integrated Risk Information System (IRIS) (https://www.epa.gov/iris). In addition, the U.S. EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-hazard contributors from the 2011 National Air Toxics Assessment (NATA) (https://www.epa.gov/national-air-toxics-assessment). These are *1,3-butadiene, acetaldehyde, acrolein, benzene, diesel PM, ethylbenzene, formaldehyde, naphthalene, and POM*. While the Federal Highway Administration (FHWA) considers these the priority MSATs, the list is subject to change and may be adjusted in consideration of future U.S. EPA rules.

The 2007 U.S. EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using U.S. 'PA's MOVES2014a model, even if vehicle activity (vehicle-miles traveled, VMT) increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emission rate for the priority MSATs is projected for the same time period, as shown in Figure 6.

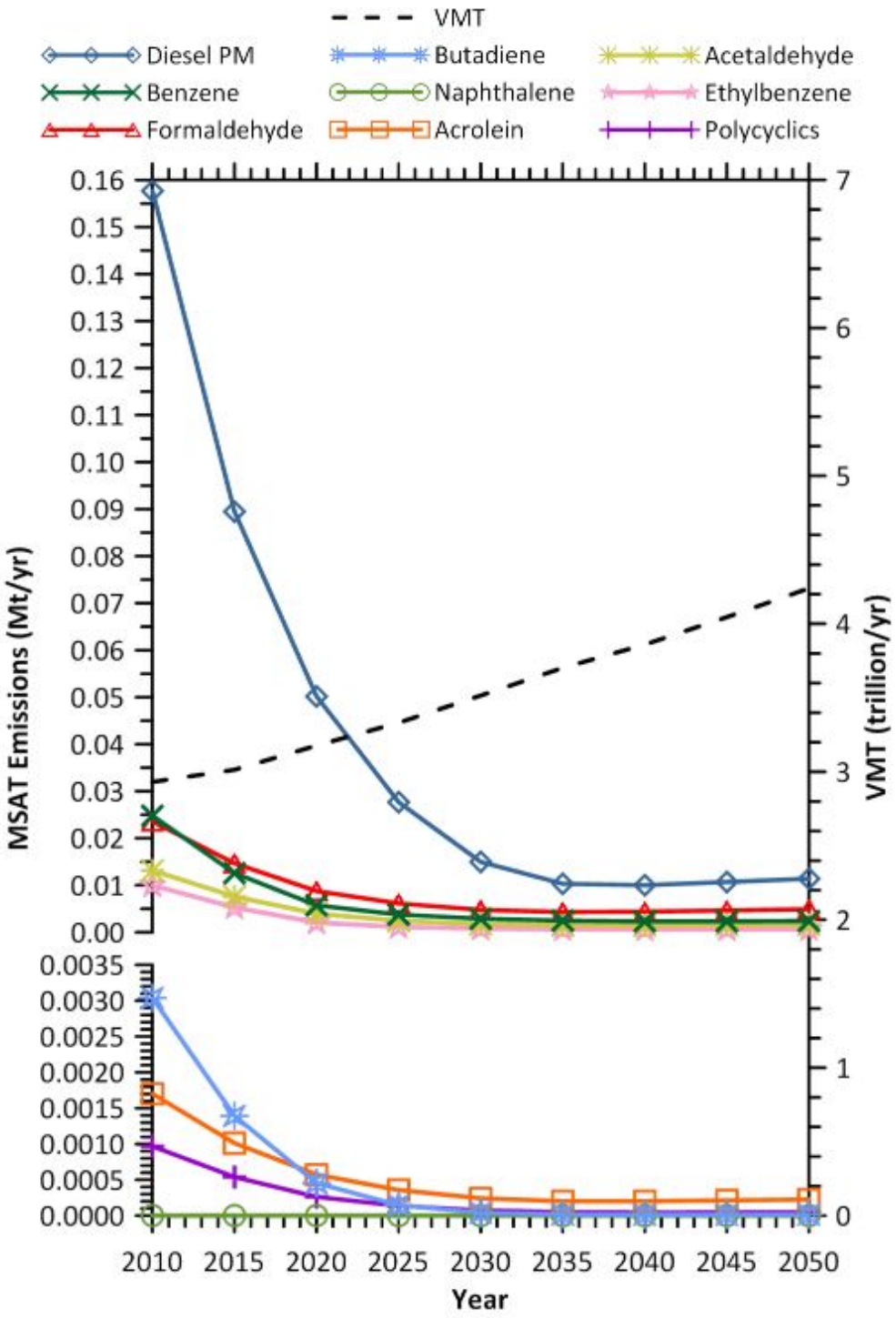

Figure 6. Projected National MSAT Trends, 2010-2050.

Source: https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/

2.1.3 Greenhouse Gases

The term greenhouse gas (GHG) is used to describe atmospheric gases that absorb solar radiation and subsequently emit radiation in the thermal infrared region of the energy spectrum, trapping heat in the Earth's atmosphere. These gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and water vapor, among others. A growing body of research attributes long-term changes in temperature, precipitation, and other elements of Earth's climate to large increases in GHG emissions since the mid-nineteenth century, particularly from human activity related to fossil fuel combustion. Anthropogenic GHG emissions of particular interest include CO_2, CH_4, N_2O, and fluorinated gases.

GHGs differ in how much heat each traps in the atmosphere (global warming potential, or GWP). CO_2 is the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called "carbon dioxide equivalent" (CO_2e). The global warming potential of CO_2 is assigned a value of 1, and the warming potential of other gases is assessed as multiples of CO_2. For example, the 2007 International Panel on Climate Change *Fourth Assessment Report* calculates the GWP of CH_4 as 25 and the GWP of N_2O as 298, over a 100-year time horizon.[1] Generally, estimates of all GHGs are summed to obtain total emissions for a project or given time period, usually expressed in metric tons ($MTCO_2e$), or million metric tons ($MMTCO_2e$).[2]

As evidence has mounted for the relationship of climate changes to rising GHGs, federal and state governments have established numerous policies and goals targeted to improving energy efficiency and fuel economy and reducing GHG emissions. Nationally, electricity generation is the largest source of GHG emissions, followed by transportation. In California, however, transportation is the largest contributor to GHGs.

At the federal level, the National Environmental Policy Act (NEPA) (42 United States Code [USC] Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level. However, the U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) issued the first corporate fuel economy standards in 2010, requiring cars and light-duty vehicles to achieve certain fuel economy targets by 2016, with the intention of gradually increasing the targets and the range of vehicles to which they would apply.

California has enacted aggressive GHG reduction targets, starting with Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 is California's signature climate change legislation. It set the goal of reducing statewide GHG emissions to 1990 levels by 2020 and required the California Air Resource Board (CARB) to develop a Scoping Plan that describes the approach

[1] See Table 2.14 in IPCC Fourth Assessment Report: Climate Change 2007 (AR4): The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA. http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter2.pdf.

[2] See http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/CEQA-Guidance-Tools.

California will take to achieve that goal and to update it every 5 years. In 2015, Governor Jerry Brown enhanced the overall adaptation planning effort with Executive Order (EO) B-30-15, establishing an interim GHG reduction goal of 40 percent below 1990 levels by 2030, and requiring state agencies to factor climate change into all planning and investment decisions.

Senate Bill (SB) 375, the Sustainable Communities and Climate Protection Act of 2008, furthered state climate action goals by mandating coordinated transportation and land use planning through preparation of Sustainable Communities Strategies (SCS). The CARB sets GHG emissions reduction targets for passenger vehicles for each region. Each regional metropolitan planning organization must include in its RTP an SCS proposing actions toward achieving the regional emissions reduction targets.[3]

With these and other State Senate and Assembly bills and executive orders, California advances an innovative and proactive approach to dealing with GHG emissions and climate change.

2.1.4 Asbestos

Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a toxic air contaminant by the ARB in 1986. All types of asbestos are hazardous and may cause lung disease and cancer.

Asbestos can be released from serpentine and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos-bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed.

Serpentine may contain chrysotile asbestos, especially near fault zones. Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos can also be associated with other rock types in California, though much less frequently than serpentinite and/or ultramafic rock. Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in counties of the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. The California Department of Conservation, Division of Mines and Geology has developed a map showing the general location of ultramafic rock in the state (https://ww3.arb.ca.gov/toxics/asbestos/ofr_2000-019.pdf).

[3] https://www.arb.ca.gov/cc/sb375/sb375.htm

2.2 Regulations

2.2.1 Federal and California Clean Air Act

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws and related regulations by the U.S. EPA and the ARB set standards for the concentration of pollutants in the air. At the federal level, these standards are called NAAQS. NAAQS and state ambient air quality standards have been established for six criteria pollutants that have been linked to potential health concerns: CO, NO_2, O_3, PM, which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), and SO_2. In addition, national and state standards exist for Pb, and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air pollutants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

2.2.2 Transportation Conformity

The conformity requirement is based on Federal Clean Air Act Sect© 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional—or, planning and programming level—and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. The U.S. EPA regulations at 40 CFR 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for CO, NO_2, O_3, PM_{10} and $PM_{2.5}$, and in some areas (although not in California), SO_2. California has attainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for Pb; however, Pb is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP), and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the Clean Air Act and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), FHWA, and Federal

Transit Administration (FTA), make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and the TIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP and the project has a design concept and scope[4] that has not changed significantly from those in the RTP and TIP. If the design concept and scope have changed substantially from that used in the RTP Conformity analysis, RTP and TIP amendments may be needed. Project-level conformity also needs to demonstrate that project analyses have used the latest planning assumptions and U.S. EPA-approved emissions models; the project complies with any control measures in the SIP in PM areas. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.2.3 National Environmental Policy Act (NEPA)

NEPA requires that policies and regulations administered by the federal government are consistent with its environmental protection goals. NEPA also requires that federal agencies use an interdisciplinary approach to planning and decision-making for any actions that could impact the environment. It requires environmental review of federal actions including the creation of Environmental Documents (EDs) that describe the environmental effects of a proposed project and its alternatives (including a section on air quality impacts).

2.2.4 California Environmental Quality Act (CEQA)

CEQA[5] is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. CEQA documents address CCAA requirements for transportation projects. While state standards are often more strict than federal standards, the state has no conformity process.

2.2.5 Local

The U.S. EPA has delegated responsibility to air districts to establish local rules to protect air quality. Caltrans' Standard Specification 14-9.02 (Caltrans, 2015) requires compliance with all applicable air quality laws and regulations including local and air district ordinances and rules.

[4] "Design concept" means the type of facility that is proposed, such as a freeway or arterial highway. "Design scope" refers to those aspects of the project that would clearly affect capacity and thus any regional emissions analysis, such as the number of lanes and the length of the project.

[5] For general information about CEQA, see: http://resources.ca.gov/ceqa/more/faq.html.

Plan Bay Area

SB 375 requires the Bay Area regional planning agencies to include an SCS in their regional transportation plan updates to describe how the GHG emissions reductions set by ARB would be met through land-use and transportation planning. In 2010, the MTC approved a set of "*Bay Area Principles for Establishing Regional Greenhouse Gas Reduction Targets*" (Resolution 3970) that proposed per-capita GHG emission reductions of 7 percent from 1990 by 2020 and 15 percent by 2035. Subsequently, MTC, along with the Association of Bay Area Governments (ABAG), developed SCS plans to meet state targets for reducing greenhouse gas emissions from light-duty vehicles. *Plan Bay Area 2040* is the most recent update to its RTP, which includes implementation of transportation projects and Climate Initiatives Program that, together, would result in emissions from light-duty vehicles that meet the region's GHG reduction targets, per SB 375.[6] The proposed project for the OAAP, being part of the conforming 2019 TIP, is part of the *Plan Bay Area 2040* transportation network.

The U.S. EPA has delegated responsibility to air districts to establish local rules to protect air quality. Caltrans' Standard Specification 14-9.02 (Caltrans, 2015) requires compliance with all applicable air quality laws and regulations including local and air district ordinances and rules.

Bay Area 2017 Clean Air Plan

The *Bay Area 2017 Clean Air Plan* (CAP) is a multi-pollutant plan prepared by the BAAQMD that addresses GHG emissions along with other air emissions in the San Francisco Bay Area Air Basin. One of the key objectives in the CAP is climate protection. The 2017 CAP includes emission control measures in five categories: Stationary Source Measures, Mobile Source Measures, Transportation Control Measures (TCMs), Land Use and Local Impact Measures, and Energy and Climate Measures. Consistency of a project with current control measures is one measure of its consistency with the CAP. The current CAP also includes performance objectives, consistent with the State's climate protection goals under SB 32, designed to reduce emissions of GHGs to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

BAAQMD Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in the updated CEQA Guidelines (updated 2011 and recently in May 2017). The significance thresholds identified by BAAQMD are summarized in Table 7 and are for informational purposes only.

[6] MTC and ABAG. 2017. *Plan Bay Area 2040 Draft EIR SCH# 2016052041*. April.

Table 7. Air Quality Significance Thresholds.

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs/day)	**Average Daily Emissions (lbs/day)**	**Annual Average Emissions (tons/year)**
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Greenhouse Gas Emissions			
GHG Annual Emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) 660 metric tons annually or 2.8 metric tons per capita (for 2030)*		
Note: BAAQMD does not have a recommended post-2020 GHG threshold; therefore, the threshold listed is the original threshold adjusted downward by 40% to achieve 2030 Statewide GHG reduction goals.			

Source: BAAQMD, 2017

Assembly Bill 617 – Community Health Protection Program

Assembly Bill 617 (AB 617) requires local air districts to increase their focus on local air pollution in overburdened communities, in addition to the traditional regionwide attainment of state and federal pollution standards. AB 617 requires ARB, with input from community groups, BAAQMD, and others, to select locations to prepare community-led plans to reduce localized emissions of toxic air contaminant (TACs, including MSATs) and criteria air pollutants. Communities can also be selected to conduct community-led monitoring. The primary requirement for community selection is a demonstrated high cumulative exposure burden. West Oakland is adjacent to, and in some areas, within industrial neighborhoods. The Port of Oakland, along with truck traffic, rail traffic and related industrial uses lies just to the west. The OAAP project footprint is just east of the West Oakland area evaluated under AB 617. This report evaluates MSAT emissions under existing conditions and future conditions with and without the project.

3. Affected Environment

The topography of a region can substantially impact air flow and resulting pollutant concentrations. California is divided into 15 air basins with similar topography and meteorology to better manage air quality throughout the state. Each air basin has a local air district that is responsible for identifying and implementing air quality strategies to comply with ambient air quality standards.

OAAP is located in proximity to City of Oakland and Alameda in Alameda County, an area within the San Francisco Bay Area Air Basin which includes Alameda, Contra Costa, Marin, San Francisco, San Mateo and Santa Clara counties, the western portion of Solano County and the southern portion of Sonoma County. Air quality regulations in the San Francisco Bay Area Air Basin are administered by the BAAQMD. Current population for Alameda County is 1,669,301 individuals and the county's economy is largely driven by the scientific and technical services, health care, and manufacturing industries.

3.1 Climate, Meteorology, and Topography

Meteorology (weather) and terrain can influence air quality. Certain weather parameters are highly correlated to air quality, including temperature, the amount of sunlight, and the type of winds at the surface and above the surface. Winds can transport ozone and ozone precursors from one region to another, contributing to air quality problems downwind of source regions. Furthermore, mountains can act as a barrier that prevents ozone from dispersing.

The Oakland International Airport climatological station, maintained by the National Weather Service, is located near the project footprint and is representative of meteorological conditions near the project area. Figure 7 shows a wind rose illustrating the predominant wind patterns near the project. The OAAP footprint is bordered by the San Francisco Bay to the west and the by the Oakland-Berkeley Hills (averaging 1,500 feet high) to the east. The climate of the project area is generally Mediterranean in character, with cool winters (average [48] °Fahrenheit in January) and warm, dry summers (average [63] °Fahrenheit in July). As shown in Figure 7, the prevailing winds in the project area flow mainly from the west off of the San Francisco Bay. Annual average rainfall is 22.6 inches (at Oakland airport), mainly falling during the winter months.

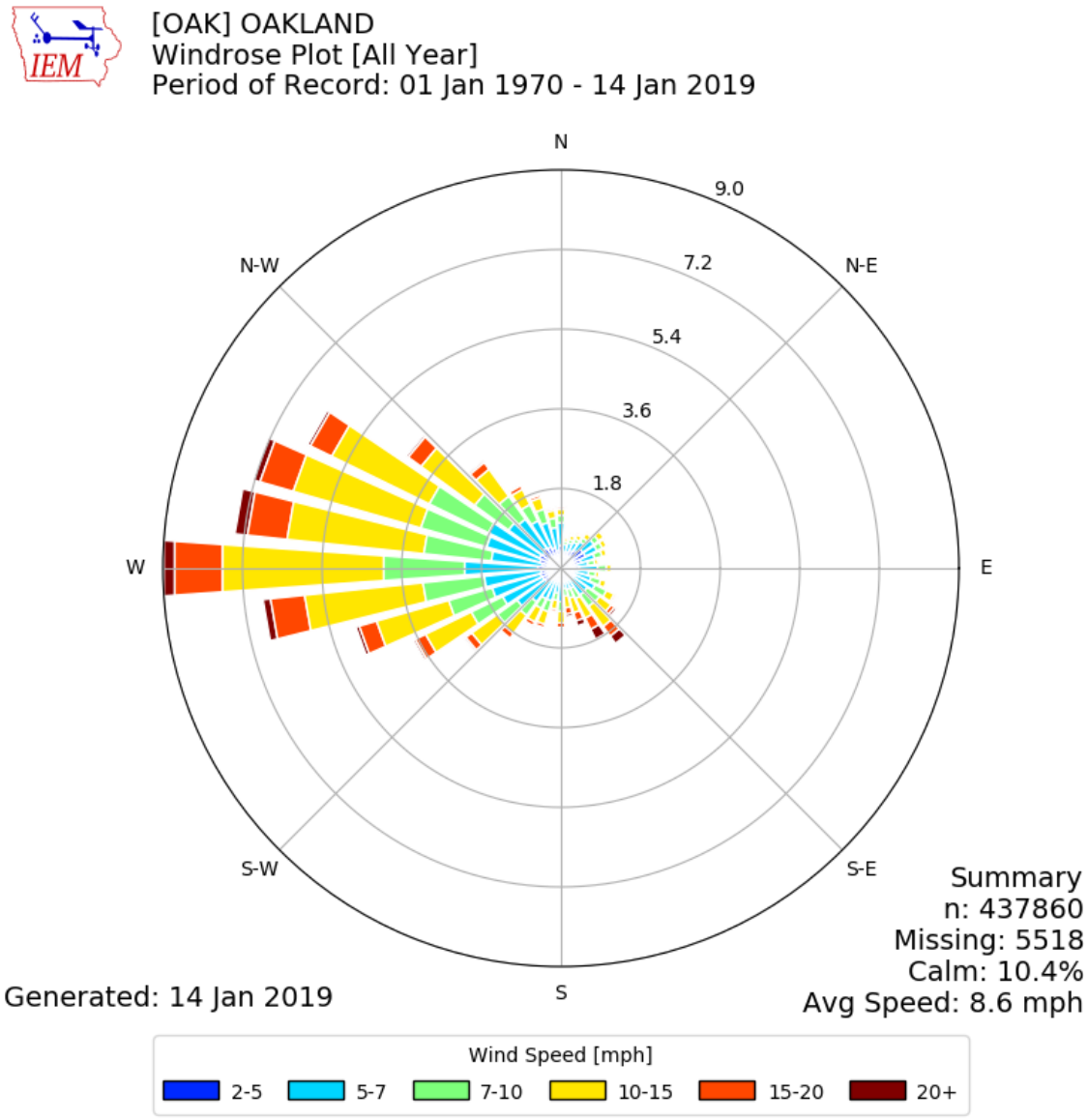

Figure 7. Predominant Wind Patterns Near the Project

Source: https://mesonet.agron.iastate.edu/sites/site.php?station=OAK&network=CA_ASOS

3.2 Existing Air Quality

This section summarizes existing air quality conditions near the proposed project area. It includes attainment statuses for criteria pollutants, describes local ambient concentrations of criteria pollutants for the past 5 years, and discusses MSAT and GHG emissions. The closest active air quality monitoring site to the project footprint is the Oakland West Station, located at 1100 21st Street in Oakland (see Figure 8). This station monitors O_3, NO_x, SO_2, CO, $PM_{2.5}$, speciated $PM_{2.5}$, toxics (MSATs and TACs), and black carbon.

Figure 8. Map of Air Quality Monitoring Station Located Near the project.

Source: HNTB Google Earth KMZ File, 2019

3.2.1 Criteria Pollutants and Attainment Status

Table 8 lists the state and federal attainment status for all regulated pollutants. Under current designations of the Air Basin, the area is nonattainment for California Ambient Air Quality Standards (CAAQS) for O_3, PM_{10}, and $PM_{2.5}$, NAAQS nonattainment for O_3 and $PM_{2.5}$, and Unclassifiable/Attainment for PM_{10}, NO_2 and SO_2. Table 9 lists air quality trends collected at the Oakland West Station for the past 5 years. Table 10 lists the status of SIPs relevant to the project study area.

Table 8. State and Federal Attainment Status.

Pollutant	State Attainment Status	Federal Attainment Status	Attainment Plan (O_3, PM and CO)
O_3	Nonattainment	Nonattainment (Marginal)	Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard (2001)
Respirable PM (PM_{10})	Nonattainment	Unclassifiable/ Attainment	--
Fine PM ($PM_{2.5}$)	Nonattainment	Nonattainment (Moderate)	Bay Area Winter Emissions Inventory for Primary $PM_{2.5}$ & PM Precursors: Year 2010 (2012)
CO	Attainment	Attainment/ Maintenance	2004 Revision to the California State Implementation Plan for Carbon Monoxide (2004)
NO_2	Attainment	Unclassifiable/ Attainment	--
SO_2	Attainment	Unclassifiable/ Attainment	--
Pb)	Attainment	Unclassifiable/ Attainment	--
Visibility-Reducing Particles	Unclassified	N/A	--
Sulfates	Attainment	N/A	--
Hydrogen Sulfide	Unclassified	N/A	--
Vinyl Chloride	No Information Available	N/A	--

Source: ARB, 2019; www.arb.ca.gov/desig/adm/adm.htm, accessed May 22, 2019, US EPA Greenbook https://www3.epa.gov/airquality/greenbook/cbtc.html, Federal Register / Vol. 77, No. 33 / February 17, 2012, Federal Register / Vol. 83, No. 66 / April 5, 2018

Table 9. Air Quality Concentrations for 2014-2018 Measured at the Oakland West Station.

Pollutant		Standard	2014	2015	2016	2017	2018
O_3							
Max 1-hr concentration			0.072 ppm	0.091 ppm	0.065 ppm	0.087 ppm	0.063 ppm
Number of days exceeded:	CAAQS	0.09 ppm	0	0	0	0	0
Max 8-hr concentration			0.059 ppm	0.065 ppm	0.053 ppm	0.069 ppm	0.050 ppm
Number of days exceeded:	CAAQS	0.070 ppm	0	0	0	0	0
	NAAQS	0.070 ppm	0	0	0	0	0
CO							
Max 1-hr concentration			3.0 ppm	4.7 ppm	2.6 ppm	6.0 ppm	3.6 ppm
Number of days exceeded:	CAAQS	20 ppm	0	0	0	0	0
	NAAQS	35 ppm	0	0	0	0	0
Max 8-hr concentration			2.6 ppm	2.6 ppm	2.2 ppm	2.1 ppm	3.1 ppm
Number of days exceeded:	CAAQS	9.0 ppm	0	0	0	0	0
	NAAQS	9 ppm	0	0	0	0	0
PM_{10}							
Max 24-hr concentration			-	-	-	-	-
Number of days exceeded:	CAAQS	50 µg/m^3	-	-	-	-	-
	NAAQS	150 µg/m^3	-	-	-	-	-
Max annual concentration			-	-	-	-	-
Number of days exceeded:	CAAQS	20 µg/m^3	-	-	-	-	-
$PM_{2.5}$							
Max 24-hr concentration			38.8 µg/m^3	38.7 µg/m^3	23.9 µg/m^3	56.0 µg/m^3	169.2 µg/m^3
Number of days exceeded:	NAAQS	35 µg/m^3	1	3.3	0	7.1	14.6
Max annual concentration			9.5 µg/m^3	10.2 µg/m^3	8.7 µg/m^3	12.8 µg/m^3	14.4 µg/m^3
Number of days exceeded:	CAAQS	12 µg/m^3	N/A	N/A	N/A	N/A	N/A
	NAAQS	12.0 µg/m^3	N/A	N/A	N/A	N/A	N/A
NO_2							
Max 1-hr concentration			0.056 ppm	0.057 ppm	0.049 ppm	0.052 ppm	0.076 ppm
Number of days exceeded:	CAAQS	0.18 ppm	0	0	0	0	0
	NAAQS	0.10 ppm	0	0	0	0	0
Max annual concentration			0.014 ppm	0.14 ppm	0.12 ppm	0.13 ppm	0.12 ppm
Number of days exceeded:	CAAQS	0.030 ppm	N/A	N/A	N/A	N/A	N/A
	NAAQS	0.053 ppm	N/A	N/A	N/A	N/A	N/A

Source: ARB, 2019; https://arb.ca.gov/adam/select8/sc8start.php, BAAQMD, 2019; https://www.baaqmd.gov/about-air-quality/air-quality-summaries

Table 10. Status of SIPs Relevant to the Project Study Area.

Name/Description	Status
O_3	Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard (2001)
$PM_{2.5}$	No SIP required. Bay Area Winter Emissions Inventory for Primary $PM_{2.5}$ & PM Precursors: Year 2010 (2012)
CO	No Conformity requirements. 2004 Revision to the California State Implementation Plan for Carbon Monoxide (2004)

Source: ARB, California State Implementation Plans see https://ww3.arb.ca.gov/planning/sip/planarea/bayareasip.htm, accessed Feb. 7, 2020

3.2.2 Mobile Source Air Toxics

The OAAP footprint is located near sources that emit priority MSATs, including non-mobile sources. These sources are described as follows, based on recent reporting by BAAQMD (2019a):

Traffic

BAAQMD reports that the heavy-duty trucks and cars that travel through West Oakland and on the surrounding roadways and freeways are the largest source of MSATs affecting sensitive receptors in West Oakland. Truck traffic in West Oakland is generated by the Port of Oakland, businesses, parking lots, warehouses, cargo staging and handling areas, fuels sales, maintenance facilities, weigh stations, and food services. About 42 percent of local diesel PM emissions and cancer risk come from heavy-duty trucks; about 38 percent of $PM_{2.5}$ impacts come from road dust.

Port & Rail Operations

The Port of Oakland (Port) is located about 1.5 miles to the west of the project footprint and encompasses a large area that extends out to about 5 miles west-northwest of the project. The Port and the Union Pacific Railroad that serves it are large sources of diesel PM and other MSATs. Port equipment includes cargo equipment, trucks, locomotives, ocean-going vessels, and harbor craft in the San Francisco Bay. Rail facilities includes passenger rail and the Union Pacific railyard. BAAQMD (2019) reports that about 33 percent of diesel PM associated with these sources comes from ocean-going vessels associated with the Port, while 18 percent comes from rail. The Port accounts for about 30 percent of the elevated cancer risk in West Oakland. In addition, there are ferry services at the Jack London Square district that emit diesel PM. UPRR rail lines that include UPRR freight and Amtrak commuter trains use tracks that are also within and near the project footprint and the locomotives emit diesel PM.

Industry (Permitted Sources)

Large industries in West Oakland include East Bay Municipal Utility District's wastewater treatment plant and recycling facilities such as Schnitzer Steel, CASS, and California Waste Solutions. Small industrial sources include gas stations, back-up diesel generators, auto-body shops, restaurants, and commercial cooking. About 18 percent of local $PM_{2.5}$ impacts come from West Oakland permitted sources.

MSAT Monitoring

Ambient MSAT data are available from ARB's website.[7] However, the closest monitoring station reporting recent data is in San Francisco. BAAQMD (2019b and c) has conducted air toxics and $PM_{2.5}$ data analysis that describe exposures to West Oakland residents that are predominantly just north of the project footprint. These assessments included development of gridded emissions of diesel PM and $PM_{2.5}$ across West Oakland and northern Alameda (including much of the project area) and modeled exposures in terms of increased cancer risk and annual $PM_{2.5}$ concentrations. The overall 2017 baseline level was established as an elevated cancer risk of 204 chances per million and an annual $PM_{2.5}$ concentration of 1.70 $\mu g/m^3$.

3.2.3 Greenhouse Gas and Climate Change

CO_2, as part of the carbon cycle, is an important compound for plant and animal life, but also accounted for 84% of California's total GHG emissions in 2015. Transportation, primarily on-road travel, is the single largest source of CO_2 emissions in the state. The proposed project, located in the cities of Oakland and Alameda and in Alameda County, is included in the *Plan Bay Area* Regional 2040 RTP/SCS. The base year used for the existing conditions in the RTP/SCS was 2010, with the exception that for GHG emissions, where 2005 was the base year to demonstrate compliance with SB 375. The horizon year (future conditions) for the RTP/SCS is 2040, when it is assumed that *Plan Bay Area* will be fully implemented; *Plan Bay Area* covers an approximately 25-year planning period, and the year 2040 represents the horizon year of the plan, when the listed projects/programs are anticipated to be fully implemented.

3.3 Sensitive Receptors

OAAP is located within the cities of Oakland and Alameda, which are both urban areas. The areas surrounding the project footprint are densely populated and developed with commercial uses (restaurants, retail spaces, and offices), residential uses (multi-family housing, single-family housing), and industrial uses (ports, light-industrial businesses). The BAAQMD defines sensitive receptors to include residential dwellings (including apartments, single-family houses, and condominiums/townhomes), schools, daycare centers, hospitals, and senior-care facilities. Based on research, the zone of greatest concern near roadways is within 500 feet (150 meters). Receptors located

[7] http://www.arb.ca.gov/adam/toxics/toxics.html)

within 500 feet of the project footprint were identified using Google Earth and ArcGIS. Table 11 lists the type of sensitive receptors and the number identified. It also names the receptors for the schools, daycares, and parks with their corresponding identification number. Figure 9 shows the locations of sensitive receptors relative to the project footprint. Due to large number of sensitive receptors identified, the receptor coordinates and additional figures are listed in Appendix A.

Table 11. Sensitive Receptors Located Within 500 Feet of the Project Footprint.

Sensitive Receptor Group	Number of Receptors Identified	Receptor Names
Residences	245	N/A due to the abundance of single-family homes and multifamily buildings identified
Schools and Daycares	6	Peralta Community College District (ID # 0) Laney College (ID #1 and #2) Sugar & Spice Center for Children (ID #4) Peter Pans School (ID #3) Alameda Science and Technology Institute (ID # 5)
Parks	2	Chinese Garden Park (ID #0) Madison Park (ID #1)

Source: Illingworth & Rodkin using Google Earth and ArcGIS, 2020

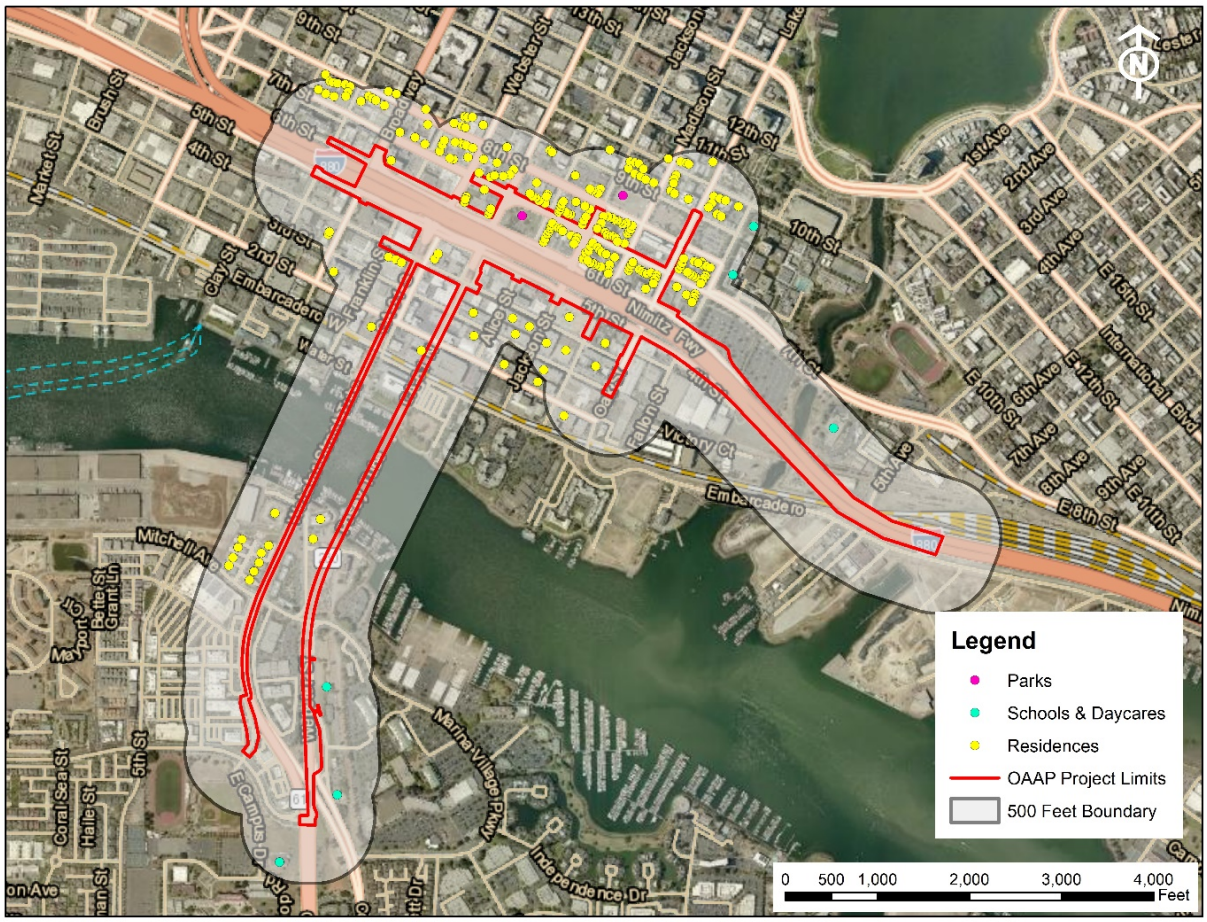

Figure 9. Sensitive Receptors Located Near the Proposed Build Alternative.

Source: Receptors identified using Google Maps, 2019. Illingworth & Rodkin using ArcGIS, 2019

3.4 Conformity Status

3.4.1 Regional Conformity

The proposed project is listed in the *Plan Bay Area 2040* financially constrained RTP (RTP ID 17-01-0030), which was found to conform by MTC on July 26, 2017. FHWA and FTA made a regional conformity determination finding on August 23, 2017. The project is also included in the MTC's financially constrained 2019 TIP (TIP ID ALA070009), page S4-75 [insert]. The 2019 TIP was determined to conform on December 17, 2018. The design concept and scope of the project is consistent with the project description in the 2040 RTP and 2019 TIP, and the "open to traffic" assumptions of the MTC's regional emissions analysis. Conformity status information is summarized in Table 12. Photocopies of relevant pages from the RTP and TIP are included in Appendix B.

Table 12. Status of Plans Related to Regional Conformity.

MPO	Plan/TIP	Date of adoption by MPO	Date of Approval by FHWA	Last Amendment	Date of Approval by FHWA of Last Amendment
MTC	Regional Transportation Plan	July 26, 2017	August 23, 2017	Draft Amendment March 2020	Pending
MTC	Transportation Improvement Program (FSTIP approval)	September 26, 2018	December 17, 2018	Draft Amendment March 2020	Pending

Source: MTC, 2020. Web: https://mtc.ca.gov/our-work/fund-invest/transportation-improvement-program

3.4.2 Project-Level Conformity

The San Francisco Bay Area Air Basin was designated as attainment area for CO NAAQS, and the project is in a nonattainment area for the O_3 and $PM_{2.5}$ NAAQS[9]. The area is still considered maintenance for the CO NAAQS; however, the CO SIP conformity requirements ended in June 2018. (See Appendix C).

Since O_3 impacts are regional in nature, projects that are included in an RTP and TIP have been included in a regional conformity analysis and do not require further analysis for conformity. This project is included in a conforming RTP and TIP, and therefore emissions of O_3 precursors from project -related traffic are not anticipated to cause or contribute to, or worsen, any O_3 NAAQS violations.

In addition, the BAAQMD adopted the 2017 Clean Air Plan (CAP) to plan for and achieve compliance with the federal and state O_3 standards (BAAQMD 2017). The project will not interfere with the control measures described in the 2017 CAP. Furthermore, the project will provide transportation benefits that reduce pollutant emissions, including O_3 precursors, by improving traffic operations and efficiency.

40 CFR 93.123(c)(5) states that: "CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses are not required to consider construction-related activities which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established 'Guideline' methods. Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site." Since construction of the project is expected to last less than five years, an evaluation of CO, PM_{10}, and $PM_{2.5}$ emissions during project construction is not required for project-level conformity determination.

3.4.3 Interagency Consultation

The ACTC, as the project sponsor, initiated consultation with the Air Quality Conformity Task Force (AQCTF) by submitting a Project Assessment Form for $PM_{2.5}$ Interagency Consultation. The AQCTF considers future traffic conditions with and without the project and whether the project meets the specific regulatory definition of a project of air quality concern (POAQC) set forth in 40 CFR Part 93. On December 12, 2019, the AQCTF determined that OAAP is not a POAQC. See Appendix C for documentation of the Task Force's determination.

3.5 NEPA Analysis/Requirement

Caltrans, as assigned by the FHWA, is the lead agency under NEPA. The air quality analysis to support NEPA findings addresses federal criteria pollutants (O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, SO_2, and Pb), MSATs, and asbestos. The project is in the MTC non-attainment/maintenance area for air quality and is listed in MTC's 2019 TIP (TIP # ALA070009) and the RTP (RTP number 17-01-0030). Nonattainment pollutants include O_3 precursors and $PM_{2.5}$, the region is in "Attainment/Maintenance" for CO. For NEPA, future Build Alternative emissions should be compared with future No-Build Alternative emissions.

3.6 CEQA Analysis/Requirement

Caltrans is the lead agency under CEQA. For CEQA, the air quality analysis addresses pollutants for which California has established air quality standards (O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, SO_2, Pb, visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride), as well as GHGs, MSATs, and asbestos. Similar to NEPA, analysis/documentation requirements for CEQA vary by pollutant; ranging from a narrative describing that the pollutant is typically not a transportation issue, to an emissions analysis. For CEQA, future scenario emissions (Build and No-Build) should be compared with baseline (existing conditions) emissions. Caltrans does not require a separate CEQA analysis.

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4. Environmental Consequences

This section describes the methods, impact criteria, and results of air quality analyses of the proposed project. Analyses in this report were conducted using methodologies and assumptions that are consistent with the requirements of NEPA, CEQA, the CAAAs of 1990, and the CCAA of 1988. The analyses also use guidelines and procedures provided in applicable air quality analysis protocols, such as the *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol) (Garza et al., 1997), *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM_{10} and $PM_{2.5}$ Nonattainment and Maintenance Areas* (U.S. EPA, 2015), and the *FHWA Updated Interim Guidance on Air Toxics Analysis in NEPA Documents* (FHWA, 2016).

4.1 Impact Criteria

Project-related emissions would have an adverse environmental impact if they result in pollutant emissions levels that either create or worsen a violation of an ambient air quality standard (identified in Table 6) or contribute to an existing air quality violation.

The NAAQS were used to evaluate air quality impacts from a NEPA and CEQA perspective. The CT-EMFAC 2017 (Version 1.0.2) and the Sacramento Metropolitan Air Quality Management District's Roadway Construction Emissions Model (Version 9.0) were used to calculate the emissions from the project

4.2 Short-Term Effects (Construction Emissions)

4.2.1 Construction Equipment, Traffic Congestion, and Fugitive Dust

Site preparation and roadway construction will involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. During construction, short-term degradation of air quality is expected from the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other activities related to construction. Emissions from construction equipment and on-road vehicles powered by gasoline and diesel engines are also anticipated and would include CO, NO_x, volatile organic compounds (VOCs), directly emitted PM_{10} and $PM_{2.5}$, and toxic air contaminants (TACs) such as diesel exhaust particulate matter. Construction activities are expected to temporarily increase traffic congestion in the area, resulting in increases in emissions from traffic. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Under the federal transportation conformity regulations (40 CFR 93.123(c)(5)), construction-related activities that cause temporary increases in emissions are not required in a hot-spot analysis. These temporary increases in emissions are those that occur only during the construction phase and last five years or less at any individual site. Construction emissions typically fall into two main categories:

- *Fugitive Dust*: Emissions from construction due to ground disturbance. All air districts and the California Health and Safety Code (Sections 41700-41701) prohibit "visible emissions" exceeding three minutes in one hour – this applies not only to dust but also to engine exhaust. In general, this is interpreted as visible emissions crossing the right-of-way line.

  Sources of fugitive dust include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site may deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions may vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

- *Construction equipment emissions*: Diesel exhaust particulate matter is a California-identified TAC, and localized issues may exist if diesel-powered construction equipment is operated near sensitive receptors.

Construction emissions were estimated for the Build Alternative using the latest Sacramento Metropolitan Air Quality Management District's Road Construction Model (RCEM) version 9.0, which uses emission factors from EMFAC2017. HNTB provided detailed equipment quantities and Build Alternative construction scheduling information that was entered into the model. HNTB also provided demolition, concrete, asphalt, and soil hauling information. Appendix D lists all the constructions inputs provided and entered into RCEM. The Build Alternative length and areas were based on a Google Earth KMZ file provided for the Build Alternative. Detailed construction plans were not available at the time of this analysis.

Construction would occur over two stages with Stage 1 focusing on the construction of the Jackson Street Horseshoe and work in or connecting to the Posey and Webster Tubes. Stage 2 focuses on the removal of the Broadway off-ramp and construction of a through 6th Street. Within each stage, there are several sub-stages (e.g. 1A, 1B, and 1C) with several phases occurring in each sub-stage.

Table 5 above provides more construction details. To account for all the construction activity that would occur in each sub-stage, a total of nine RCEM model runs were developed to compute the construction emissions. Construction-related emissions for the Build Alternative are presented in Table 13, Table 14, and Table 15. Total tons for a construction period, average daily emissions, and annual emissions for CO_2e were calculated. The results of the construction emission computations are included in Appendix D. The emissions presented are based on the best information available at the time of calculations.

Table 13. Construction Emissions for OAAP Stage 1 Construction Activity.

Sub-Stage	Phase	Activities	ROG (lbs./day)	CO (lbs./day)	NO_x (lbs./day)	Exhaust PM_{10} (lbs./day)	Exhaust $PM_{2.5}$ (lbs./day)	CO_2e (Metric Tons/phase)
1A	1Aa	Mobilization, clear and grub	2.32	26.19	19.04	0.91	0.84	93.46
	1Ab	Construct 5th Street entrance to Webster Tube	5.76	49.01	54.23	2.36	2.13	218.92
	1Ad	Construct Webster Tube bicycle/pedestrian walkway	4.20	43.16	36.32	1.64	1.51	476.78
	1Ae	Restripe Webster Tube	0.35	2.82	2.38	0.14	0.10	6.72
1B	1Ba	Construction of RW 4	2.80	27.92	23.82	1.12	1.03	155.04
	1Bb	Close Broadway to Jackson off-ramp connection	2.94	30.10	25.02	1.24	1.08	251.05
		Construction of RWs 2 and 3						
	1Bc	Construct Horseshoe and re-construct Jackson Street off-=ramp	6.45	63.97	61.92	2.81	2.51	1,666.99
		Remove Jackson Street off-ramp.						
		Partial construction of RWs 1, 8r, 8L, and Jackson Street off-ramp abutment						

Sub-Stage	Phase	Activities	ROG (lbs./day)	CO (lbs./day)	NO_x (lbs./day)	Exhaust PM_{10} (lbs./day)	Exhaust $PM_{2.5}$ (lbs./day)	CO_2e (Metric Tons/phase)
	1Bd	Re-construct Jackson off-ramp.	3.47	34.33	32.98	1.39	1.27	269.92
		Complete Posey Tube connection to the horseshoe.						
		Complete RWs 1 and 6						
1C		Construct 5th Street curb/gutter, sidewalk and pavement	3.07	30.85	27.74	1.20	1.09	62.50
1D	1Da	Restripe Posey Tube	0.61	5.94	5.02	0.26	0.23	10.70
	1Db	Overhead guide signs	5.41	46.32	52.98	2.23	1.96	113.73
	1Dc	Construct RW 9, pavement, and stripe Harrison Street	3.55	38.87	33.85	1.57	1.37	165.82
Average Daily Emissions (lbs./day) *Based on 380 Workdays			8.89	88.53	82.44	3.75	3.32	2,205.23 MT/Year
Stage 1 Total Construction Tons			1.69 tons	16.82 tons	15.66 tons	0.71 tons	0.63 tons	3,491.62 MT

Source: Illingworth & Rodkin using RCEM version 9.0.0, 2020

Table 14. Construction Emissions for OAAP Stage 2 Construction Activity.

Sub-Stage	Phase	Activities	ROG (lbs./day)	CO (lbs./day)	NO_x (lbs./day)	Exhaust PM_{10} (lbs./day)	Exhaust $PM_{2.5}$ (lbs./day)	CO_2e (MT/phase)
2A	2Aa	Construct RWs 7 and 10 at Oak Street off-ramp	5.50	50.61	51.95	2.13	1.91	616.59
	2Ab	Construct auxiliary lane	2.95	28.84	30.61	1.34	1.15	141.48
	2Ac	Close Jackson Street on-ramp to Broadway off-ramp connection	3.93	39.44	35.00	1.50	1.34	436.48
		Construct RW 5 at Jackson Street on-ramp						
		Remove raised gore and curb at on-ramp entrance. Restripe entrance ramp						
2B		Remove Broadway off-ramp structure and approach	6.15	65.04	46.80	1.94	1.79	418.61
2C	2Ca	Construct 6th Street curb/gutter, sidewalk, fences	2.86	29.45	25.11	1.11	1.01	350.72
	2Cb	Construct 6th Street from Oak Street to Jackson Street	3.08	31.52	26.10	1.20	1.08	124.74
	2Cc	Construct 6th Street between Jackson and Harrison streets	3.43	38.33	35.49	1.51	1.27	202.12

Sub-Stage	Phase	Activities	ROG (lbs./day)	CO (lbs./day)	NO_x (lbs./day)	Exhaust PM_{10} (lbs./day)	Exhaust $PM_{2.5}$ (lbs./day)	CO_2e (MT/phase)
	2Cd/2Ce	Construct 6th Street between Jackson and Harrison streets/ Mill and overlay 6th Street between Broadway and Washington Street	3.84	41.78	32.74	1.47	1.36	219.33
2D	2Da	Construct bicycle paths and cycle tracks, local street paving	2.64	26.72	26.83	1.15	0.97	147.99
	2Db	Reconstruct Harrison/7th and 7th/Jackson intersections	2.03	20.49	17.32	0.79	0.67	97.87
	2Dc	Traffic signal installation and modification	2.47	25.95	21.50	0.99	0.87	111.75
2E		Landscaping	0.95	7.76	7.42	0.33	0.27	25.19
Average Daily Emissions (lbs./day) *Based on 500 Workdays			5.14	51.95	45.89	1.97	1.76	1,388.49 MT/Year
Stage 2 Total Construction Tons			1.28 tons	12.99 tons	11.47 tons	0.49 tons	0.44 tons	2,892.68 MT

Source: Illingworth & Rodkin using RCEM version 9.0.0, 2020

Table 15. Total Construction Emissions for OAAP.

	ROG	CO	NO_x	PM_{10}	$PM_{2.5}$	CO_2e (MT)
Stage 1 (tons)	1.69	16.82	15.66	0.71	0.63	3,491.62 MT
Stage 2 (tons)	1.28	12.99	11.47	0.49	0.44	2,892.68 MT
Build Alternative Total (tons)	2.97	29.81	27.13	1.21	1.07	6,384.30 MT
Average Daily Emissions (lbs./day) *Based on 800 Workdays	7.43	74.52	67.84	3.02	2.68	1,915.29 MT/Year

Source: Illingworth & Rodkin using RCEM version 9.0.0, 2020

Implementation of the following measures, some of which may also be required for other purposes such as storm water pollution control, will reduce air quality impacts resulting from construction activities. Please note that although these measures are anticipated to reduce construction-related emissions, these reductions cannot be quantified at this time.

- The construction contractor must comply with the Caltrans' Standard Specifications in Section 14-9 (2015).
  - Section 14-9-02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.
- Water or a dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions.
- Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by CA Code of Regulations Title 17, Section 93114.
- Equipment and material storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly.
- All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to minimize emission of dust during transportation.
- Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to reduce PM emissions.
- To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Soil stabilization measures, such as mulch, hydroseeding, or vegetation, will be installed as soon as practical after grading to reduce windblown PM in the area.

Additionally, the *Plan Bay Area 2040* has exhaust and dust control measures for construction-related emissions. EPA and ARB have adopted rules and emission standards that would reduce diesel PM emissions from on-road and off-road engines for construction equipment. However, these regulations will continue to be phased in through 2023. The mitigation measures identified in the *Draft Environmental Impact Report* (DEIR) for *Plan Bay Area 2040* lists specific construction-related measures that would reduce emissions from exhaust and dust. Section 5.1 identifies these measures.

4.2.2 Asbestos

As detailed in Section 2.1.4, asbestos is a known human carcinogen that can be found in man-made items (e.g. structural asbestos found in ceilings) or found naturally (e.g. naturally occurring asbestos [NOA]). Structural asbestos is regulated by federal and state air district regulations, while NOA is regulated by ARB and worker-safety programs.

NOA in California may occur in serpentinite and ultramafic rocks. NOA is commonly found in the foothill region of the Sierra Nevada, the Coast Ranges, and northwestern California. In a NOA area, construction could disturb the NOA and it may become airborne. Therefore, a review of the project footprint and of asbestos areas in California was completed to determine if NOA would be present in the area. Based on a map from ARB[8], this project is not located in an NOA area and further analysis would not be needed.

According to the Initial Site Assessment (Parikh, 2020), structures within the project footprint, such as the Posey Tube and I-880 structure are old enough to have the potential to contain asbestos. The presence of asbestos will be confirmed prior to demolition or modification. Demolition activities are subject to BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing). BAAQMD Regulation 11, Rule 2 is intended to limit asbestos emissions and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses the national emissions standards for asbestos along with some additional requirements. The BAAQMD requires the Lead Agency and its contractors to notify BAAQMD of any regulated renovation or demolition activity. This notification includes a description of structures and methods utilized to determine whether asbestos-containing materials are potentially present. All asbestos-containing material found in the project footprint must be removed prior to demolition or renovation activity in accordance with BAAQMD Regulation 11, Rule 2, which includes specific requirements for surveying, notification, removal, and disposal of material containing asbestos. Projects that comply with Regulation 11, Rule 2 would ensure that asbestos-containing materials would be disposed of appropriately and safely (BAAQMD 2017).

4.2.3 Lead

Lead is normally not an air quality issue for transportation projects unless the project involves disturbance of soils containing high levels of aerially deposited lead or painting or modification of structures with lead-based coatings. In these cases, construction impact analysis should describe

[8] See https://www.arb.ca.gov/toxics/asbestos/geninfo.htm, accessed February 13, 2020.

monitoring and abatement requirements of Caltrans' Standard Specifications and Standard Special Provisions for aerially deposited lead or for lead paint removal and sandblasting.

According to the Initial Site Assessment (Parikh, 2020), lead contamination could occur where construction involves disturbing or exposing surface soils adjacent to the existing roadways. Project specific avoidance and minimization measures, including identification and disposal of contaminated soils as well as dust control measures, would address this potential issue. Additionally, the project would use lead-free and chromium-free yellow substitute pigments for permanent project elements (i.e. striping). The project would not release hazardous lead chromate materials nor expose the public or environment to it. Prior to construction, lead based paint and other leaded materials would be identified and abated to prevent impacts to air quality and human health.

4.3 Long-Term Effects (Operational Emissions)

Operational emissions take into account long-term changes in emissions due to the project (excluding the construction phase). The operational emissions analysis compares forecasted emissions for existing/baseline, No-Build, and Build Alternatives. Air pollutant emissions associated with the operation of roadways were estimated using the project-specific traffic data and conditions and the CT-EMFAC2017 tool. The traffic consultant, DKS, provided VMT for the study area for the existing/baseline conditions (2015), No-Build Alternative, and Build Alternative. The opening year (2025), RTP horizon year (2040), and design year (2045) were analyzed for the No-Build and Build Alternative.

The VMT analysis provided in the December 10, 2019 DKS memorandum was used for this analysis, not the VMT from the OAAP TOAR. In the memorandum, the study area was expanded to capture in more detail how the Build Alternative would affect travel behavior areas a result of the project. The study area is bounded by Grand Avenue to the north, Market Street to the west, the Oakland Estuary (including Webster/Posey tubes) to the south, and Lake Merritt to the east. Figure 10 shows the defined study area used for the VMT analysis.

Traffic data for this assessment was developed in terms of VMT data by speed (in 5 mph bins or increments) for AM peak, PM peak, midday, and evening periods. The traffic mix was based on the average mix for the project footprint using I-880 conditions, since much of the traffic would use that facility. The traffic mix and VMT data by speed bin were inputted into the CT-EMFAC 2017 (version 1.0.2) model for each daytime period and each modeling scenario (i.e., year and alternative).

ARB developed off-model adjustment factors that account for the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program, which is a ruling that revokes California's authority to set its own GHG emission standards and set zero emission vehicle mandates in California. The off-model adjustment factors are applied to the results of CT-EMFAC2017 operational emissions for gasoline light-duty vehicle. The adjustment factors are for NO_x exhaust, TOG evaporative, TOG exhaust, PM exhaust, and CO exhaust from each year from 2021 through 2050. These factors are also applicable to MSATs. No GHG off-model adjustments have been provided by ARB. U.S. EPA approved of these adjustments on March 5, 2020. The results in Table 16 account for the off-model EMFAC2017

adjustment factors, as these factors were applied to both the No-Build and Build Alternatives for the years 2025, 2040, and 2045.

The results of this assessment showed that emissions from the Build Alternative would be similar or slightly less than the emission from the No-Build Alternative for all analysis years. The slight decrease in emissions would be due to the roadway networking improvements proposed under the Build Alternative, which would result in slightly lower VMT. The only exception is the 2025 ROG emissions; these emissions are marginally higher in the Build Alternative. However, the difference in emissions between the alternatives is only 1.88 pounds (a 1.7% increase). This is a negligible increase. In the RTP horizon and design years, the ROG emissions are the same for both the No-Build and Build Alternatives. On the other hand, NO_x emissions are slightly lower with the Build Alternative. ROG and NO_x are precursor pollutants that can lead to the formation of ozone.

Overall, based on the operational period emission data in Table 16 the Build Alternative would not worsen the flow or the traffic operations within the Oakland and Alameda project study area. Emissions would slightly decrease or remain the same with implementation of the Build Alternative. Furthermore, the proposed Build Alternative would construct and improve infrastructure for bicycles and pedestrians for better connectivity between the cities of Alameda and Oakland. The CT-EMFAC2017 model does not capture these improvements but they would have some benefits for the surrounding area. See Appendix E for CT-EMFAC2017 inputs/outputs, the VMT provided by DKS, and ARB off-model SAFE adjustment factors

Table 16. Summary of Comparative Emissions Analysis for the OAAP.

Scenario/ Analysis Year	CO (pounds/day)	Safe Off-Model Adjustment Factor*	$PM_{2.5}$ (pounds/day)	Safe Off-Model Adjustment Factor*	PM_{10} (pounds/day)	Safe Off-Model Adjustment Factor*	ROG (pounds/day)	Safe Off-Model Adjustment Factor*	NO_x (surrogate for NO_2) (pounds/day)	Safe Off-Model Adjustment Factor*
Baseline (Existing Conditions) 2015	2,776	*None*	70	*None*	209	*None*	250	*None*	1,132	*None*
No-Build Alternative 2025	1,125	*1.0065*	56	*1.0074*	210	*1.0074*	110	*1.0016*	386	*1.0018*
Build Alternative 2025	1,122		56		209		112		386	
No-Build Alternative 2040	903	*1.0281*	59	*1.0270*	226	*1.0270*	77	*1.0174*	352	*1.0109*
Build Alternative 2040	899		59		226		77		350	
No-Build Alternative 2045	907	*1.0306*	61	*1.0300*	232	*1.0300*	76	*1.0225*	362	*1.0124*
Build Alternative 2045	905		61		232		76		360	

*These SAFE off-model adjustment factors were only applied to exhaust emissions. Source: Illingworth & Rodkin using CT-EMFAC2017 Version 1.0.2, 2020ing

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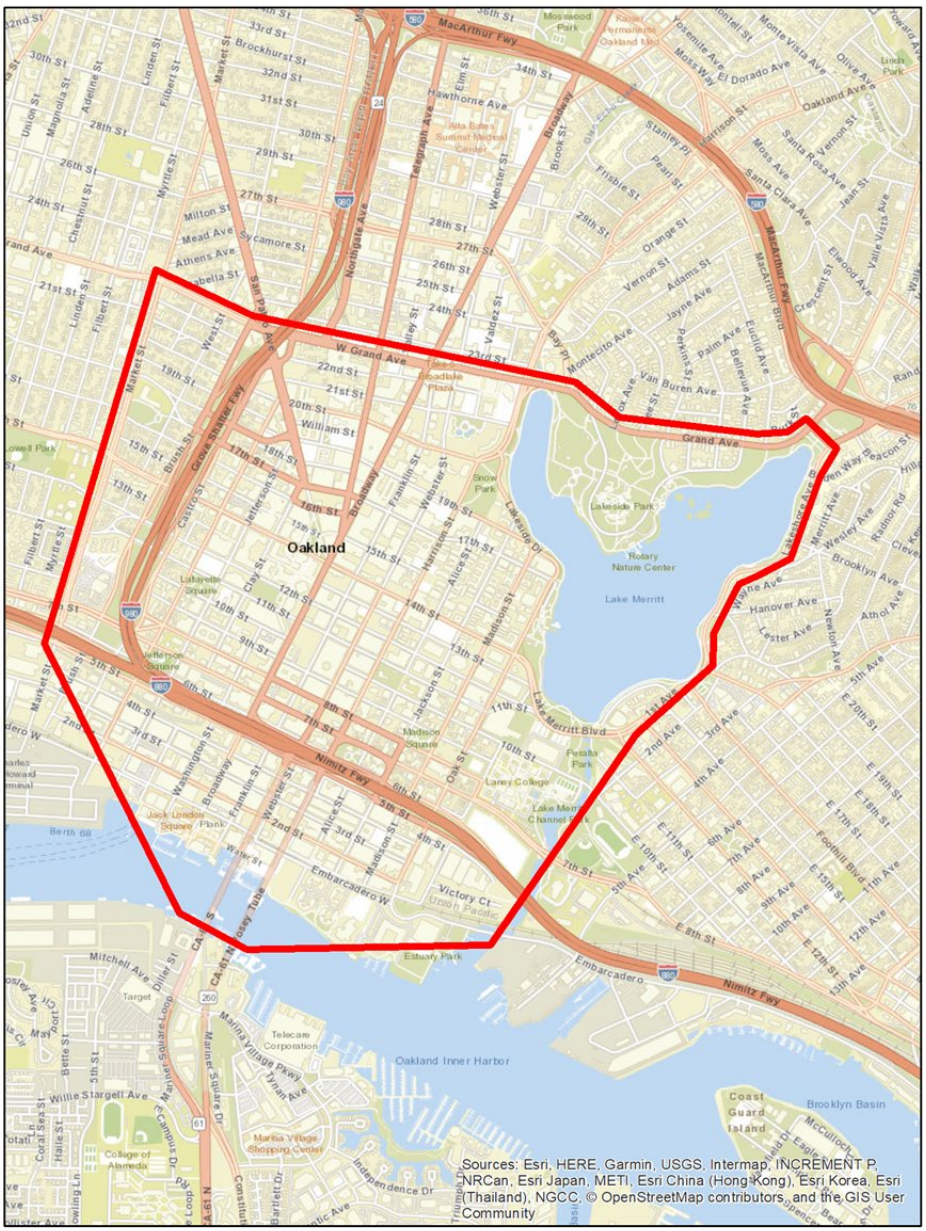

Figure 10. Study Area for Project VMT Analysis.

Source: DKS, 2019

4.3.1 CO Analysis

CO emissions were estimated for Baseline, No-Build, and the Build Alternative for the opening year (2025), the RTP horizon year (2040), and the design year (2045). The changes in the Build Alternative CO emissions between the various modeling scenarios are shown in Table 16. CO levels in the future are much lower than the baseline conditions. Emissions are slightly lower with the Build Alternative for each of the modeled future years.

The CO Protocol was developed for project-level conformity (hot-spot) analysis and was approved for use by the U.S. EPA in 1997. It provides qualitative and quantitative screening procedures, as well as quantitative (modeling) analysis methods to assess project-level CO impacts. The qualitative screening step is designed to avoid the use of detailed modeling for projects that clearly cannot cause a violation, or worsen an existing violation, of the CO standards. Although the protocol was designed to address federal standards, it has been recommended for use by several air pollution control districts in their CEQA analysis guidance documents and should also be valid for California standards because the key criterion (8-hour concentration) is similar: 9 ppm for the federal standard and 9.0 ppm for the state standard.

The transportation conformity requirements for CO ceased to apply in June 1, 2018 (see Appendix F). The project is not anticipated to increase the percentage of vehicles operating in cold start mode; increase traffic volume; or worsen traffic flow. Additionally, the project is in an area designated "Attainment" for CO under both the NAAQS and CAAQS. Therefore, based on the CO Protocol Carbon Monoxide Screening Analysis, no further analysis is necessary to demonstrate that the project would not cause or contribute to a violation of an ambient air quality standards for CO. Note that measured CO concentrations near the project footprint are well below the NAAQS and state standards.

4.3.2 PM Analysis

Emissions Analysis

It was determined on December 12, 2019 through interagency consultation that the project is not a POAQC as described in 40 CFR 93.123(b)(1)(i), and therefore, is not subject to $PM_{2.5}$ project level conformity requirements or emissions analysis. See Appendix C for Interagency Consultation Documentation.

Hot-Spot Analysis

In November 2015, the U.S. EPA released an updated version of Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas (Guidance) for quantifying the local air quality impacts of transportation projects and comparing them to the PM NAAQS (75 FR 79370). The U.S. EPA originally released the quantitative guidance in December 2010 and released a revised version in November 2013 to reflect the approval of EMFAC 2011 and U.S. EPA's 2012 PM NAAQS final rule. The November 2015 version reflects MOVES2014 and

its subsequent minor revisions such as MOVES2014a, to revise design value calculations to be more consistent with other U.S. EPA programs, and to reflect guidance implementation and experience in the field. Note that EMFAC, not MOVES, should be used for project hot-spot analysis in California. The Guidance requires a hot-spot analysis to be completed for a POAQC. The final rule in 40 CFR 93.123(b)(1) defines a POAQC as:

> (i) New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;
>
> (ii) Projects affecting intersections that are at Level-of-Service (LOS) D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
>
> (iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
>
> (iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
>
> (v) Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

This project is not a POAQC as determined by the MTC Task Force on December 12, 2019, and therefore it is not required to include a hot-spot analysis.

4.3.3 NO_2 Analysis

The U.S. EPA modified the NO_2 NAAQS to include a 1-hour standard of 100 parts per billion (ppb). Currently there is no federal project-level NO_2 analysis requirement. However, NO_2 is a pollutant of concern near roadways. The project is in an area unclassified by U.S. EPA for attainment. Current and historical monitoring data for the region do not indicate any violations of the NAAQS or exceedances of the CAAQS. Therefore, a project-level analysis of NO_2 is not necessary. The CT-EMFAC2017 model provides NO_x emission estimates, as reported in Table 16. NO_2 concentrations affected by the project will likely be dominated by overall NO_x emissions. If ozone is present at relatively low (background) concentrations, most of the directly emitted NO_x will convert to NO_2 within a few seconds. Therefore, NO_x emissions overall can serve as a useful analysis surrogate for NO_2 (Caltrans, 2012). Table 16 shows NO_x emissions decreasing substantially in the future under both alternatives. There are minor differences in emissions between Build and No-Build, where the Build Alternative has slightly lower emissions.

4.3.4 Mobile Source Air Toxics Analysis

FHWA released updated guidance in October 2016 (FHWA, 2016) for determining when and how to address MSAT impacts in the NEPA process for transportation projects. FHWA identified three levels of analysis:

- No analysis for exempt projects or projects with no potential for meaningful MSAT effects;
- Qualitative analysis for projects with low potential MSAT effects; and
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Projects with no impacts generally include those that; a) qualify as a categorical exclusion under 23 CFR 771.117; b) qualify as exempt under the FCAA conformity rule under 40 CFR 93.126, and; c) are not exempt, but have no meaningful impacts on traffic volumes or vehicle mix.

Projects that have low potential MSAT effects are those that serve to improve highway, transit, or freight operations or movement without adding substantial new capacity, or don't create a facility that is likely to substantially increase emissions. The large majority of projects fall into this category.

Projects with high potential MSAT effects include those that:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel PM in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes where the AADT is projected to be in the range of 140,000 to 150,000, or greater, by the design year; and
- Are proposed to be located in proximity to populated areas or, in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

This assessment considers the expected effect of the project on traffic volumes, vehicle mix, or routing of traffic and the associated changes in MSAT for the project alternatives (i.e., No-Build and project), based on VMT, vehicle mix, and speed. Because the emission effects of this type of project typically are low, no appreciable difference in overall MSAT emissions among the various alternatives are expected.

The project would not change the traffic mix, nor move major roadways closer to sensitive receptors. The project would also not add significant capacity. For the project, the amount of MSAT emitted is expected to be proportional to the VMT, assuming that other variables such as fleet mix remain the same. However, MSAT emissions were estimated for the baseline, No-Build Alternative, and Build Alternative for all analysis years to further show that the MSAT emissions between the alternatives would not be significantly different. Daily VMT estimates were provided by DKS for the study area. The latest version of CT-EMFAC, CT-EMFAC2017 released in January 2019 (and approved by U.S. EPA on August 15, 2019) was used to estimate the emissions of benzene, ethylbenzene, 1,3-butadiene, formaldehyde, acrolein, naphthalene, diesel PM, and polycyclic POM. Figure 10 illustrates the extent of the area considered in the MSAT analysis. Traffic activity data were estimated for each of the different periods in a representative day given the baseline year (2015), opening year (2025), horizon year (2040),

and design year (2045). Appendix E includes traffic activity data. Emissions were estimated for all MSATs using CT-EMFAC2017, based on EMFAC2017 and speciation factors provided by ARB and U.S. EPA.

As shown in Table 17, VMT within the study area decreases by less than one percent between the alternatives. Since the VMT estimated for the No-Build Alternative and Build Alternative are similar, appreciably higher levels of MSATs are not expected. Figure 10 (above) illustrates the extent of the area considered in the MSAT analysis. As shown in Table 18, the MSAT emissions for the alternatives would all be lower than the baseline emissions. The emissions between the No-Build and Build Alternatives would be similar or slightly less.

Table 17. Summary of Average Daily VMT used in MSAT Qualitative Emissions Analysis (miles)

Scenario	Baseline 2015	Opening Year 2025	RTP Horizon Year 2040	Design Year 2045
No-Build Alternative	677,973	758,440	822,125	843,353
Build Alternative		757,430	821,198	842,454
Difference (Build vs. No-Build)	--	-1,010 (-0.1%)	-927 (-0.1%)	-899 (-0.1%)

Source: Illingworth & Rodkin using CT-EMFAC2017 Version 1.0.2, 20

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Table 18. Summary of Comparative MSAT Emissions Analysis in Project Vicinity.

Scenario/ Analysis Year	1,3-butadiene (lbs/day)	Acetaldehyde (lbs/day)	Acrolein (lbs/day)	Benzene (lbs/day)	Diesel PM (lbs/day)	Ethylbenzene (lbs/day)	Formaldehyde (lbs/day)	Naphthalene (lbs/day)	POM (lbs/day)	SAFE Off-Model Adjustment Factors
Baseline (Existing Conditions) 2015	0.82	4.60	0.17	5.31	21.99	3.33	10.37	0.28	0.24	*None*
No-Build Alternative 2025	0.27	0.56	0.06	1.94	1.99	1.69	1.55	0.14	0.05	*1.0016 (1.0 for Diesel PM and POM)*
Build Alternative 2025	0.27	0.56	0.06	1.94	2.00	1.69	1.55	0.14	0.05	
No-Build Alternative 2040	0.22	0.53	0.05	1.45	1.76	1.17	1.39	0.10	0.03	*1.0174 (1.0 for Diesel PM and POM)*
Build Alternative 2040	0.22	00.53	0.05	1.44	1.77	1.16	1.38	0.10	0.03	
No-Build Alternative 2045	0.22	0.55	0.05	1.44	1.78	1.14	1.43	0.10	0.03	*1.0225 (1.0 for Diesel PM and POM)*
Build Alternative 2045	0.22	0.55	0.05	1.44	1.79	1.13	1.43	0.10	0.03	

Source: Illingworth & Rodkin using CT-EMFAC2017 Version 1.0.2, 2020

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Regardless of the alternative chosen, emissions would be lower than present levels in the horizon year (2040) and design year (2045) as a result of U.S. EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the U.S. EPA projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all alternatives for the project.

Additionally, it should be noted that current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts from transportation projects in a way that would be useful to decision-makers. See Appendix C from the MSAT interim guidance below.

Council on Environmental Quality (CEQ) Provisions Covering Incomplete or Unavailable Information (40 CFR 1502.22)

Sec. 1502.22 Incomplete or Unavailable Information

When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.

(a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.

(b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:

1. a statement that such information is incomplete or unavailable;
2. a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;
3. a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and
4. the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, "reasonably foreseeable" includes impacts that have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

(c) The amended regulation will be applicable to all environmental impact statements for which a Notice to Intent (40 CFR 1508.22) is published in the Federal Register on or after May 27, 1986. For environmental impact statements in progress, agencies may choose to comply with the requirements of either the original or amended regulation.

Incomplete or Unavailable Information for Project Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project -specific health impacts due to changes in mobile source air toxic (MSAT) emissions associated with a proposed set of highway alternatives. The outcome of such C-2 an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, https://www.epa.gov/iris/). Each report contains assessments of non- cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-reviewliterature-exposure-and-health-effects) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of C-3 occupational exposure data to the general population, a concern expressed by HEI (Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxicscritical-review-literature-exposure-and-health-effects). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (https://www.epa.gov/iris)."

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable (https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf.)

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

4.3.5 Greenhouse Gas Emissions Analysis

GHG emissions associated with the proposed Build Alternative would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and

vendor trips. However, long-term operational emissions associated with vehicular traffic in the project study area would continue and would be altered by the Build Alternative. GHG emissions impacts for the proposed Build Alternative were computed using CT-EMFAC 2017 (Version 1.0.2) for the existing year and future years for the No-Build and Build Alternative. There are no off-model adjustments available to adjust EMFAC outputs based on the SAFE rule. VMT provided by the traffic consultant was used. The CO_2e for the No-Build and Build Alternative and each year scenario was calculated by multiplying the total emissions (grams/day) of CO_2, CH_4, N_2O by their GWPs then summing the emission and changing the units into annual metric tons of CO_2e.[9] The GWP for CO_2 is one (1) as it is the reference gas, while the GWP for CH_4 is 25 and the GWP for N_2O is 298 per ARB, which uses the IPCC's fourth assessment report. Table 19 lists the GHG emissions for the existing year (2015) and design year (2045). For CEQA purposes, the difference in emissions between the baseline year and the design year must be compared. The opening year (2025) and RTP horizon year (2040) GHG emissions are included for additional comparison.

GHG emissions for the baseline year were computed to be 114,861 metric ton (MT) of carbon dioxide equivalent (CO_2e). The GHG emissions for the 2045 design No-Build and Build Alternative were calculated as 84,427 MT CO_2e and 84,281 MT CO_2e, respectively. The difference between the baseline emissions and the Build Alternative 2045 emissions is a decrease of 30,581 MT of CO_2e. As shown in Table 19, with or without the project, the mobile GHG emissions in the area would decrease due to the improvements in vehicle technology and reformulation of fuels. Modeling shows that the Build Alternative would have lower GHG emissions than the No-Build Alterative for all future years.

[9] Per the EPA, GWP is a measure of how much energy the emission of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (https://www.epa.gov/ghgemissions/understanding-global-warming-potentials#Learn%20why).

Table 19. Modeled Annual CO_2e Emissions and Vehicle Miles Traveled, by Alternative.

Measure	Existing 2015	No-Build 2025	Build 2025	No-Build 2040	Build 2040	No-Build 2045	Build 2045
GHG Emissions	114,861	97,934	97,823	83,598	83,435	84,427	84,281
Difference Between No-Build and Build		-112		-163		-146	
Change Over Existing		-17,038		-31,427		-30,581	
Daily Vehicle Miles Traveled	677,973	758,440	757,430	822,125	821,198	843,353	842,454
Annual Vehicle Miles Traveled[1]	235,256,461	263,178,651	262,828,049	285,277,280	284,955,630	292,643,489	292,331,491

Source: Illingworth & Rodkin using CT-EMFAC 2017 version 1.0.2, 2020. CO_2e = carbon dioxide equivalent

[1] Annual VMT values derived from Daily VMT values multiplied by 347, per ARB methodology (ARB 2008).

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4.4 Cumulative/Regional/Indirect Effects

Effects of the project that would occur beyond the design year or are fairly distant from the project are referred to as indirect effects. Cumulative impacts are those effects that result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. Cumulative impacts are inclusive of the indirect effects. As summarized below, the potential for indirect effects or cumulative impacts to air quality that may be attributable to this project are not expected to be considerable.

The analysis of project impacts to regional air quality, as performed by MTC as part of the RTP and TIP conformity process, is a cumulative analysis. The proposed project would conform to the assumptions in the regional emissions analyses for the 2040 RTP and 2019 TIP, which are transportation planning documents that include the combination of roadway projects throughout the region. The DEIR for *Plan Bay Area 2040* identified a significant impact related to a net increase of construction-related emissions of criteria pollutants from on-road mobile and land use sources compared to existing conditions, that include emissions of ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$, as the air basin is in non-attainment for ozone, PM_{10}, and $PM_{2.5}$ standards. Mitigation Measures 2.2-3 (a-d) from the *Plan Bay Area 2040* DEIR would reduce these impacts to a less-than-significant level. The project would not conflict with implementation of these mitigation measures.

Furthermore, an analysis of the Build Alternative emissions was conducted using the applicable traffic projections, speed, and fleet mix information to compute an emission "burden" using CT-EMFAC 2017 (Version 1.0.2). The analysis, presented in Section 4.3, shows that the Build Alternative would have lower or similar emission than the No-Build Alternative and the baseline scenario, except for a negligible ROG emissions increase under the Build Alternative in 2025 (Table 16).

The CO qualitative assessment and MSAT quantitative assessment can be considered indirect effect analyses because they look at air quality impacts (attributable to the project) that would occur at a time in the future. Those assessments indicated that the potential for indirect effects associated with the project would not be considerable. They demonstrate that in the future: (1) air quality impacts from CO will not cause or contribute to violations of the CO NAAQS; and (2) MSAT emissions from the Build Alternative would be lower than the No-Build conditions and lower than the baseline conditions.

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5. Minimization Measures

Feasible short-term and long-term measures that can eliminate or substantially reduce project impacts are listed below. These measures, when incorporated into the project, can mitigate adverse impacts. The project applicant would be responsible for implementing these mitigation measures.

5.1 Short-Term (Construction)

The following are best management practices from the *Plan Bay Area 2040* DEIR. These measures control dust and exhaust during any construction period that involves ground disturbance.

Construction Best Practices for Exhaust

Road equipment greater than 25 horsepower (hp) that would be operated for more than 20 hours over the entire duration of construction will include the following requirements:1) Be zero emissions, OR; 2) Have engines that meet or exceed either EPA or ARB Tier 2 off-road emission standards; and 3) Have engines that are retrofitted with an ARB Level 3 Verified Diesel Emissions Control Strategy (VDECS), if one is available for the equipment being used. Equipment with engines that meet Tier 4 Interim or Tier 4 Final emission standards automatically meet this requirement; therefore, a VDECS would not be required.

- Idling time of diesel-powered construction equipment and trucks shall be limited to no more than two minutes. Clear signage of this idling restriction shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with the manufacturers' specifications.

- Portable diesel generators shall be prohibited. Grid power electricity should be used to provide power at construction sites; or propane and natural gas generators may be used when grid power electricity is not feasible.

Construction Best Practices for Dust

The following are best management practices from the Plan Bay Area 2040 DEIR. These measures control dust and exhaust during any construction period that involves ground disturbance.

- All disturbed areas (areas with exposed soil or other erodible material) shall be watered two times per day or as needed to control airborne dust.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed at least once per day. If dry power sweeping is used, it should only be performed in conjunction with thorough watering of the subject roads.
- All vehicle speeds on unpaved roads and surfaces shall be limited to 15 mph.
- All roadway, driveway, and sidewalk paving shall be completed as soon as possible. Building pads shall be paved as soon as possible after grading.
- All construction sites shall provide a posted sign visible to the public with the telephone number and person to contact at the Lead Agency regarding dust complaints. The recommended response time for corrective action shall be within 48 hours. BAAQMD's Complaint Line (1-800-334-6367) shall also be included on posted signs to ensure compliance with applicable regulations.
- When average wind speeds exceed 20 mph, excavation, grading, and/or demolition activities should be avoided where feasible to minimize air borne dust.
- Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
- The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time will be minimized where feasible. If possible, activities will be phased to reduce the amount of disturbed surfaces at any one time.
- Sandbags or other erosion control measures will be used to minimize silt runoff to public roadways.

5.2 Long-Term (Operational)

The Build Alternative would have overall lower operational and GHG emissions when compared to the baseline. When compared to the No-Build Alternative conditions, the differences in emissions would be similar or slightly lower. The Build Alternative also includes transportation system management (TSM)/ transportation demand management (TDM) strategies. Therefore, there are no avoidance or minimization measures required or recommended to reduce operational air quality impacts or GHG emissions from the operation of the project.

Transportation System Management and Transportation Demand Management

TSM strategies increase the efficiency of existing facilities. They are actions that increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Examples of TSM strategies include ramp metering, auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination.

TDM focuses on regional means of reducing the number of vehicle trips and miles traveled and increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding transportation options in terms of travel method, time, route, costs, and quality and convenience.

The following TSM/TDM measures have been incorporated into the Build Alternative.

Bicycle and pedestrian facilities would be constructed as follows:

- Construction of a continuous two-way Class IV cycle track (on street dedicated bikeways with physical separation from traffic) with additional treatments such as bicycle boxes on the west side of Oak Street from 3rd Street to 9th Street;
- Creation of a bicycle lane on the south side of 5th Street from Jackson to Oak streets; and
- Bicycle facilities and ADA-compliant pedestrian facilities would be constructed on 5th Street, 6th Street, Oak Street, and SR-260 through the Tubes to provide better connectivity within Oakland and to/from Alameda.

Select intersections would have "no turn on red" to provide protected bicycle/pedestrian phases (traffic is completely stopped to accommodate crossings through the intersection) at the following locations:

- Eastbound right turn at 5th and Jackson streets/I-980 off-ramp,
- Eastbound right turn at 5th/Oak streets,
- Southbound right turn at 6th/Madison streets,
- Southbound right turn at 6th/Jackson streets,
- Southbound right turn at 6th/Harrison streets,
- Southbound right turn at 6th/Jackson streets,
- Southbound and westbound right turns at 6th Street/Broadway,
- Eastbound left turn at 7th/Oak streets, and
- Northbound left turn at 8th/Oak streets.

Curb extensions or bulb-outs would be constructed to shorten crossing distances and reduce pedestrian exposure to vehicular conflict at the following locations:

- Southwest and northeast corners at 5th and Jackson streets/I-980 off-ramp to shorten south and east leg crossings;
- Southeast corner at 7th/Harrison streets to shorten south and east leg crossings; and
- Southwest corner of 7th/Jackson streets to shorten south leg crossing.

Protected pedestrian phases (traffic is completely stopped to accommodate crossings through the intersection) would be implemented at:

- South leg of 5th and Jackson streets/I-980 off-ramp,
- North leg of 6th Street/Broadway, and
- HAWK signal would be installed on 7th Street at Alice Street.

Traffic signal timing modifications would be implemented at the following new or modified intersections:

- 5th/Jackson streets would have a new protected pedestrian phase;
- 5th Street and Broadway would have modified phasing and splits to incorporate leading pedestrian interval. The 5th Street/Broadway entrance to the Webster Tube would be moved slightly east. The 5th Street crosswalk on the east side of Broadway also would be shifted east and shortened considerably. The signal phasing would be modified to include a pedestrian-led signal phase for the east leg pedestrian traffic. This would improve safety by giving pedestrians priority overturning traffic. This would also improve truck access to the Webster Tube and minimize conflicts with other vehicular traffic; and
- 8th Street/Oak Street would have modified phasing and splits to accommodate protected phases for the cycle track and northbound left turn.

6. Conclusions

The OAAP aims to alleviate the congestion and improve operations along I-880, the Posey and Webster Tubes, downtown Oakland, and the City of Alameda. No-Build and Build Alternatives were evaluated in this Air Quality Report. The Build Alternative proposes to remove and modify the existing freeway ramps and to modify the existing Posey Tube in Oakland. In addition, the Build Alternative proposes to construct a Class IV bicycle paths within the project footprint to improve connectivity to existing and future planned bicycle paths in the City of Oakland and implement various "complete streets" improvements to facilitate mobility across I-880 between downtown Oakland and the Jack London District. Additional bicycle and pedestrian improvements would occur at the Posey and Webster Tube approaches and in the Webster Tube.

The Build Alternative is included in the conforming 2019 TIP and the MTC RTP (i.e. *Plan Bay Area 2040*). Therefore, the project would conform with the SIP. The air quality technical report calculated and analyzed the air quality and GHG impacts of the No-Build and Build Alternative.

The short-term air quality impacts from construction were based on six RCEM models that estimated emissions from the roadway and structural construction work and minimization measures were provided that would reduce or eliminate construction-related impacts.

The long-term air quality impacts from the operation of the roadway were based on computations done using CT-EMFAC2017 (version 1.0.2, modified with off-model adjustments based on the SAFE rule) with the project traffic data provided in the TOAR. The operational emissions were computed for the baseline conditions in 2015 and the No-Build and Build Alternative in the years 2025, 2040, and 2045. The CO, PM_{10}, $PM_{2.5}$, ROG and NO_x emissions (pounds/day) between the two alternatives were compared. In each analysis year, the Build Alternative would have slightly lower or similar emissions than the No-Build Alternative due to a slight decrease in VMT.

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7. References

"Alameda County, CA." *Data USA*, https://datausa.io/profile/geo/alameda-county-ca. Accessed 31 October 2019.

Bay Area Air Quality Management District (BAAQMD 2016) Planning Healthy Places. Available at http://www.baaqmd.gov/~/media/files/planning-and-research/planning-healthy-places/php_may20_2016-pdf.pdf?la=en

Bay Area Air Quality Management District (BAAQMD 2017) BAAQMD CEQA Air Quality Guidelines. May. Available at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

Bay Area Air Quality Management District (BAAQMD 2019a) Owning Our Air – The West Oakland Community Action Plan – A Summary. A joint Project of the Bay Area Air Quality Management District and the West Oakland Environmental Indicators Project October. Available at http://www.baaqmd.gov/~/media/files/ab617-community-health/west-oakland/100219-files/owning-our-air-plan-summary-pdf.pdf?la=en

Bay Area Air Quality Management District (BAAQMD 2019b) Air Toxics Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. April. Available at http://www.baaqmd.gov/~/media/files/ab617-community-health/west-oakland/baaqmd_2016_toxics_modeling_report-pdf.pdf?la=en

Bay Area Air Quality Management District (BAAQMD 2019c) Fine Particulate Matter Data Analysis and Regional Modeling in the San Francisco Bay Area to Support AB617. January. Available at http://www.baaqmd.gov/~/media/files/ab617-community-health/west-oakland/baaqmd_2016_pm_modeling_report-pdf.pdf?la=en

California Environmental Protection Agency and California Air Resources Board (Cal/EPA and ARB, 2005) Air quality and land use handbook: a community health perspective. April. Available at http://www.arb.ca.gov/ch/handbook.pdf.

California Department of Transportation (2012) Near-Road Nitrogen Dioxide Assessment. Final report, CTAQ-RT-12-270.09.02, August.

California Department of Transportation (2015) Standard Specifications. Prepared by the State of California Department of Transportation. Available at http://www.dot.ca.gov/hq/esc/oe/construction_contract_standards/std_specs/2015_StdSpecs/2015_StdSpecs.pdf.

DKS (2019) Oakland-Alameda Access Project EA#04-0G360 Traffice Operations Analysis Report. September.

DKS (2019) Oakland-Alameda Access Project - VMT Analysis in Support of Environmental Assessment Memorandum. December.

Federal Highway Administration (2016) Updated Interim guidance update on mobile source air toxic analysis in NEPA documents. Available at https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/.

Garza V., Graney P., Sperling D., Niemeier D., Eisinger D., Kear T., and Chang D. (1997) Transportation project-level carbon monoxide protocol revised. Prepared for Environmental Program California Department of Transportation by the Institute of Transportation Studies, University of California, Davis, UCD-ITS-RR-97-21, December. Available at http://www.dot.ca.gov/hq/env/air/pages/coprot.htm.

South Coast Air Quality Management District (SCAQMD, 2014) Multiple Air Toxics Exposure Study: MATES IV draft report. Findings presented at the SCAQMD Governing Board Meeting, October 3.

State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011-2019*. Sacramento, California, May 2019.

U.S. Environmental Protection Agency (1995) Compilation of air pollutant emission factors, AP-42. Vol. 1: stationary point and area sources. 5th ed. (January 1995). Report prepared by the Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC. Available at http://www.epa.gov/ttnchie1/ap42/.

U.S. Environmental Protection Agency (2015) Transportation conformity guidance for quantitative hot-spot analyses in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas. Prepared by the U.S. EPA Office of Transportation and Air Quality, Transportation and Climate Division, EPA-420-B-15-084, November. Available at http://www3.epa.gov/otaq/stateresources/transconf/projectlevel-hotspot.htm.

8. Appendices

Appendix A – List and Figures of Sensitive Receptors

Due to the large number of sensitive receptors identified, a list of all receptor and additional figures are included in Appendix A.

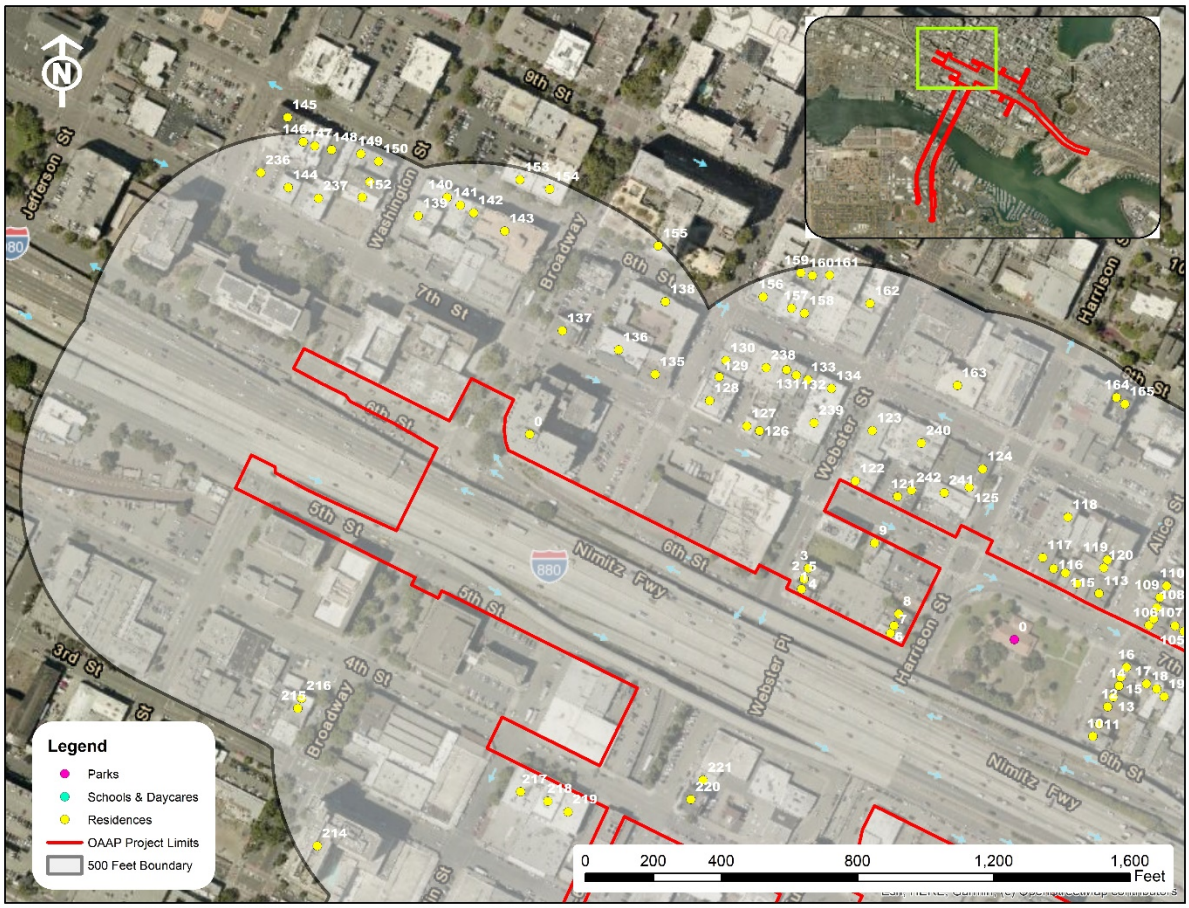
Sensitive Receptors: Residences					
Identifying Number	**Latitude**	**Longitude**	**Identifying Number**	**Latitude**	**Longitude**
0	37.79890223	-122.2740989	123	37.79893	-122.2713424
1	37.79791859	-122.2719123	124	37.79868	-122.270454
2	37.79798432	-122.2718915	125	37.79857	-122.2705623
3	37.7980524	-122.2718558	126	37.79893	-122.2722496
4	37.79798432	-122.2718915	127	37.79896	-122.2723504
5	37.79798432	-122.2718915	128	37.79912	-122.2726508
6	37.79763922	-122.2711963	129	37.79927	-122.2725748
7	37.79768617	-122.2711665	130	37.79937	-122.2725196
8	37.7977613	-122.2711309	131	37.79931	-122.272031
9	37.79821204	-122.271324	132	37.79928	-122.271953
10	37.79698486	-122.2695676	133	37.79925	-122.2718598
11	37.79705998	-122.2695176	134	37.79919	-122.2716697
12	37.79717267	-122.2694487	135	37.79928	-122.2730882
13	37.79723277	-122.2694036	136	37.79944	-122.2733829
14	37.79730414	-122.2693584	137	37.79956	-122.2738354
15	37.79736048	-122.2693418	138	37.79975	-122.2730064
16	37.79742246	-122.2692966	139	37.80029	-122.2749953
17	37.79731728	-122.2691374	140	37.80041	-122.2747633
18	37.79728536	-122.2690542	141	37.80036	-122.2746569
19	37.79723652	-122.2689947	142	37.80031	-122.2745485
20	37.79713886	-122.2687452	143	37.80019	-122.2742994
21	37.79709567	-122.2685717	144	37.80047	-122.2760411
22	37.79701491	-122.2686121	145	37.80092	-122.2760465
23	37.79693978	-122.268662	146	37.80076	-122.2759199
24	37.79658482	-122.268391	147	37.80073	-122.2758272
25	37.79672943	-122.2683102	148	37.80071	-122.2756917
26	37.79677263	-122.268227	149	37.80068	-122.2754564
27	37.7968778	-122.2681605	150	37.80064	-122.2753138
28	37.7969642	-122.2680987	151	37.80051	-122.2753851
29	37.79685902	-122.2679561	152	37.80041	-122.2754457
30	37.79678766	-122.2678967	153	37.80052	-122.2741765
31	37.79674634	-122.2678325	154	37.80046	-122.2739376
32	37.79669751	-122.2677041	155	37.8001	-122.2730642
33	37.79662614	-122.2674522	156	37.79978	-122.2722192

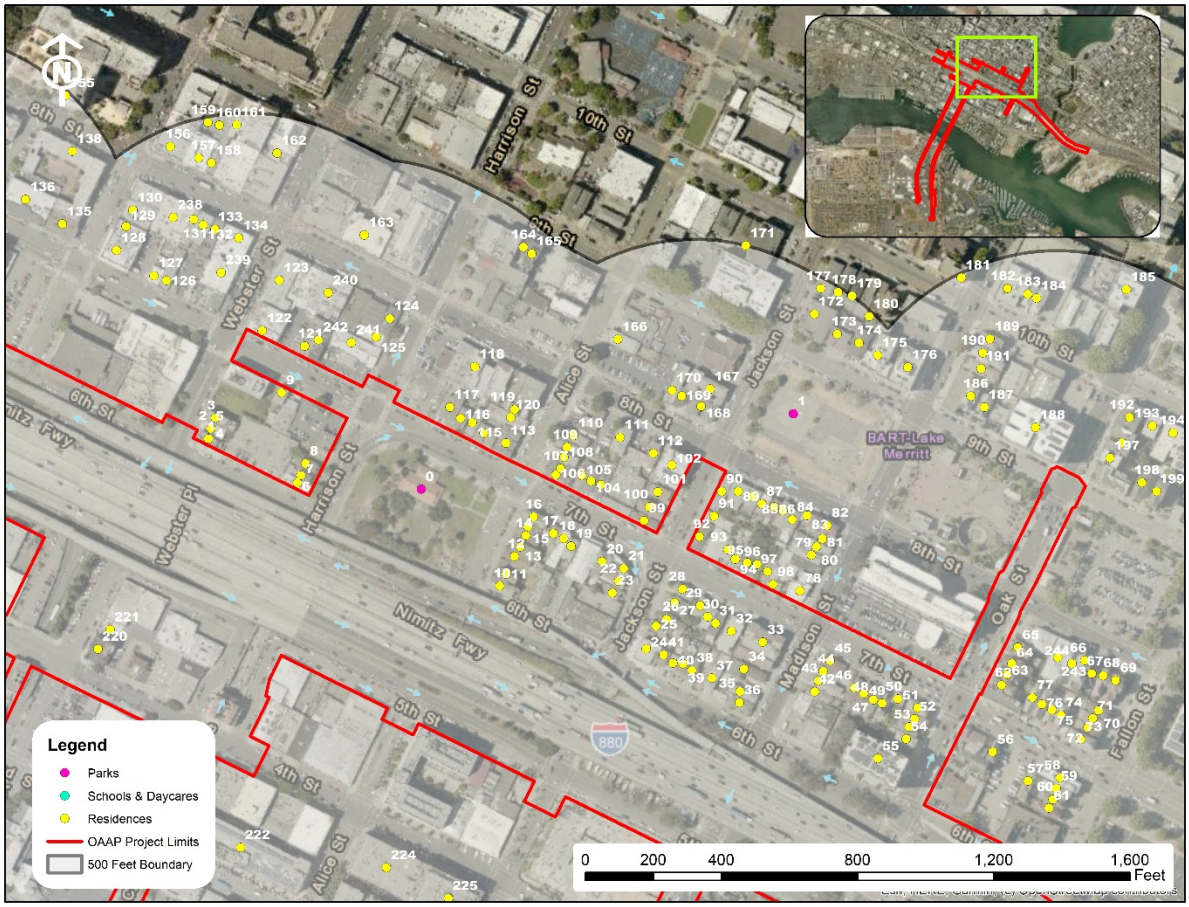
34	37.79645711	-122.2676043	157	37.7997	-122.271991
35	37.79631437	-122.2676352	158	37.79967	-122.2718876
36	37.796243	-122.26764	159	37.79993	-122.2719162
37	37.79639888	-122.267861	160	37.79991	-122.2718235
38	37.79644771	-122.2680226	161	37.79991	-122.2716844
39	37.79648903	-122.2680939	162	37.79973	-122.27136
40	37.79649467	-122.2681747	163	37.79921	-122.2706577
41	37.79654538	-122.2682508	164	37.79914	-122.2693777
42	37.79631249	-122.2670339	165	37.79909	-122.26931
43	37.79638198	-122.2670054	166	37.79855	-122.2686184
44	37.79644208	-122.2669673	167	37.79824	-122.2678768
45	37.79650781	-122.2669103	168	37.79813	-122.2679481
46	37.7963369	-122.2667178	169	37.79819	-122.268105
47	37.79630122	-122.2666393	170	37.79823	-122.2681834
48	37.79626178	-122.2665633	171	37.79915	-122.2675893
49	37.79623924	-122.266492	172	37.79871	-122.267039
50	37.79626554	-122.266366	173	37.79858	-122.2668536
51	37.79620919	-122.2662068	174	37.79853	-122.2666789
52	37.7961397	-122.2662305	175	37.79845	-122.2665292
53	37.79608899	-122.2662757	176	37.79837	-122.2662867
54	37.79601199	-122.2662995	177	37.79887	-122.2669855
55	37.79588803	-122.2665276	178	37.79885	-122.2668465
56	37.79592935	-122.2656031	179	37.79883	-122.2667333
57	37.79574529	-122.2653178	180	37.7987	-122.2665969
58	37.79576595	-122.2650588	181	37.79894	-122.2658553
59	37.79569834	-122.265092	182	37.79887	-122.2654846
60	37.79562885	-122.2651182	183	37.79884	-122.2653206
61	37.79557438	-122.2651515	184	37.79881	-122.2652493
62	37.79635432	-122.2655314	185	37.79887	-122.2645291
63	37.7964224	-122.2654869	186	37.79819	-122.2657783
64	37.79649048	-122.2654482	187	37.79812	-122.2656713
65	37.79659378	-122.2654007	188	37.79799	-122.2652578
66	37.79651161	-122.2648629	189	37.79855	-122.265625
67	37.79642709	-122.2648065	190	37.79846	-122.265682
68	37.79641536	-122.2647144	191	37.79837	-122.2656963
69	37.79638484	-122.2646134	192	37.79806	-122.2645019
70	37.79619468	-122.26475	193	37.798	-122.2643201
71	37.79614303	-122.2647976	194	37.79796	-122.2641526
72	37.79608434	-122.2648362	195	37.79782	-122.2637711
73	37.79600921	-122.2648927	196	37.79789	-122.2645626
74	37.79616416	-122.2650531	197	37.7978	-122.2646588
75	37.79619702	-122.2651244	198	37.79764	-122.2644021
76	37.79623224	-122.2652076	199	37.79758	-122.2642845
77	37.7962745	-122.2652848	200	37.79048	-122.2762005
78	37.79695297	-122.2671536	201	37.79062	-122.2775553
79	37.79718069	-122.2670615	202	37.78986	-122.277736
80	37.79723469	-122.2670199	203	37.78968	-122.2779594
81	37.79728399	-122.2669724	204	37.78946	-122.2780245

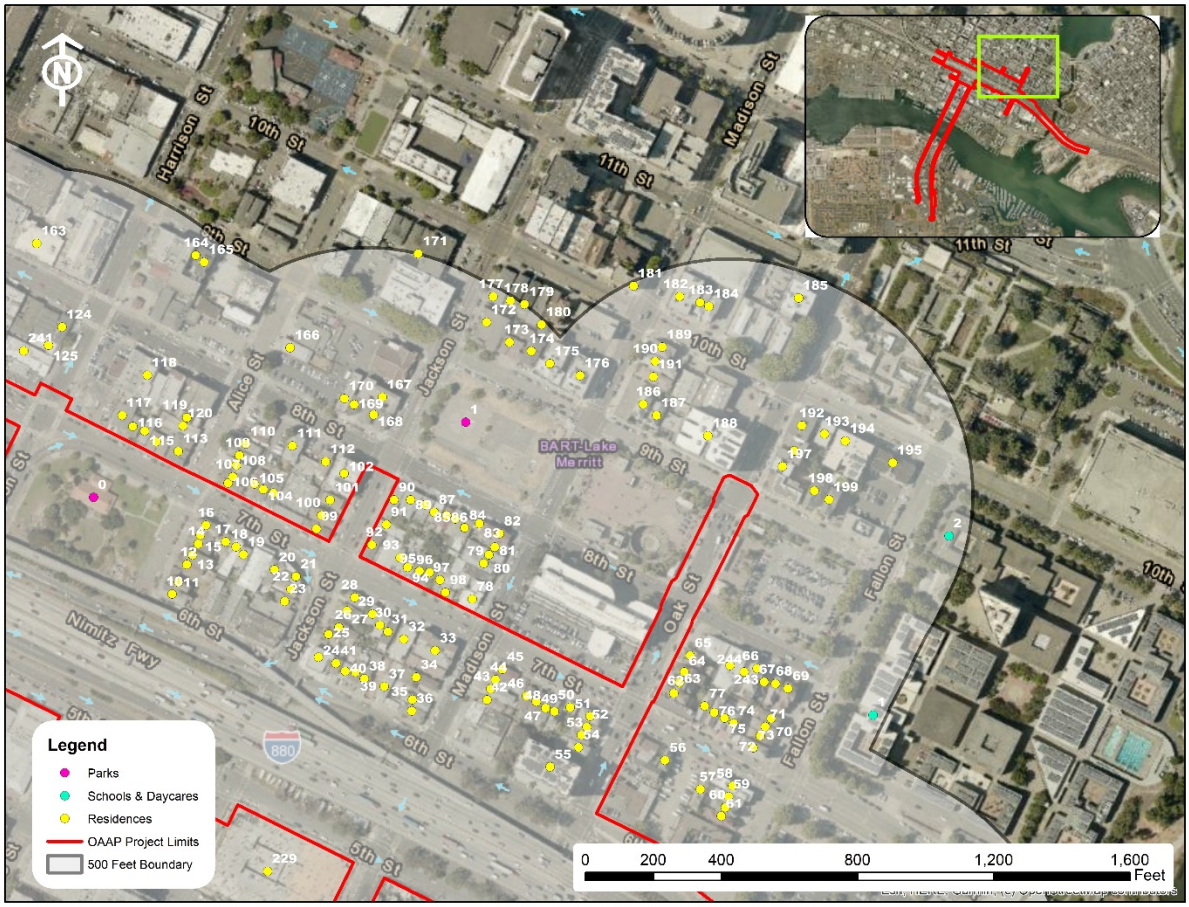
82	37.7973685	-122.2669337	205	37.78925	-122.2781766
83	37.79743189	-122.2670971	206	37.78905	-122.278305
84	37.79740606	-122.267216	207	37.79	-122.2785331
85	37.79746241	-122.2672902	208	37.78981	-122.2786472
86	37.79748588	-122.2673616	209	37.78958	-122.2787993
87	37.79750466	-122.2674596	210	37.78938	-122.2789229
88	37.79755162	-122.2675339	211	37.79001	-122.2764202
89	37.79758448	-122.2676497	212	37.79444	-122.2732042
90	37.79758448	-122.2677834	213	37.79499	-122.2746873
91	37.79742719	-122.2678458	214	37.79629	-122.2758067
92	37.79729807	-122.2679617	215	37.79716	-122.2759641
93	37.7972159	-122.2677329	216	37.79722	-122.2759318
94	37.79715487	-122.2676735	217	37.79663	-122.2741706
95	37.79713139	-122.2675784	218	37.79657	-122.2739519
96	37.797122	-122.2674982	219	37.7965	-122.2737903
97	37.79707505	-122.267415	220	37.79658	-122.2728013
98	37.79699523	-122.2673705	221	37.79671	-122.2727029
99	37.79739902	-122.2684073	222	37.79532	-122.2716533
100	37.79748588	-122.2683657	223	37.79479	-122.2716343
101	37.79758213	-122.2682974	224	37.7952	-122.2704801
102	37.79775116	-122.2681845	225	37.795	-122.2699834
103	37.79762674	-122.2687549	226	37.79482	-122.2704017
104	37.79765022	-122.2688352	227	37.79462	-122.2694752
105	37.79768543	-122.2689065	228	37.79444	-122.2689048
106	37.79769013	-122.2691174	229	37.79522	-122.2688002
107	37.79773003	-122.2690788	230	37.79461	-122.2677344
108	37.79780281	-122.269052	231	37.79407	-122.2680107
109	37.7978662	-122.2690283	232	37.79291	-122.2689546
110	37.79793897	-122.2689748	233	37.7937	-122.269739
111	37.79792723	-122.2686005	234	37.79399	-122.2695607
112	37.79782629	-122.2683331	235	37.79411	-122.2707394
113	37.79789202	-122.2695185	236	37.80056	-122.2762606
114	37.79795306	-122.2696968	237	37.8004	-122.2757971
115	37.79802114	-122.2697889	238	37.79932	-122.2721955
116	37.79804931	-122.2698839	239	37.79898	-122.2718105
117	37.79811974	-122.2699701	240	37.79885	-122.2709477
118	37.79837563	-122.2697681	241	37.79853	-122.2707623
119	37.79810565	-122.2694502	242	37.79855	-122.2710261
120	37.79805401	-122.2694799	243	37.79653	-122.2650798
121	37.79850816	-122.2711385	244	37.79649	-122.2649669
122	37.79860619	-122.2714793			

Sensitive Receptors: Parks		
Identifying Number	**Latitude**	**Longitude**
0	37.797599	-122.2702
1	37.798077	-122.267207

Sensitive Receptors: Schools		
Identifying Number	**Latitude**	**Longitude**
0	37.79261529	-122.2609412
1	37.7962167	-122.26393
2	37.79735385	-122.2633183
3	37.78400057	-122.2756976
4	37.78653703	-122.2760125
5	37.78242327	-122.2774157




Legend
Parks
Schools & Daycares
Residences
OAAP Project Limits
500 Feet Boundary
0
200
400
800
1,200
1,600
Feet
Harrison St
10th St
8th St
Webster St
Webster Pl
Alice St
Jackson St
Madison St
Oak St
Fallon St
6th St
7th St
8th St
9th St
5th St
4th St
Nimitz Fwy
BART-Lake Merritt
880


Harrison St
10th St
11th St
Madison St
Jackson St
Alice St
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9th St
7th St
6th St
5th St
Oak St
Fallon St
Nimitz Fwy
880
BART-Lake Merritt
Legend
Parks
Schools & Daycares
Residences
OAAP Project Limits
500 Feet Boundary
0
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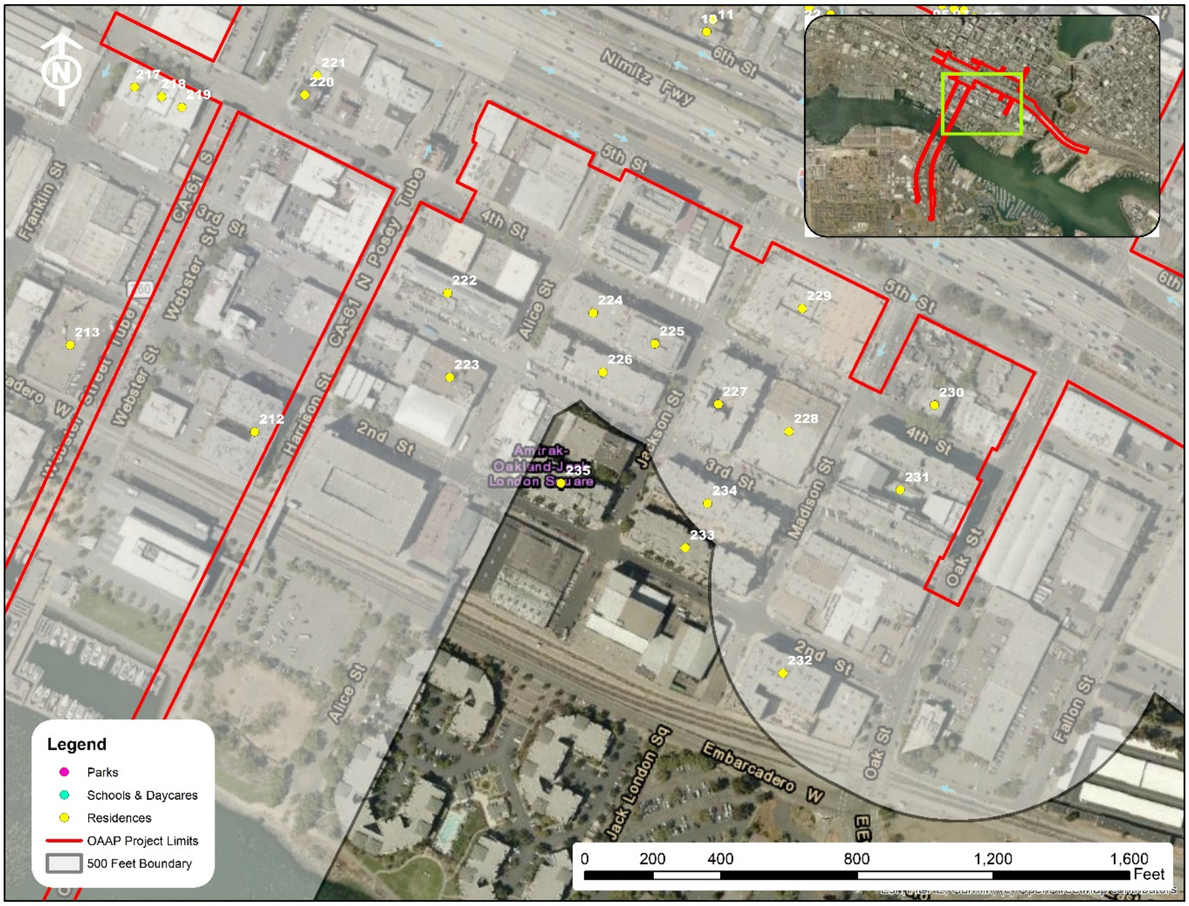
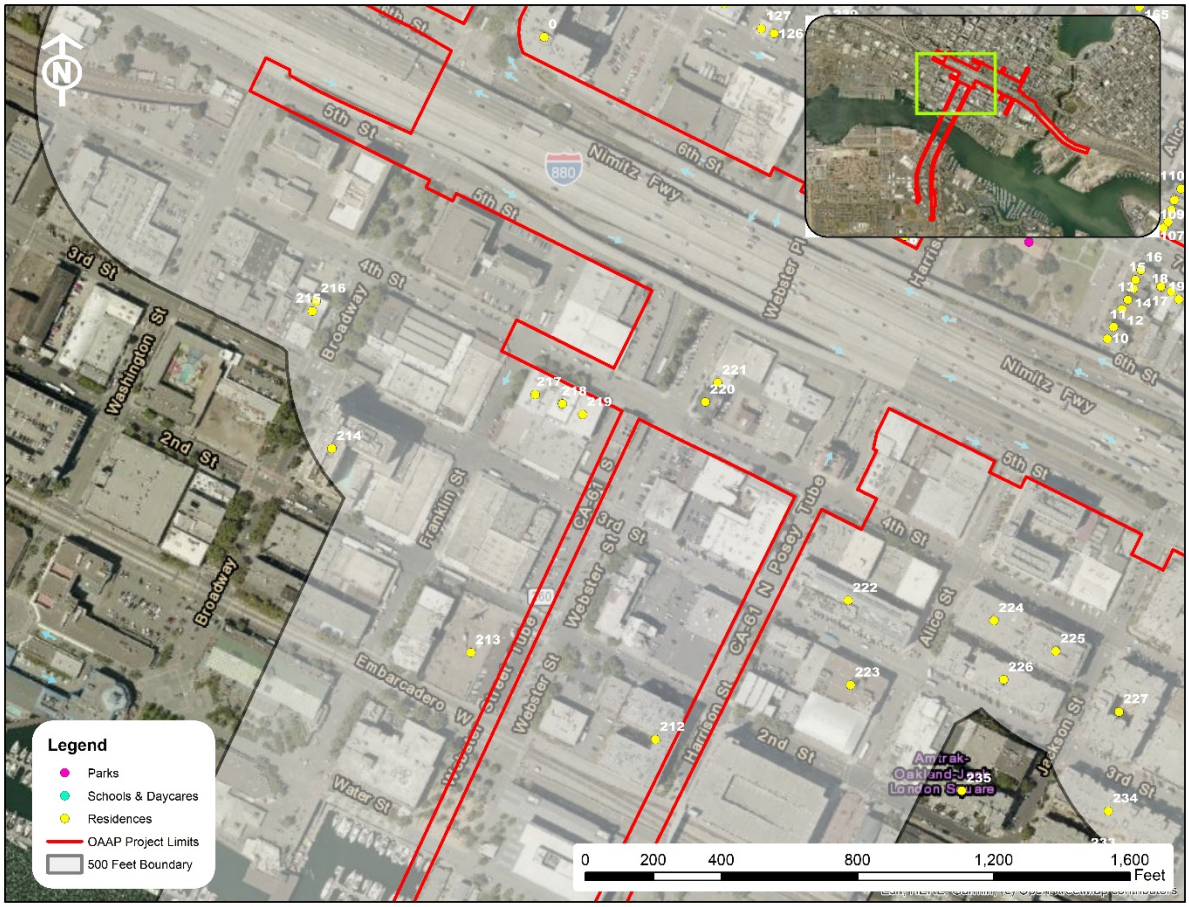
1,600
Feet



Legend
Parks
Schools & Daycares
Residences
OAAP Project Limits
500 Feet Boundary
0
200
400
800
1,200
1,600
Feet
Nimitz Fwy
6th St
5th St
4th St
3rd St
2nd St
Franklin St
Webster St
Harrison St
Alice St
Jackson St
Madison St
Oak St
Fallon St
Jack London Sq
Embarcadero W
CA-61 N Posey Tube
Webster Street Tube
Amtrak-Oakland-Jack London Square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Parks
Schools & Daycares
Residences
OAAP Project Limits
500 Feet Boundary
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400
800
1,200
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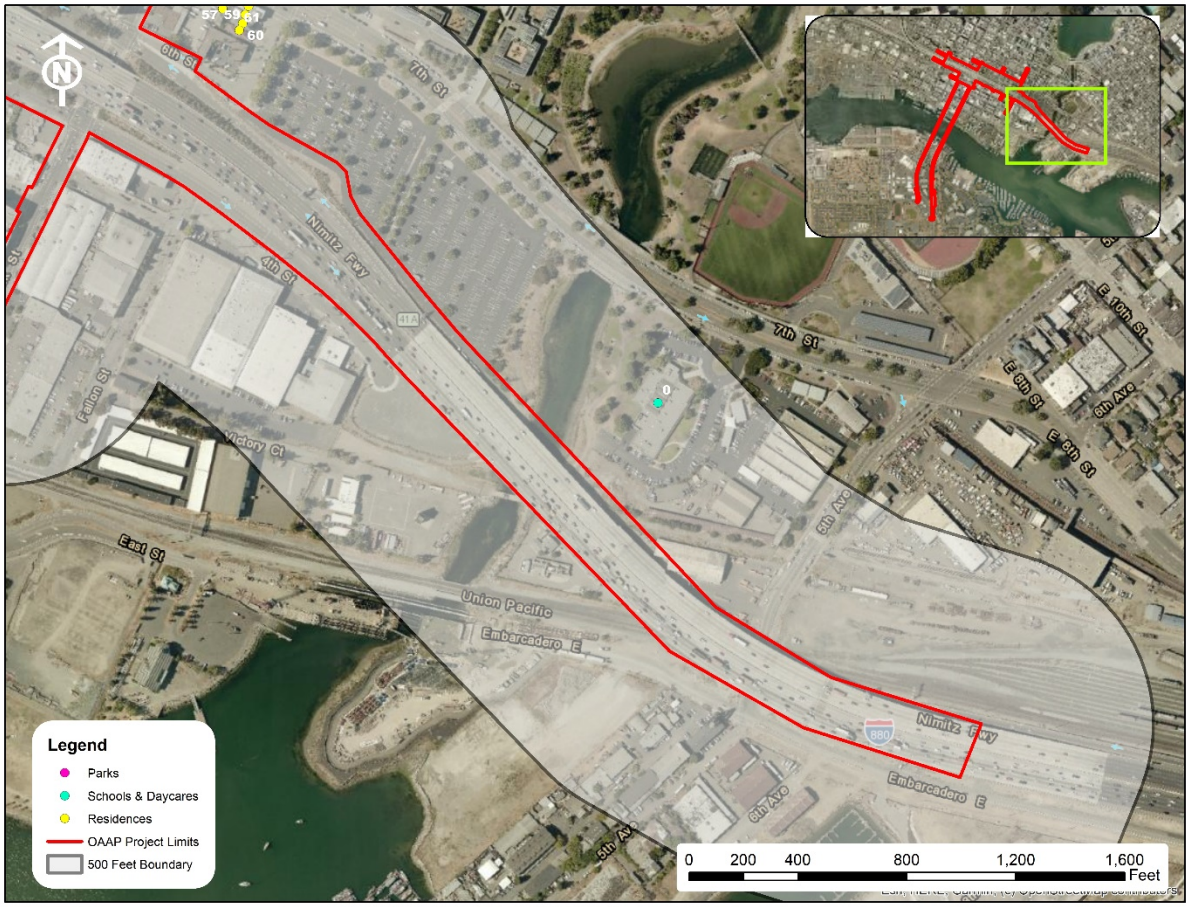
Feet
5th St
6th St
Nimitz Fwy
3rd St
4th St
2nd St
Broadway
Washington St
Franklin St
Webster St
Webster Tube
Embarcadero W
Water St
Harrison St
Alice St
Jackson St
Webster Pl
Harris
N Posey Tube
CA-61
Amtrak-Oakland-Jack London Square


57
59
61
60
6th St
7th St
Nimitz Fwy
4th St
41A
Fallon St
Victory Ct
East St
Union Pacific
Embarcadero E
5th Ave
6th Ave
880
E 10th St
E 9th St
E 8th St
Legend
Parks
Schools & Daycares
Residences
OAAP Project Limits
500 Feet Boundary
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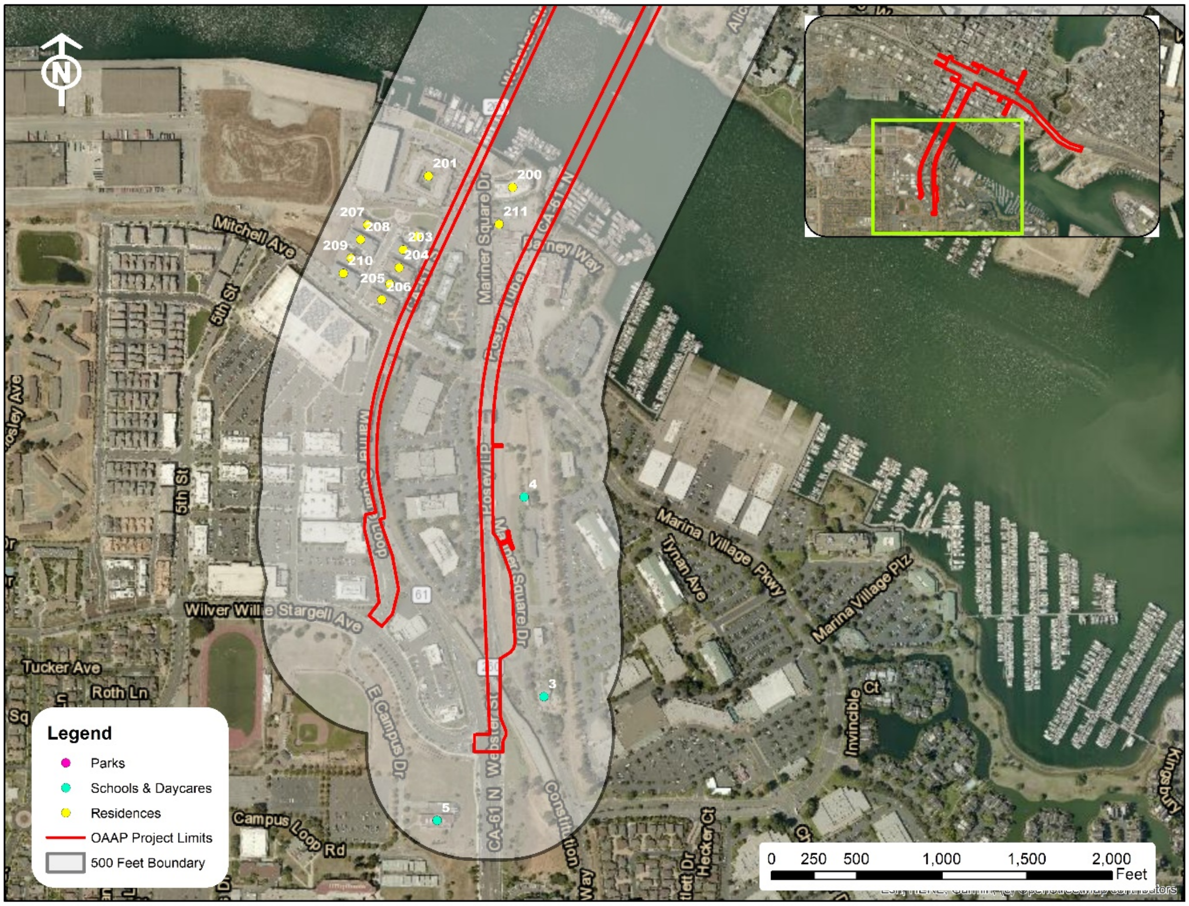
Feet


N
Legend
Parks
Schools & Daycares
Residences
OAAP Project Limits
500 Feet Boundary
0 250 500 1,000 1,500 2,000
Feet
Mitchell Ave
5th St
Mariner Square Dr
Mariner Square Loop
Wilver Willie Stargell Ave
Tucker Ave
Roth Ln
E Campus Dr
Campus Loop Rd
Webster St
CA-61 N
Constitution Way
Marina Village Pkwy
Tynan Ave
Marina Village Plz
Invincible Ct
Hecker Ct
Posey Tube
Mosley Ave
200
201
203
204
205
206
207
208
209
210
211
3
4
5

Appendix B – RTP, TIP, and FMS Listing for the Build Alternative

The Build Alternative is included in the regional emissions analysis conducted by MTC for the current RTP (17-01-0030), *Plan Bay Area 2040*. The regional emissions analysis found that significant Build Alternatives in the San Francisco Bay Area will conform to the SIP for attaining and/or maintaining the NAAQS as provided in Section 176(c) of the Clean Air Act. FHWA and FTA determined that the RTP conforms to the SIP on August 23, 2017. The Build Alternative is also included in the MTC's financially constrained 2019 TIP (TIP ID ALA070009). The TIP gives priority to eligible Transportation Control Measures (TCMs) identified in the SIP and provides sufficient funds to provide for their implementation. The Build Alternative's design concept, scope, and open-to-traffic date assumptions are generally consistent with the regional emissions analysis performed for the current RTP and TIP. Therefore, the Build Alternative will not interfere with the timely implementation of any TCMs identified in the SIP.

TIP ID: **ALA070009** County: Alameda System: State RTP ID: 17-01-0030 CTIPS 2060000367

Sponsor: Alameda County Transportation Commission (ACTC) Implementing Agency: Alameda County Transportation

Project Name: Oakland/Alameda Access Project

Description: Oakland and Alameda: Between Oak Street and Union Street: Reconfigure interchange and intersections to improve connections between I-880, the Posey and Webster tubes and the downtown Oakland area.

Air Quality Exempt Code: NON-EXEMPT

Route: 880 Post Mile From: Post Mile To: Toll

All funding in thousands of dollars

Phase	Fund Source	Prior Years	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	Future Years	Total Programmed
PE	OTHER LOCAL	$ 2,500		$ 500				$ 3,000
PE	RTP-LRP						$ 4,900	$ 4,900
PE	SALESTAX-MEASURE	$ 5,600						$ 5,600
ROW	RTP-LRP						$ 1,000	$ 1,000
CON	OTHER LOCAL					$ 1,000		$ 1,000
CON	RTP-LRP						$ 67,500	$ 67,500
Total Programmed Funding:		$ 8,100		$ 500		$ 1,000	$ 73,400	$ 83,000

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FMS Log in Version 4.1.31

Project Manager Report Manager Help Privacy Policy

VIEW PROJECT: **Oakland/Alameda Access Project**

Project Search | Project Detail | Funding | Air Quality | Project Documents | Contacts | Delivery Milestones | Location | Screening Criteria | Comments | RTP Information | Group Listing

TIP ID	ALA070009	**Status**	ACTIVE	**County**	Alameda	**Project name**	Oakland/Alameda Access Project
FMS ID	176.00	**Version**	10	**Implementing Agency**	ACTC	**Sponsor**	ACTC

Regional Conformity

Air Quality Code	Air Quality Description
Non-Exempt	NON-EXEMPT

☐ AQCTF Regional Conformity Review

Air Basin	Air District
San Francisco Bay Area	Bay Area AQMD

TCM	TCM Number	VOC	NOX	CO	PM10	PM2.5	CO2
		0.0	0.0	0.0	0.0	0.0	0.0

Conformity Analysis Year	Regionally Significant
2030	

** Based on RTP ID of the project

Project Conformity

Overview: The San Francisco Bay Area has been designated as non-attainment for the 24-hour PM2.5 standard. Beginning December 14, 2010, certain projects are required to complete a PM2.5 hot-spot analysis as part of the project-level conformity determination process. Project sponsors must engage in interagency consultation on the PM2.5 hot-spot analysis through MTC's Air Quality Conformity Task Force. The Conformity Task Force will (1) determine if a project meets the definition of a project of air quality concern and if the project requires undergoing a project-level PM2.5 hot-spot analysis, and (2) review the methods, assumptions and analysis of the PM2.5 hot-spot analysis. The EPA and either FHWA or FTA must concur with the recommendations from the Conformity Task Force. Upon completion of the interagency consultation, project sponsors must seek approval from FHWA or FTA on the PM2.5 hot-spot analysis.

Project Conformity Analysis Summary

Next Step	**Responsible Party**
Step 2 - Awaiting completion of a Project Assessment Form and a Requested Date of Consultation	Sponsor

Milestone	Status	Comments
Step 1 - Project Identification		
Sponsor Input	Completed	
System Determination	Completed	Project exempt from regional air quality conformity 40 CFR 93.127:{Interchange reconfiguration projects.}. However, this project may still require project level conformity and is therefore subject to interagency consultation. Please complete Step 2
Task Force Determination	N/A	
Step 2 - Interagency Consultation		
Sponsor Input	Pending	
Task Force Determination	Pending	Requested Date of Consultation: Pending
Step 3 - PM 2.5 Hot Spot Analysis	TBD	
Sponsor Input		
Task Force Review		

FMS Log in Version 4.1.31

Project Manager Report Manager Help Privacy Policy

VIEW PROJECT: **Oakland/Alameda Access Project**

Project Search | Project Detail | Funding | Air Quality | Project Documents | Contacts | Delivery Milestones | Location | Screening Criteria | Comments | RTP Information | Group Listing

Alternate ID Information

TIP ID	ALA070009	**FMS ID**	176.00
CTIPS ID	20600003678	**RTP ID**	17-01-0030
Version	10	**TIP Revision No**	2019-00
Revision Type	Amendment	**RTP Page No**	
RTP Cycle	PLANBAYAREA2040	**RTP Project Cost**	$244
RTP Title	I-880 Broadway/Jackson Interchange Improvements		
Regional Approval Date	09/26/2018	**State Approval Date**	11/02/2018
Federal Approval Date	12/17/2018	**Final Approval Date**	12/17/2018

Status Information

Created	03/03/2018	**Last updated**	08/13/2018	**Status**	ACTIVE
Current version	No	**Locked**	No		
Completed	No	**Modified**		**Review Level**	AA

General Information

Project Name	Oakland/Alameda Access Project		
Sponsor	ACTC	**Implementing Agency**	ACTC
Project Type	FREEWAY I/C	**Purpose**	SYSTMGMT
Mode	AUTO:100%		
Submode	AUTO:100%		
Primary Mode	AUTO:100%		
Primary Submode	AUTO:100%		
Transportation System	STATE HWY		
Description	Oakland and Alameda: Between Oak Street and Union Street: Reconfigure interchange and intersections to improve connections between I-880, the Posey and Webster tubes and the downtown Oakland area.		
Expanded Description	Oakland and Alameda: Between Oak Street and Union Street: Reconfigure interchange and intersections to improve connections between I-880, the Posey and Webster tubes and the downtown Oakland area. Preliminary engineering and environmental clearance for the reconfiguration of the I-880 Broadway Jackson Interchange to include removing or reconstructing the NB 880 Broadway off-ramp, widening of the NB 880 Oak St off-ramp, constructing a new NB I-880 on-ramp from Harrison and Market, reconfiguring the I-980 Jackson St off-ramp and constructing a new SB 880 off-ramp at Oak St. Provide improvements along 5th and 6th street to facilitate flow of traffic to and from I-880, Jack London Square, Chinatown, downtown Oakland, and the Posey and Webster Tube. Project is associated with Plan Bay Area 2040 project ID 17-01-0061		
Reason for Revision	2019 TIP Update - Update funding plan		
Reason Type	4C		
Description of Change	2019 TIP Update - Update funding plan		
Transportation problem to be addressed	Limited and circuitous access between Alameda and I-880. Current access to Alameda relies on Oakland's major arterials. Suboptimal operations on I-880 within the vicinity of Broadway and Jackson.		

Primary Location Information

Location				
Area				
County	Alameda			
Urbanized Area				
State Hwy	880			
Post Mile	**From**		**To**	

METROPOLITAN TRANSPORTATION COMMISSION (HTTP://WWW.MTC.CA.GOV)

Data

Basic Information

What is this project/program?	I-880 Broadway/Jackson Interchange Improvements
What would this project/program do?	The project proposes to improve connectivity between I-880/I-980 and Alameda and Oakland. Improvements include reconfiguration of existing ramps, demolition of existing ones, and construction of new ramps.
RTPID:	17-01-0030
County:	Alameda
Agency:	Alameda County Transportation Commission (ACTC)
Mode:	Auto
System:	Street/Highway Facility

Cost and Funding (in Year-of-Expenditure)

How much does this project/program cost?	$244 (millions)
How much of this project/program is covered in the Plan period?	$242 (millions)
How much of the project/program was included in previous plans?	$2 (millions)

Schedule

By when is this project/program anticipated to open?	2023

Location

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Appendix C – Interagency Consultation Documentation

From: Fund Management System
To: vbhat@alamedactc.org
Cc: Fund Management System; Harold Brazil
Subject: FMS POAQC Project TIP ID ALA070009 (Oakland/Alameda Access Project) update: Project is a not a POAQC
Date: Thursday, December 12, 2019 1:07:31 PM

Dear Project Sponsor

Based on the recent interagency consultation with the Air Quality Conformity Task force, Project TIP ID ALA070009 (FMS ID:176.00) does not fit the definition of a project of air quality concern as defined by 40 CFR 93.123(b)(1) or 40 CFR 93.128 and therefore is not subject to PM2.5 project level conformity requirement. Please save this email as documentation confirming the project has undergone and completed the interagency consultation requirement for PM2.5 project level conformity. Note project sponsors are required to undergo a proactive public involvement process which provides opportunity for public review as outlined by 40 CFR 93.105(e). For projects that are not of air quality concern, a comment period is only required for project level conformity determinations if such a comment period would have been required under NEPA. For more information, please see FHWA PM2.5 Project Level Conformity Frequently Asked Questions (FAQ):
http://www.fhwa.dot.gov/environment/air_quality/conformity/reference/faqs/pm25faqs.cfm

If you have any questions, please direct them to Harold Brazil at hbrazil@bayareametro.gov or by phone at 415-778-6747

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Appendix D – RCEM Construction Emissions Calculation

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Project Name: OAAP: Stage 1 Construct Jackson Hoseshoe - Subphase 1A

Complete ALL Portions in Yellow If Possible

See Equipment Type TAB for type, horsepower and load factor

Fill in Green Boxes if Info Known (Defaults Available)

2023 Construction Start Year (2014-2040)

Project Type

Project Construction Time (Months)

Working Days per Month

Predominant Soil/Site Typer (1,2, or 3)

Project Length (miles)

Total Project Area (acres)

Maximum Area Disturbed/Day (acres)

Water Trucks Used (y/n)

Soil Types

1) Sand Gravel: Use for Quaternary Deposits (Delta/West County)

2) Weathered Rock-Earth: Use for Laguna formation (Jackson Higway area) or the lone formation (Scott Road, Rancho Murieta)

3) Blasted Rock: Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South Highway 50, Rancho Murieta)

*Assuming all excavated concrete will be exported with soil together

*Assuming that there are 20 workdays per month

*Assuming all excavated asphalt will be reused

*Assuming soil hauling and asphalt hauling have the same trip

Equipment Qty	Description	HP		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours		Comments
	(1Aa) Mobilization, Clear and Grubb			total duration	40			Soil Hauling	Asphalt Hauling
1	Sweepers/Scrubbers	64		8	40	8	320	Haul Truck Efficiency	Haul Truck Capacity
4	Signal Boards	6		8	40	8	1280	12 (yd^3)	12 (yd^3)
1	Excavators	158		8	40	8	320	Import Volume	Import Volume
1	Generator Sets	84		8	40	8	320	0 (yd^3/hr)	0 (yd^3/day)
1	Pressure Washers	13		8	40	8	320	Export Volume	Export Volume
1	Other Material Handling Equipment	168		8	40	8	320	4 (yd^3/hr)	0 (yd^3/day)
1	Generator Sets	84		8	40	8	320		
1	Off-Highway Tractors	124		8	5	1	40		
1	Dump Trucks	402		8	40	8	320		
1	Skid Steer Loaders	65		8	40	8	320		
							0		
	(1Ac) Construct 5th Street entrance to Webster			total duration	40			Haul Truck Capacity	Haul Truck Capacity
								12 (yd^3)	12 (yd^3)
4	Signal Boards	6		8	40	8	1280	Import Volume	Import Volume
1	Cement and Mortar Mixers	9		8	10	2	80	0 (yd^3/day)	32 (yd^3/day)
1	Scrapers	367		8	10	2	80	Export Volume	Export Volume
1	Generator Sets	84		8	40	8	320	0 (yd^3/day)	0 (yd^3/day)
1	Plate compactors	8		8	10	2	80		
1	Concrete/Industrial Saws	81		8	40	8	320		
1	Crushing/Proc. Equipment	85		8	5	1	40		
1	Trenchers	78		8	10	2	80		
1	Excavators	158		8	10	2	80		
1	Sweepers/Scrubbers	64		8	40	8	320		
1	Graders	187		8	10	2	80		
1	Pavers	130		8	10	2	80		
1	Paving Equipment	132		8	10	2	80		
1	Rollers	80		8	10	2	80		
1	Surfacing Equipment	263		8	10	2	80		
1	Off-Highway Tractors	124		8	40	8	320		
1	Dump Trucks	402		8	20	2.666666667	160		
1	Skid Steer Loaders	65		8	40	8	320		
1	Jack Hammer	3		8	10	2	80		
	(1Ad) Construct Webster Tube/Bike Ped Walkway			total duration	120			Haul Truck Capacity	Haul Truck Capacity
								12 (yd^3)	12 (yd^3)
4	Signal Boards	6		8	120	8	3840	Import Volume	Import Volume
1	Cement and Mortar Mixers	9		8	40	2.666666667	320	0 (yd^3/day)	0 (yd^3/day)
1	Scrapers	367		8	15	1	120	Export Volume	Export Volume
1	Generator Sets	84		8	120	8	960	32 (yd^3/day)	0 (yd^3/day)
1	Plate compactors	8		8	20	1.333333333	160		
1	Concrete/Industrial Saws	81		8	20	1.333333333	160		
1	Skid Steer Loaders	65		8	40	2.666666667	320		
1	Pressure Washers	13		8	120	8	960		
1	Excavators	158		8	20	1.333333333	160		
1	Rough Terrain Forklifts	100		8	120	8	960		
1	Dump Trucks	402		8	20	1.333333333	160		
1	Graders	187		8	30	2	240		
1	Rollers	80		8	15	1	120		
1	Surfacing Equipment	263		8	10	0.666666667	80		
1	Sweepers/Scrubbers	64		8	120	8	960		
1	Crushing/Proc. Equipment	85		8	40	2.666666667	320		
1	Off-Highway Tractors	124		8	100	6.666666667	800		
1	Welders	46		8	20	1.333333333	160		
	(1Ae) Restripe Webster Tube			total duration	20			Haul Truck Capacity	Haul Truck Capacity
								-	-
4	Signal Boards	6		8	0	0	0	Import Volume	Import Volume
1	Other Construction Equipment	172		8	20	1.333333333	160	0 (yd^3/day)	0 (yd^3/day)
						0	0	Export Volume	Export Volume
						0	0	-	0 (yd^3/day)
						0	0	-	
						0	0		
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						0	0		
						0	0		
						0	0		
						0	0		

	Grubbing/ Land Clearing		Grading/Excavation		Drainage/Utilities/Subgrade		Paving	
Trips	Miles/ Round Trip	Round Trips/ Day	Miles/ Round Trip	Round Trips/ Day	Miles/ Round Trip	Round Trips/ Day	Miles/Round Trip	

Worker Commute

Miles/one-way trip	
One-way trips/day	
Grubbing/Land Clearing Employee #	
Grading/Excavation Employee #	
Drainage/Utilities/Subgrade Employee #	
Paving Employee #	

Project Name: OAAP: Stage 1 Construct Jackson Hoseshoe - Subphase 1B

Complete ALL Portions in Yellow If Possible

See Equipment Type TAB for type, horsepower and load factor

Fill in Green Boxes if Info Known (Defaults Available)

Construction Start Year (2014-2040)

Project Type

Project Construction Time (Months)

Working Days per Month

Predominant Soil/Site Typer (1,2, or 3)

Project Length (miles)

Total Project Area (acres)

Maximum Area Disturbed/Day (acres)

Water Trucks Used (y/n)

Soil Types

1) Sand Gravel: Use for Quaternary Deposits (Delta/West County)

2) Weathered Rock-Earth: Use for Laguna formation (Jackson Higway area) or the lone formation (Scott Road, Rancho Murieta)

3) Blasted Rock: Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South Highway 50, Rancho Murieta)

*Assuming all excavated concrete will be exported with soil together

*Assuming that there are 20 workdays per month

*Assuming all excavated asphalt will be reused

*Assuming soil hauling and asphalt hauling have the same trip

Equipment Qty	Description	HP		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours		Comments	
	(1Ba) Construct RW 4			total duration	60					
4	Signal Boards	6		8	60	8	1920	**Haul Truck Capacity**	**Haul Truck Capacity**	
1	Aerial Lifts	63		8	60	8	480	12 (yd^3)	12 (yd^3)	
1	Cement and Mortar Mixers	9		8	40	7	320	**Import Volume**	**Import Volume**	
1	Crushing/Proc. Equipment	85		8	20	8	160	0 (yd^3/day)	32 (yd^3/day)	
1	Generator Sets	84		8	60	8	480	**Export Volume**	**Export Volume**	
1	Sweepers/Scrubbers	64		8	60	8	480	32 (yd^3/day)	0 (yd^3/day)	
1	Concrete/Industrial Saws	81		8	60	8	480			
1	Off-Highway Tractors	124		8	60	8	480			
1	Dump Trucks	402		8	20	2	160			
1	Welders	46		8	30	4	240			
1	Excavators	158		8	20	2	160			
1	Skid Steer Loaders	65		8	60	8	480			
1	Pile Driver	164		8	20	8	160			
1	Forklifts	89		8	60	8	480			
	(1Bb) Close Broadway to Jackson Off-Ramp and Construct RW 2 and 3			total duration	80			**Soil Hauling**	**Asphalt Hauling**	
4	Signal Boards	6		8	80	8	2560	**Haul Truck Capacity**	**Haul Truck Capacity**	
1	Aerial Lifts	63		8	40	4	320	12 (yd^3)	12 (yd^3)	soil
1	Cement and Mortar Mixers	9		8	70	7	560	**Import Volume**	**Import Volume**	
1	Sweepers/Scrubbers	64		8	80	8	640	0 (yd^3/day)	0 (yd^3/day)	905
1	Generator Sets	84		8	80	8	640	**Export Volume**	**Export Volume**	
1	Crushing/Proc. Equipment	85		8	80	8	640	128 (yd^3/day)	0 (yd^3/day)	2964
1	Concrete/Industrial Saws	81		8	80	8	640			2059
1	Welders	46		8	40	4	320			to export
1	Excavators	158		8	20	2	160			
1	Skid Steer Loaders	65		8	80	8	640			
1	Forklifts	89		8	40	4	320			
4	Dump Trucks	402		8	20	2	640			
1	Pile Driver	164		8	20	8	160			
1	Off-Highway Tractors	124		8	80	8	640			
	(1Bc) Construct Horseshoe and reconstruct Jackson Off-Ramp, Remove Jackson Off-Ramp, Construct Partial RW 1, 8R, 8L, Reconstruct Jackson Off-ramp			total duration	240					
4	Signal Boards	6		8	240	8	7680	**Haul Truck Capacity**	**Haul Truck Capacity**	
1	Aerial Lifts	63		8	240	8	1920	12 (yd^3)	12 (yd^3)	soil
1	Cement and Mortar Mixers	9		8	220	8	1760	**Import Volume**	**Import Volume**	remove jackson
1	Scrapers	367		8	220	8	1760	0(yd^3/day)	128(yd^3/day)	267
1	Generator Sets	84		8	240	8	1920	**Export Volume**	**Export Volume**	
1	Plate compactors	8		8	15	4	120	128(yd^3/day)	0(yd^3/day)	567
1	Crushing/Proc. Equipment	85		8	30	4	240			
1	Concrete/Industrial Saws	81		8	20	8	160			
1	Cranes	231		8	120	4	960			RW 8R
1	Graders	187		8	30	1	240			
1	Excavators	158		8	10	8	80			364 backfill
1	Skid Steer Loaders	65		8	40	4	320			319 excavation
1	Rough Terrain Forklifts	100		8	40	4	320			
1	Off-Highway Tractors	124		8	120	4	960			RW 1
4	Dump Trucks	402		8	80	4	2560			
1	Sweepers/Scrubbers	64		8	240	8	1920			47 backfill
1	Trenchers	78		8	40	8	320			118 excavation
1	Welders	46		8	80	8	640			
1	Pavers	130		8	30	1	240			290.5
1	Paving Equipment	132		8	30	1	240			Export
1	Jack Hammer	3		8	40	8	320			
1	Hoe Ram	169		8	10	8	80			
1	Pile Driver	164		8	40	8	320			
1	Rollers	80		8	20	4	160			
1	Surfacing equipment	263		8	20	4	160			
1	Other Construction Equipment	172		8	240	8	1920			
	(1Bd) Complete Posey Tube Connection to Horseshoe and Complete RW 1, Begin RW 6			total duration	80			**Haul Truck Capacity**	**Haul Truck Capacity**	
								12 (yd^3)	12 (yd^3)	Rest of RW#1
4	Signal Boards	6		8	80	8	2560	**Import Volume**	**Import Volume**	23.5
1	Cement and Mortar Mixers	9		8	40	4	320	0(yd^3/day)	0(yd^3/day)	
1	Scrapers	367		8	20	2	160	**Export Volume**	**Export Volume**	59
1	Generator Sets	84		8	80	8	640	32(yd^3/day)	0(yd^3/day)	
1	Plate compactors	8		8	20	2	160			All asphaht for posey tube has been included in 1Bb
1	Concrete/Industrial Saws	81		8	20	2	160			
1	Skid Steer Loaders	65		8	40	4	320			
1	Pressure Washers	13		8	80	8	640			
1	Excavators	158		8	20	2	160			
1	Rough Terrain Forklifts	100		8	60	6	480			
1	Graders	187		8	20	2	160			
1	Rollers	80		8	20	2	160			
1	Dump Trucks	402		8	20	2	160			
1	Pavers	130		8	20	2	160			
1	Pile Driver	164		8	20	2	160			
1	Paving Equipment	132		8	20	2	160			
1	Off-Highway Tractors	124		8	60	6	480			

Trips	**Grubbing/ Land Clearing** Miles/ Round Trip	Round Trips/ Day	**Grading/Excavation** Miles/ Round Trip	Round Trips/ Day	**Drainage/Utilities/Subgrade** Miles/ Round Trip	Round Trips/ Day	**Paving** Miles/Round Trip
Soil Hauling							
Asphalt Hauling							
Water Trucks							

Worker Commute	
Miles/one-way trip	
One-way trips/day	
Grubbing/Land Clearing Employee #	
Grading/Excavation Employee #	
Drainage/Utilities/Subgrade Employee #	
Paving Employee #	

Project Name: OAAP: Stage 1 Construct Jackson Hoseshoe - Subphase 1B

Complete ALL Portions in Yellow If Possible

See Equipment Type TAB for type, horsepower and load factor

Fill in Green Boxes if Info Known (Defaults Available)

Construction Start Year (2014-2040)	
Project Type	
Project Construction Time (Months)	
Working Days per Month	
Predominant Soil/Site Typer (1,2, or 3)	
Project Length (miles)	
Total Project Area (acres)	
Maximum Area Disturbed/Day (acres)	
Water Trucks Used (y/n)	

Soil Types

1) Sand Gravel: Use for Quaternary Deposits (Delta/West County)

2) Weathered Rock-Earth: Use for Laguna formation (Jackson Higway area) or the lone formation (Scott Road, Rancho Murieta)

3) Blasted Rock: Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South Highway 50, Rancho Murieta)

*Assuming all excavated concrete will be exported with soil together

*Assuming that there are 22 workdays per month

*Assuming all excavated asphalt will be reused

*Assuming soil hauling and asphalt hauling have the same trip

Equipment Qty	Description	HP		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours		Comments	
	(1C) Construct 5th Street curb/gutter, SW and pavement	Start Date:		total duration	20					
		End Date:								
4	Signal Boards	6		8	20	8	640	Haul Truck Capacity	Haul Truck Capacity	
1	Cement and Mortar Mixers	9		8	10	4	80	12 (yd^3)	12 (yd^3)	
1	Scrapers	367		8	10	4	80	Import Volume	Import Volume	
1	Generator Sets	84		8	10	4	80	0 (yd^3/day)	0 (yd^3/day)	
1	Plate compactors	8		8	10	4	80	Export Volume	Export Volume	
1	Concrete/Industrial Saws	81		8	10	4	80	32 (yd^3/day)	0 (yd^3/day)	
1	Skid Steer Loaders	65		8	10	4	80			
1	Pressure Washers	13		8	15	6	120			
1	Graders	187		8	10	4	80			
1	Surfacing Equipment	263		8	10	4	80			
1	Sweepers/Scrubbers	64		8	20	8	160			
1	Crushing/Proc. Equipment	85		8	10	4	80			
1	Dump Trucks	402		8	10	4	80			
1	Pavers	130		8	10	4	80			
1	Paving Equipment	132		8	10	4	80			
1	Off-Highway Tractors	124		8	15	6	120			

905

2964

2059 to export

soil

remove jackson

267

567

RW 8R

364 backfill
319 excavation

RW 1

47 backfill
118 excavation

290.5 Export

Rest of RW#1

23.5

59

All asphaht for posey tube has been included in 1Bb

Trips	Grubbing/ Land Clearing Miles/ Round Trip	Round Trips/ Day	Grading/Excavation Miles/ Round Trip	Round Trips/ Day	Drainage/Utilities/Subgrade Miles/ Round Trip	Round Trips/ Day	Paving Miles/Round Trip
Soil Hauling							
Asphalt Hauling							
Water Trucks							

Worker Commute	
Miles/one-way trip	
One-way trips/day	
Grubbing/Land Clearing Employee #	
Grading/Excavation Employee #	
Drainage/Utilities/Subgrade Employee #	
Paving Employee #	

Project Name: OAAP: Stage 1 Construct Jackson Hoseshoe - Subphase 1B

Complete ALL Portions in Yellow If Possible

See Equipment Type TAB for type, horsepower and load factor

Fill in Green Boxes if Info Known (Defaults Available)

Construction Start Year (2014-2040)

Project Type

Project Construction Time (Months)

Working Days per Month

Predominant Soil/Site Typer (1,2, or 3)

Project Length (miles)

Total Project Area (acres)

Maximum Area Disturbed/Day (acres)

Water Trucks Used (y/n)

Soil Types

1) Sand Gravel: Use for Quaternary Deposits (Delta/West County)

2) Weathered Rock-Earth: Use for Laguna formation (Jackson Higway area) or the lone formation (Scott Road, Rancho Murieta)

3) Blasted Rock: Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South Highway 50, Rancho Murieta)

*Assuming all excavated concrete will be exported with soil together

*Assuming that there are 22 workdays per month

*Assuming all excavated asphalt will be reused

*Assuming soil hauling and asphalt hauling have the same trip

Equipment Qty	Description	HP		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours		Comments	
	(1Da) Restripe Posey Tube			total duration	20					
4	Signal Boards	6		8	20	8	640	Haul Truck Capacity	Haul Truck Capacity	
1	Other Construction Equipment	172		8	20	8	160	0 (yd^3)	0 (yd^3)	
								Import Volume	Import Volume	
								0 (yd^3/day)	0 (yd^3/day)	
								Export Volume	Export Volume	
								0 (yd^3/day)	0 (yd^3/day)	
	(1Db) Overhead Guide signs			total duration	20			Soil Hauling	Asphalt Hauling	
4	Signal Boards	6		8	20	8	640	Haul Truck Capacity	Haul Truck Capacity	
1	Aerial Lifts	63		8	20	8	160	12 (yd^3)	12 (yd^3)	soil
1	Cement and Mortar Mixers	9		8	10	4	80	Import Volume	Import Volume	
1	Sweepers/Scrubbers	64		8	20	8	160	0 (yd^3/day)	0 (yd^3/day)	905
1	Generator Sets	84		8	20	8	160	Export Volume	Export Volume	
1	Crushing/Proc. Equipment	85		8	5	2	40	128 (yd^3/day)	0 (yd^3/day)	2964
1	Concrete/Industrial Saws	81		8	15	6	120			2059
1	Welders	46		8	5	2	40			to export
1	Excavators	158		8	2	0.8	16			
1	Skid Steer Loaders	65		8	0	0	0			
1	Forklifts	89		8	0	0	0			
1	Dump Trucks	402		8	8	3.2	64			
1	Pile Driver	164		8	10	4	80			
1	Off-Highway Tractors	124		8	10	4	80			
	(1Dc) Construct RW9, pavement and stripe Harrison			total duration	40					
4	Signal Boards	6		8	40	8	1280	Haul Truck Capacity	Haul Truck Capacity	
1	Aerial Lifts	63		8	20	4	160	12 (yd^3)	12 (yd^3)	soil
1	Cement and Mortar Mixers	9		8	20	4	160	Import Volume	Import Volume	remove jackson
1	Scrapers	367		8	20	4	160	0(yd^3/day)	128(yd^3/day)	267
1	Generator Sets	84		8	20	4	160	Export Volume	Export Volume	
1	Plate compactors	8		8	20	4	160	64 (yd^3/day)	0(yd^3/day)	567
1	Crushing/Proc. Equipment	85		8	10	2	80			
1	Concrete/Industrial Saws	81		8	20	4	160			
1	Cranes	231		8	10	2	80			RW 8R
1	Graders	187		8	10	2	80			
1	Excavators	158		8	10	2	80			364 backfill
1	Skid Steer Loaders	65		8	10	2	80			319 excavation
1	Rough Terrain Forklifts	100		8	10	2	80			
1	Off-Highway Tractors	124		8	10	2	80			RW 1
1	Dump Trucks	402		8	10	2	80			
1	Sweepers/Scrubbers	64		8	40	8	320			47 backfill
1	Trenchers	78		8	15	3	120			118 excavation
1	Welders	46		8	10	2	80			
1	Pavers	130		8	10	2	80			290.5
1	Paving Equipment	132		8	10	2	80			Export
1	Jack Hammer	3		8	10	2	80			
1	Hoe Ram	169		8	10	2	80			
1	Pile Driver	164		8	15	3	120			
1	Rollers	80		8	10	2	80			
1	Surfacing equipment	263		8	10	2	80			
1	Other Construction Equipment	172		8	5	1	40			

Trips	Grubbing/ Land Clearing Miles/ Round Trip	Round Trips/ Day	Grading/Excavation Miles/ Round Trip	Round Trips/ Day	Drainage/Utilities/Subgrade Miles/ Round Trip	Round Trips/ Day	Paving Miles/Round Trip
Soil Hauling							
Asphalt Hauling							
Water Trucks							

Worker Commute	
Miles/one-way trip	
One-way trips/day	
Grubbing/Land Clearing Employee #	
Grading/Excavation Employee #	
Drainage/Utilities/Subgrade Employee #	
Paving Employee #	

Project Name: OAAP: Stage 1 Construct Jackson Hoseshoe - Subphase 1C

Complete ALL Portions in Yellow If Possible

See Equipment Type TAB for type, horsepower and load factor

Fill in Green Boxes if Info Known (Defaults Available)

Construction Start Year (2014-2040)	
Project Type	
Project Construction Time (Months)	
Working Days per Month	
Predominant Soil/Site Typer (1,2, or 3)	
Project Length (miles)	
Total Project Area (acres)	
Maximum Area Disturbed/Day (acres)	
Water Trucks Used (y/n)	

Soil Types

1) Sand Gravel: Use for Quaternary Deposits (Delta/West County)

2) Weathered Rock-Earth: Use for Laguna formation (Jackson Higway area) or the lone formation (Scott Road, Rancho Murieta)

3) Blasted Rock: Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South Highway 50, Rancho Murieta)

*Assuming all excavated concrete will be exported with soil together

*Assuming that there are 22 workdays per month

*Assuming all excavated asphalt will be reused

*Assuming soil hauling and asphalt hauling have the same trip

Equipment Qty	Description	HP		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours			
	(2Aa) Construct RW 7 and 10 at Oak Street off-ramp			total duration	100			Soil Hauling	Asphalt Hauling	
										Soil
4	Signal boards	6		8	100	8	3200	Haul Truck Capacity	Haul Truck Capacity	
1	Aerial Lifts	63		8	80	6.4	640	12 (yd^3)	12 (yd^3)	
1	Cement and Mortar Mixers	9		8	80	6.4	640	Import Volume	Import Volume	
1	Crushing/Proc. Equipment	85		8	80	6.4	640	0 (yd^3/day)	32 (yd^3/day)	684
1	Generator Sets	84		8	100	8	800	Export Volume	Export Volume	
1	Sweepers/Scrubbers	64		8	100	8	800	64 (yd^3/day)	0 (yd^3/day)	1207
1	Concrete/Industrial Saws	81		8	100	8	800			523
1	Off-Highway Tractors	124		8	100	8	800			to export
2	Dump Trucks	402		8	50	4	800			
1	Welders	46		8	80	6.4	640			
1	Pavers	130		8	0	0	0			
1	Paving Equipment	132		8	0	0	0			
1	Plate Compactors	8		8	0	0	0			
1	Graders	187		8	0	0	0			
1	Surfacing Equipment	263		8	0	0	0			
1	Scrapers	367		8	0	0	0			
1	Excavators	158		8	40	3.2	320			
1	Skid Steer Loaders	65		8	0	0	0			
1	Rollers	80		8	0	0	0			
1	Pile Driver	164		8	80	6.4	640			
1	Forklifts	89		8	0	0	0			
	(2Ab) Construct Auxiliary Lane			total duration	40			Haul Truck Capacity	Haul Truck Capacity	
								12 (yd^3)	12 (yd^3)	
4	Signal boards	6		8	40	8	1280	Import Volume	Import Volume	
1	Sweepers/Scrubbers	64		8	40	8	320	0 (yd^3/day)	64 (yd^3/day)	soil
1	Pavers	130		8	40	3.2	320	Export Volume	Export Volume	
1	Paving Equipment	132		8	40	3.2	320	64 (yd^3/day)	0 (yd^3/day)	
1	Plate Compactors	8		8	30	2.4	240			
1	Graders	187		8	30	2.4	240			1506
1	Surfacing Equipment	263		8	10	0.8	80			1506
1	Scrapers	367		8	0	0	0			to export
1	Excavators	158		8	0	0	0			
1	Skid Steer Loaders	65		8	0	0	0			
1	Rollers	80		8	20	1.6	160			
1	Other Construction Equipment	172		8	20	1.6	160			
	(2Ac) Close Jackson on-ramp to Broadway off-ramp connection, Construct RW 5 at Jackson on-ramp and Remove raised gore curb and restripe entrance ramp			total duration	100					
4	Signal boards	6		8	100	8	3200	Haul Truck Capacity	Haul Truck Capacity	
1	Aerial Lifts	63		8	40	3.2	320	12 (yd^3)	12 (yd^3)	
1	Cement and Mortar Mixers	9		8	40	3.2	320	Import Volume	Import Volume	
1	Crushing/Proc. Equipment	85		8	40	3.2	320	0 (yd^3/day)	64 (yd^3/day)	
1	Generator Sets	84		8	100	8	800	Export Volume	Export Volume	
1	Sweepers/Scrubbers	64		8	100	8	800	64 (yd^3/day)	0 (yd^3/day)	
1	Concrete/Industrial Saws	81		8	80	6.4	640			
1	Off-Highway Tractors	124		8	50	4	400			
2	Dump Trucks	402		8	20	4	320			
1	Welders	46		8	60	4.8	480			
1	Excavators	158		8	20	1.6	160			
1	Skid Steer Loaders	65		8	80	6.4	640			
1	Pile Driver	164		8	60	4.8	480			
1	Forklifts	89		8	20	1.6	160			

Project Name: OAAP: Stage 2 Construct Jackson Hoseshoe - Subphase 2A

Complete ALL Portions in Yellow If Possible

See Equipment Type TAB for type, horsepower and load factor

Fill in Green Boxes if Info Known (Defaults Available)

Construction Start Year (2014-2040)		Pile Driving (Yes or No):
Project Type		
Project Construction Time (Months)		
Working Days per Month		
Predominant Soil/Site Typer (1,2, or 3)		
Project Length (miles)		
Total Project Area (acres)		
Maximum Area Disturbed/Day (acres)		
Water Trucks Used (y/n)		

Soil Types

1) Sand Gravel: Use for Quaternary Deposits (Delta/West County)

2) Weathered Rock-Earth: Use for Laguna formation (Jackson Higway area) or the lone formation (Scott Road, Rancho Murieta)

3) Blasted Rock: Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South Highway 50, Rancho Murieta)

*Assuming all excavated concrete will be exported with soil together

*Assuming that there are 22 workdays per month

*Assuming all excavated asphalt will be reused

*Assuming soil hauling and asphalt hauling have the same trip

Equipment Qty	Description	HP		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Soil Hauling	Asphalt Hauling	Comments
	(2B)Remove Broadway off-ramp structure and approach			total duration	60			Soil Hauling	Asphalt Hauling	
1	Crushing/Proc. Equipment	85		8	60	8	480	Haul Truck Capacity	Haul Truck Capacity	
4	Signal Boards	6		8	60	8	1920	12 (yd^3)	12 (yd^3)	
1	Jack Hammer	3		8	60	8	480	Import Volume	Import Volume	
4	Excavators	158		8	60	8	1920	0 (yd^3/day)	0 (yd^3/day)	
6	Dump Trucks	402		8	60	8	2880	Export Volume	Export Volume	
6	Skid Steer Loaders	65		8	60	8	2880	32 (yd^3/day)	0 (yd^3/day)	
1	Sweepers/Scrubbers	64		8	60	8	480			
1	Concrete/Industrial Saws	81		8	60	8	480			
1	Hoe Ram	169		8	60	8	480			
1	Generator Sets	84		8	60	8	480			
1	Off-Highway Tractors	124		8	60	8	480			

Remove 443 CY s

Trips	Grubbing/ Land Clearing Miles/ Round Trip	Grubbing/ Land Clearing Round Trips/ Day	Grading/Excavation Miles/ Round Trip	Grading/Excavation Round Trips/ Day	Drainage/Utilities/Subgrade Miles/ Round Trip	Drainage/Utilities/Subgrade Round Trips/ Day	Paving Miles/Round Trip
Soil Hauling							
Asphalt Hauling							
Water Trucks							

Worker Commute	
Miles/one-way trip	
One-way trips/day	
Grubbing/Land Clearing Employee #	
Grading/Excavation Employee #	
Drainage/Utilities/Subgrade Employee #	
Paving Employee #	

Project Name: OAAP: Stage 2 Construct Jackson Hoseshoe - Subphase 2C

Complete ALL Portions in Yellow If Possible

See Equipment Type TAB for type, horsepower and load factor

Fill in Green Boxes if Info Known (Defaults Available)

Construction Start Year (2014-2040)

Pile Driving (Yes or No):

Project Type

Project Construction Time (Months)

Working Days per Month

Predominant Soil/Site Typer (1,2, or 3)

Project Length (miles)

Total Project Area (acres)

Maximum Area Disturbed/Day (acres)

Water Trucks Used (y/n)

Soil Types

1) Sand Gravel: Use for Quaternary Deposits (Delta/West County)

2) Weathered Rock-Earth: Use for Laguna formation (Jackson Higway area) or the lone formation (Scott Road, Rancho Murieta)

3) Blasted Rock: Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South Highway 50, Rancho Murieta)

*Assuming all excavated concrete will be exported with soil together

*Assuming that there are 22 workdays per month

*Assuming all excavated asphalt will be reused

*Assuming soil hauling and asphalt hauling have the same trip

Equipment Qty	Description	HP		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours		Comments	
	(2Ca) Construct 6th Street Crub/gutter, SW and temp pavement			total duration	120			Haul Truck Capacity	Haul Truck Capacity	
								12 (yd^3)	12 (yd^3)	
4	Signal boards	6		8	120	8	3840	Import Volume	Import Volume	hove 1065 CY earth
1	Cement and Mortar Mixers	9		8	100	6.666666667	800	0 (yd^3/day)	0 (yd^3/day)	nport 411 CY asph
1	Concrete/Industrial Saws	81		8	40	2.666666667	320	Export Volume	Export Volume	
1	Skid Steer Loaders	65		8	100	6.666666667	800	32 (yd^3/day)	0 (yd^3/day)	
1	Crushing/Proc. Equipment	85		8	60	4	480			
1	Trenchers	78		8	20	1.333333333	160			
1	Generator Sets	84		8	100	6.666666667	800			
1	Plate Compactors	8		8	20	1.333333333	160			
1	Pavers	130		8	20	1.333333333	160			
1	Paving Equipment	132		8	20	1.333333333	160			
1	Off-Highway Tractors	124		8	120	8	960			
1	Dump Trucks	402		8	40	2.666666667	320			
1	Excavators	158		8	0	0	0			
1	Forklifts	89		8	0	0	0			
1	Rollers	80		8	100	6.666666667	800			
1	Scrapers	367		8	100	6.666666667	800			
1	Surfacing Equipment	263		8	40	2.666666667	320			
1	Sweepers/Scrubbers	64		8	120	8	960			
1	Graders	187		8	60	4	480			
	(2Cb) Construct of 6th Street from Oak to Jackson			total duration	40					
4	Signal boards	6		8	40	8	1280	Haul Truck Capacity	Haul Truck Capacity	
1	Cement and Mortar Mixers	9		8	0	0	0	12 (yd^3)	12 (yd^3)	
1	Concrete/Industrial Saws	81		8	40	8	320	Import Volume	Import Volume	recycled asphalt f
1	Skid Steer Loaders	65		8	20	4	160	0 (yd^3/day)	0 (yd^3/day)	et excavation will b
1	Crushing/Proc. Equipment	85		8	20	4	160	Export Volume	Export Volume	
1	Trenchers	78		8	20	4	160	0 (yd^3/day)	0 (yd^3/day)	CY soil to be remo
1	Dump Trucks	402		8	20	4	160			
1	Excavators	158		8	0	0	0			
1	Forklifts	89		8	20	4	160			
1	Rollers	80		8	20	4	160			
1	Scrapers	367		8	20	4	160			
1	Surfacing Equipment	263		8	20	4	160			
1	Sweepers/Scrubbers	64		8	20	4	160			
1	Graders	187		8	20	4	160			

Project Name: OAAP: Stage 2 Construct Jackson Hoseshoe - Subphase 2C

Complete ALL Portions in Yellow If Possible

See Equipment Type TAB for type, horsepower and load factor

Fill in Green Boxes if Info Known (Defaults Available)

Construction Start Year (2014-2040)

Pile Driving (Yes or No):

Project Type

Project Construction Time (Months)

Working Days per Month

Predominant Soil/Site Typer (1,2, or 3)

Project Length (miles)

Total Project Area (acres)

Maximum Area Disturbed/Day (acres)

Water Trucks Used (y/n)

Soil Types

1) Sand Gravel: Use for Quaternary Deposits (Delta/West County)

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*Assuming all excavated asphalt will be reused

*Assuming soil hauling and asphalt hauling have the same trip

Equipment Qty	Description	HP		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours		Comments
	(2Da) Construct Bike Paths and Cycle Tracks on Local Streets			total duration	40			Soil Hauling	Asphalt Hauling
4	Signal boards	6		8	40	8	1280	Haul Truck Capacity	Haul Truck Capacity
1	Cement and Mortar Mixers	9		8	20	4	160	12 (yd^3)	12 (yd^3)
1	Concrete/Industrial Saws	81		8	20	4	160	Import Volume	Import Volume
1	Skid Steer Loaders	65		8	20	4	160	0 (yd^3/day)	192 (yd^3/day)
1	Crushing/Proc. Equipment	85		8	20	4	160	Export Volume	Export Volume
1	Trenchers	78		8	20	4	160	64 (yd^3/day)	0 (yd^3/day)
1	Generator Sets	84		8	20	4	160		
1	Plate Compactors	8		8	20	4	160		
1	Pavers	130		8	20	4	160		
1	Paving Equipment	132		8	20	4	160		
1	Off-Highway Tractors	124		8	20	4	160		
2	Dump Trucks	402		8	20	4	320		
1	Excavators	158		8	20	4	160		
1	Forklifts	89		8	20	4	160		
1	Rollers	80		8	20	4	160		
1	Scrapers	367		8	20	4	160		
1	Surfacing Equipment	263		8	20	4	160		
1	Sweepers/Scrubbers	64		8	40	8	320		
1	Graders	187		8	20	4	160		
	(2Db) Reconstruct Harrison/7th and 7th/Jackson intersections			total duration	40			Haul Truck Capacity	Haul Truck Capacity
								12 (yd^3)	12 (yd^3)
4	Signal boards	6		8	40	8	1280	Import Volume	Import Volume
1	Cement and Mortar Mixers	9		8	20	4	160	0 (yd^3/day)	0 (yd^3/day)
1	Concrete/Industrial Saws	81		8	20	4	160	Export Volume	Export Volume
1	Skid Steer Loaders	65		8	20	4	160	64 (yd^3/day)	0 (yd^3/day)
1	Crushing/Proc. Equipment	85		8	20	4	160		
1	Off-Highway Tractors	124		8	20	4	160		
1	Dump Trucks	402		8	10	2	80		
1	Excavators	158		8	10	2	80		
1	Forklifts	89		8	20	4	160		
1	Rollers	80		8	20	4	160		
1	Scrapers	367		8	20	4	160		
1	Surfacing Equipment	263		8	20	4	160		
1	Sweepers/Scrubbers	64		8	20	4	160		
1	Graders	187		8	20	4	160		
	(2Dc) Traffic Signal installation and modification			total duration	40			Haul Truck Capacity	Haul Truck Capacity
								12 (yd^3)	12 (yd^3)
4	Signal boards	6		8	40	8	1280	Import Volume	Import Volume
1	Cement and Mortar Mixers	9		8	20	4	160	0 (yd^3/day)	0 (yd^3/day)
1	Concrete/Industrial Saws	81		8	20	4	160	Export Volume	Export Volume
1	Skid Steer Loaders	65		8	20	4	160	64 (yd^3/day)	0 (yd^3/day)
1	Crushing/Proc. Equipment	85		8	20	4	160		
1	Trenchers	78		8	20	4	160		
1	Generator Sets	84		8	20	4	160		
1	Plate Compactors	8		8	20	4	160		
1	Pavers	130		8	20	4	160		
1	Paving Equipment	132		8	20	4	160		
1	Off-Highway Tractors	124		8	20	4	160		
1	Dump Trucks	402		8	20	4	160		
1	Excavators	158		8	10	2	80		
1	Forklifts	89		8	20	4	160		
1	Rollers	80		8	20	4	160		
1	Scrapers	367		8	20	4	160		
1	Surfacing Equipment	263		8	20	4	160		
1	Sweepers/Scrubbers	64		8	20	4	160		
1	Graders	187		8	20	4	160		

	Grubbing/ Land Clearing		Grading/Excavation		Drainage/Utilities/Subgrade		Paving
Trips	Miles/ Round Trip	Round Trips/ Day	Miles/ Round Trip	Round Trips/ Day	Miles/ Round Trip	Round Trips/ Day	Miles/Round Trip
Soil Hauling							
Asphalt Hauling							
Water Trucks							

Project Name: OAAP: Stage 2 Construct Jackson Hoseshoe - Subphase 2C

Complete ALL Portions in Yellow If Possible

See Equipment Type TAB for type, horsepower and load factor

Fill in Green Boxes if Info Known (Defaults Available)

Construction Start Year (2014-2040)

Pile Driving (Yes or No):

Project Type

Project Construction Time (Months)

Working Days per Month

Predominant Soil/Site Typer (1,2, or 3)

Project Length (miles)

Total Project Area (acres)

Maximum Area Disturbed/Day (acres)

Water Trucks Used (y/n)

Soil Types

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Equipment Qty	Description	HP		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours		Comments	
	(2E) Landscape			total duration	20			Soil Hauling	Asphalt Hauling	
4	Signal boards	6		8	20	8	640	Haul Truck Capacity	Haul Truck Capacity	Remove 1065 CY earth out
1	Forklifts	89		8	10	4	80	12 (yd^3)	12 (yd^3)	Import 411 CY asphalt
1	Other Construction Equipment	172		8	10	4	80	Import Volume	Import Volume	
2	Dump Trucks	402		8	10	4	160	0 (yd^3/day)	32 (yd^3/day)	
								Export Volume	Export Volume	
								32 (yd^3/day)	0 (yd^3/day)	

Trips	Grubbing/ Land Clearing		Grading/Excavation		Drainage/Utilities/Subgrade		Paving
	Miles/ Round Trip	Round Trips/ Day	Miles/ Round Trip	Round Trips/ Day	Miles/ Round Trip	Round Trips/ Day	Miles/Round Trip
Soil Hauling	87.6	2.6					
Asphalt Hauling							
Water Trucks							

Worker Commute	
Miles/one-way trip	
One-way trips/day	
Grubbing/Land Clearing Employee #	
Grading/Excavation Employee #	
Drainage/Utilities/Subgrade Employee #	
Paving Employee #	

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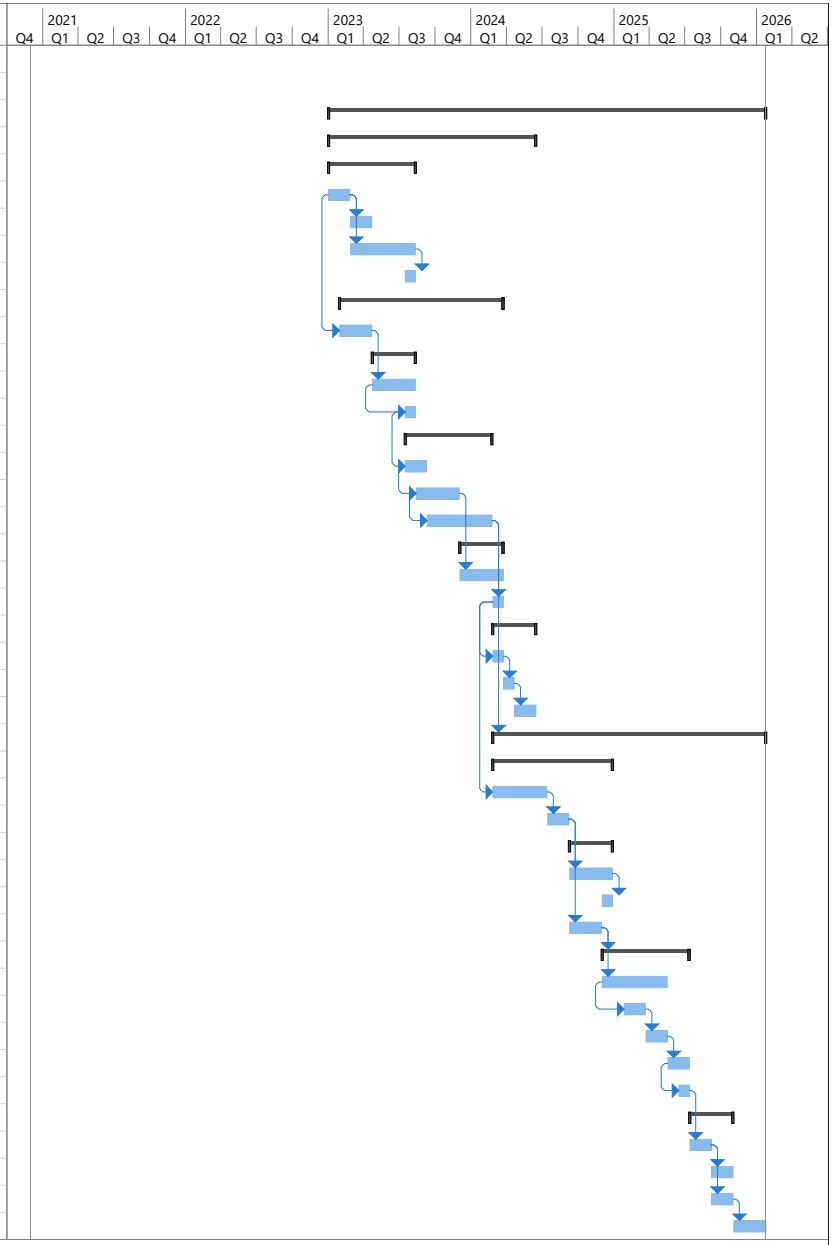
Oakland Alameda Access Project
Date: Jan 22, 2020

ID	ID	Activit	Name	Duration	Start	Finish
1	1		Oakland Alameda Access Project			
2	2					
3	**3**		**Begin Construction**	**800 days**	**Mon 1/2/23**	**Fri 1/23/26**
4	**4**		**Stage 1 - South of I-880**	**380 days**	**Mon 1/2/23**	**Fri 6/14/24**
5	**5**		**1A - Construct Webster Tube Bike/Ped Walkway**	**160 days**	**Mon 1/2/23**	**Fri 8/11/23**
6	6		1Aa - Mobilization, Clear and Grubb	40 days	Mon 1/2/23	Fri 2/24/23
7	7		1Ab - Construct 5th Street entrance to Webster	40 days	Mon 2/27/23	Fri 4/21/23
8	8		1Ad - Construct Webster Tube Bike/Ped Walkway	120 days	Mon 2/27/23	Fri 8/11/23
9	9		1Ae - Restripe Webster Tube	20 days	Mon 7/17/23	Fri 8/11/23
10	**10**		**1B - Construct Horseshoe**	**300 days**	**Mon 1/30/23**	**Fri 3/22/24**
11	11		1Ba - Construct RW4	60 days	Mon 1/30/23	Fri 4/21/23
12	**12**		**1Bb - Close Broadway to Jackson off-ramp connection**	**80 days**	**Mon 4/24/23**	**Fri 8/11/23**
13	13		Construct RW 2 and 3	80 days	Mon 4/24/23	Fri 8/11/23
14	14		Remove raised gore curb and restripe entrance ramp	20 days	Mon 7/17/23	Fri 8/11/23
15	**15**		**1Bc - Construct Horseshoe and Re-construct Jackson offr-ramp**	**160 days**	**Mon 7/17/23**	**Fri 2/23/24**
16	16		Remove Jackson off-ramp	40 days	Mon 7/17/23	Fri 9/8/23
17	17		Construct partial RW1, 8R, 8L and abutment	80 days	Mon 8/14/23	Fri 12/1/23
18	18		Re-construct Jackson Off-ramp	120 days	Mon 9/11/23	Fri 2/23/24
19	**19**		**1Bd - Complete Posey Tube Connection to Horseshoe**	**80 days**	**Mon 12/4/23**	**Fri 3/22/24**
20	20		Complete RW 1 and 6	80 days	Mon 12/4/23	Fri 3/22/24
21	21		1C - Construct 5th Street curb/gutter, SW and pavement	20 days	Mon 2/26/24	Fri 3/22/24
22	**22**		**1D - Posey Tube/Harrison Street**	**80 days**	**Mon 2/26/24**	**Fri 6/14/24**
23	23		1Da - Restripe Posey Tube	20 days	Mon 2/26/24	Fri 3/22/24
24	24		1Db - Overhead guide signs	20 days	Mon 3/25/24	Fri 4/19/24
25	25		1Dc - Construct RW 9, pavement and stripe Harrison	40 days	Mon 4/22/24	Fri 6/14/24
26	**26**		**Stage 2 - North of I-880**	**500 days**	**Mon 2/26/24**	**Fri 1/23/26**
27	**27**		**2A - Widen Oak Street off-ramp and Prepare 6th Street**	**220 days**	**Mon 2/26/24**	**Fri 12/27/24**
28	28		2Aa - Construct RW 7 and 10 at Oak Street off-ramp	100 days	Mon 2/26/24	Fri 7/12/24
29	29		2Ab - Construct Auxiliary Lane	40 days	Mon 7/15/24	Fri 9/6/24
30	**30**		**2Ac - Close Jackson on-ramp to Broadway off-ramp connection**	**80 days**	**Mon 9/9/24**	**Fri 12/27/24**
31	31		Construct RW 5 at Jackson on-ramp	80 days	Mon 9/9/24	Fri 12/27/24
32	32		Remove raised gore curb and restripe entrance ramp	20 days	Mon 12/2/24	Fri 12/27/24
33	33		2B - Remove Broadway off-ramp structure and approach	60 days	Mon 9/9/24	Fri 11/29/24
34	**34**		**2C - Construct 6th Street**	**160 days**	**Mon 12/2/24**	**Fri 7/11/25**
35	35		2Ca - Construct 6th Street curb/gutter, SW, fences	120 days	Mon 12/2/24	Fri 5/16/25
36	36		2Cb - Construct 6th Street from Oak to Jackson	40 days	Mon 1/27/25	Fri 3/21/25
37	37		2Cc - Construct 6th Street between Jackson and Harrison	40 days	Mon 3/24/25	Fri 5/16/25
38	38		2Cd - Construct 6th Street between Harrison and Broadway	40 days	Mon 5/19/25	Fri 7/11/25
39	39		2Ce - Mill and overlay 6th St between Broadway and Washingto	20 days	Mon 6/16/25	Fri 7/11/25
40	**40**		**2D - Construct Bike Paths and Cycle Tracks on Local Streets**	**80 days**	**Mon 7/14/25**	**Fri 10/31/25**
41	41		2Da - Construct Bike Paths and Cycle Tracks, Local Street paving	40 days	Mon 7/14/25	Fri 9/5/25
42	42		2Db - Reconstruct Harrison/7th and 7th/Jackson intersections	40 days	Mon 9/8/25	Fri 10/31/25
43	43		2Dc - Traffic Signal installation and modifications	40 days	Mon 9/8/25	Fri 10/31/25
44	44		2E - Landscaping	60 days	Mon 11/3/25	Fri 1/23/26



Project: oaap
Date: Wed 1/22/20

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress

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		ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Stage 1A	Grubbing/Land Clearing	0.05	0.52	0.38	0.12	0.02	0.10	0.04	0.02	0.02	0.00	102.03	0.02	0.00	93.46
	Grading/Excavation	0.12	0.98	1.08	0.15	0.05	0.10	0.06	0.04	0.02	0.00	238.92	0.06	0.00	218.92
	Drainage/Utilities/Sub-Grade	0.25	2.59	2.18	0.40	0.10	0.30	0.15	0.09	0.06	0.01	520.81	0.11	0.01	476.78
	Paving	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.29	0.00	0.00	6.72
	Maximum (tons/phase)	**0.25**	**2.59**	**2.18**	**0.40**	**0.10**	**0.30**	**0.15**	**0.09**	**0.06**	**0.01**	**520.81**	**0.11**	**0.01**	**476.78**
	Total (tons/construction project)	**0.42**	**4.12**	**3.67**	**0.67**	**0.17**	**0.50**	**0.26**	**0.15**	**0.10**	**0.01**	**869.05**	**0.20**	**0.01**	**795.87**
Stage 1B	Grubbing/Land Clearing	0.08	0.84	0.71	0.33	0.03	0.30	0.09	0.03	0.06	0.00	168.68	0.03	0.01	155.04
	Grading/Excavation	0.12	1.20	1.00	0.45	0.05	0.40	0.13	0.04	0.08	0.00	272.51	0.04	0.01	251.05
	Drainage/Utilities/Sub-Grade	0.77	7.68	7.43	1.54	0.34	1.20	0.55	0.30	0.25	0.02	1,809.53	0.36	0.06	1,666.99
	Paving	0.14	1.37	1.32	0.06	0.06	0.00	0.05	0.05	0.00	0.00	294.12	0.07	0.01	269.92
	Maximum (tons/phase)	**0.77**	**7.68**	**7.43**	**1.54**	**0.34**	**1.20**	**0.55**	**0.30**	**0.25**	**0.02**	**1,809.53**	**0.36**	**0.06**	**1,666.99**
	Total (tons/construction project)	**1.11**	**11.09**	**10.46**	**2.38**	**0.48**	**1.90**	**0.82**	**0.42**	**0.39**	**0.02**	**2,544.84**	**0.50**	**0.09**	**2,343.00**
Stage 1C	Grubbing/Land Clearing	0.03	0.31	0.28	0.06	0.01	0.05	0.02	0.01	0.01	0.00	68.07	0.02	0.00	62.50
	Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	Maximum (tons/phase)	**0.03**	**0.31**	**0.28**	**0.06**	**0.01**	**0.05**	**0.02**	**0.01**	**0.01**	**0.00**	**68.07**	**0.02**	**0.00**	**62.50**
	Total (tons/construction project)	**0.03**	**0.31**	**0.28**	**0.06**	**0.01**	**0.05**	**0.02**	**0.01**	**0.01**	**0.00**	**68.07**	**0.02**	**0.00**	**62.50**
Stage 1D	Grubbing/Land Clearing	0.01	0.06	0.05	0.05	0.00	0.05	0.01	0.00	0.01	0.00	11.64	0.00	0.00	10.70
	Grading/Excavation	0.05	0.46	0.53	0.07	0.02	0.05	0.03	0.02	0.01	0.00	123.64	0.03	0.00	113.73
	Drainage/Utilities/Sub-Grade	0.07	0.78	0.68	0.13	0.03	0.10	0.05	0.03	0.02	0.00	179.72	0.03	0.01	165.82
	Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum (tons/phase)	**0.07**	**0.78**	**0.68**	**0.13**	**0.03**	**0.10**	**0.05**	**0.03**	**0.02**	**0.00**	**179.72**	**0.03**	**0.01**	**165.82**
	Total (tons/construction project)	**0.13**	**1.30**	**1.26**	**0.26**	**0.06**	**0.20**	**0.09**	**0.05**	**0.04**	**0.00**	**314.99**	**0.06**	**0.01**	**290.25**
Stage 2A	Grubbing/Land Clearing	0.28	2.53	2.60	0.36	0.11	0.25	0.15	0.10	0.05	0.01	669.34	0.15	0.02	616.59
	Grading/Excavation	0.06	0.58	0.61	0.13	0.03	0.10	0.04	0.02	0.02	0.00	153.07	0.04	0.01	141.28
	Drainage/Utilities/Sub-Grade	0.20	1.97	1.75	0.33	0.08	0.25	0.12	0.07	0.05	0.00	474.06	0.10	0.02	436.48
	Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum (tons/phase)	**0.28**	**2.53**	**2.60**	**0.36**	**0.11**	**0.25**	**0.15**	**0.10**	**0.05**	**0.01**	**669.34**	**0.15**	**0.02**	**616.59**
	Total (tons/construction project)	**0.53**	**5.08**	**4.96**	**0.81**	**0.21**	**0.60**	**0.31**	**0.19**	**0.12**	**0.01**	**1,296.48**	**0.29**	**0.04**	**1,194.35**
Stage 2B	Grubbing/Land Clearing	0.18	1.95	1.40	0.36	0.06	0.30	0.12	0.05	0.06	0.00	456.53	0.12	0.01	418.61
	Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum (tons/phase)	**0.18**	**1.95**	**1.40**	**0.36**	**0.06**	**0.30**	**0.12**	**0.05**	**0.06**	**0.00**	**456.53**	**0.12**	**0.01**	**418.61**
	Total (tons/construction project)	**0.18**	**1.95**	**1.40**	**0.36**	**0.06**	**0.30**	**0.12**	**0.05**	**0.06**	**0.00**	**456.53**	**0.12**	**0.01**	**418.61**
Stage 2C	Grubbing/Land Clearing	0.17	1.77	1.51	0.67	0.07	0.60	0.19	0.06	0.12	0.00	382.12	0.09	0.01	350.72
	Grading/Excavation	0.06	0.63	0.52	0.22	0.02	0.20	0.06	0.02	0.04	0.00	136.18	0.03	0.00	124.74
	Drainage/Utilities/Sub-Grade	0.07	0.77	0.71	0.23	0.03	0.20	0.07	0.03	0.04	0.00	218.10	0.03	0.01	202.12
	Paving	0.12	1.25	0.98	0.04	0.04	0.00	0.04	0.04	0.00	0.00	239.56	0.05	0.00	219.33
	Maximum (tons/phase)	**0.17**	**1.77**	**1.51**	**0.67**	**0.07**	**0.60**	**0.19**	**0.06**	**0.12**	**0.00**	**382.12**	**0.09**	**0.01**	**350.72**
	Total (tons/construction project)	**0.42**	**4.42**	**3.72**	**1.16**	**0.16**	**1.00**	**0.36**	**0.15**	**0.21**	**0.01**	**975.97**	**0.21**	**0.03**	**896.91**
Stage 2D	Grubbing/Land Clearing	0.05	0.53	0.54	0.12	0.02	0.10	0.04	0.02	0.02	0.00	159.73	0.03	0.01	147.99
	Grading/Excavation	0.04	0.41	0.35	0.12	0.02	0.10	0.03	0.01	0.02	0.00	106.31	0.02	0.00	97.87
	Drainage/Utilities/Sub-Grade	0.05	0.52	0.43	0.12	0.02	0.10	0.04	0.02	0.02	0.00	121.49	0.03	0.00	111.75
	Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum (tons/phase)	**0.05**	**0.53**	**0.54**	**0.12**	**0.02**	**0.10**	**0.04**	**0.02**	**0.02**	**0.00**	**159.73**	**0.03**	**0.01**	**147.99**
	Total (tons/construction project)	**0.14**	**1.46**	**1.31**	**0.36**	**0.06**	**0.30**	**0.11**	**0.05**	**0.06**	**0.00**	**387.53**	**0.07**	**0.02**	**357.62**
Stage 2E	Grubbing/Land Clearing	0.01	0.08	0.07	0.20	0.00	0.20	0.04	0.00	0.04	0.00	27.25	0.01	0.00	25.19
	Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum (tons/phase)	**0.01**	**0.08**	**0.07**	**0.20**	**0.00**	**0.20**	**0.04**	**0.00**	**0.04**	**0.00**	**27.25**	**0.01**	**0.00**	**25.19**
	Total (tons/construction project)	**0.01**	**0.08**	**0.07**	**0.20**	**0.00**	**0.20**	**0.04**	**0.00**	**0.04**	**0.00**	**27.25**	**0.01**	**0.00**	**25.19**
STAGE 1 TOTAL (TONS)		1.69	16.82	15.66	3.36	0.71	2.65	1.19	0.63	0.55	0.03	3,796.96	0.78	0.11	3,491.62
STAGE 2 TOTAL (TONS)		1.28	12.99	11.47	2.89	0.49	2.40	0.94	0.44	0.50	0.03	3,143.76	0.69	0.09	2,892.68
TOTAL CONSTRUCTIONS (TONS)		2.97	29.81	27.13	6.26	1.21	5.05	2.13	1.07	1.05	0.07	6,940.72	1.47	0.21	6,384.30
STAGE 1 TOTAL (lbs/day) - 380 days		8.89	88.53	82.44	17.70	3.75	13.95	6.25	3.32	2.87	0.17	19,984.00	4.09	0.60	9.19 MT/day
Annual Emissions (lbs/year)		2,133.28	21,246.90	19,784.46	4,248.39	901.02	3,347.37	1,499.84	797.52	689.68	41.78	4,796,158.96	981.67	143.66	2,205.23 MT/Year
STAGE 2 TOTAL (lbs/day) - 500 days		5.14	51.95	45.89	11.57	1.97	9.60	3.76	1.76	2.00	0.13	12,575.04	2.78	0.37	5.79 MT/Day
Annual Emissions (lbs/year)		1,232.60	12,469.18	11,012.58	2,777.65	473.65	2,304.00	902.05	422.82	479.23	31.27	3,018,008.56	667.16	88.48	1,388.49 MT/Year
TOTAL CONSTRUCTIONS (lbs/day) - 800 days		7.43	74.52	67.84	15.64	3.02	12.63	5.32	2.68	2.61	0.16	17,351.80	3.68	0.51	7.98 MT/Day
Annual Emissions (lbs/year)		1,783.68	17,885.51	16,280.48	3,754.02	724.02	3,030.00	1,276.21	643.09	627.12	39.39	4,164,430.85	883.27	123.54	1,915.29 MT/Year

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					Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
		ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Stage 1A	Grubbing/Land Clearing	2.32	26.19	19.04	5.91	0.91	5.00	1.88	0.84	1.04	0.05	5,101.65	1.13	0.07	5,150.84
	Grading/Excavation	5.76	49.01	54.23	7.36	2.36	5.00	3.17	2.13	1.04	0.12	11,946.13	3.09	0.14	12,065.65
	Drainage/Utilities/Sub-Grade	4.20	43.16	36.32	6.64	1.64	5.00	2.55	1.51	1.04	0.09	8,680.13	1.89	0.11	8,759.18
	Paving	0.35	2.82	2.38	0.14	0.14	0.00	0.10	0.10	0.00	0.01	728.85	0.06	0.03	740.27
	Maximum (pounds/day)	**12.63**	**121.18**	**111.97**	**20.04**	**5.04**	**15.00**	**7.71**	**4.59**	**3.12**	**0.28**	**26,456.76**	**6.18**	**0.35**	**26,715.93**
	Total (tons/construction project)	**0.42**	**4.12**	**3.67**	**0.67**	**0.17**	**0.50**	**0.26**	**0.15**	**0.10**	**0.01**	**869.05**	**0.20**	**0.01**	**877.28**
Stage 1B	Grubbing/Land Clearing	2.80	27.92	23.82	11.12	1.12	10.00	3.11	1.03	0.06	0.00	168.68	0.03	0.01	155.04
	Grading/Excavation	2.94	30.10	25.02	11.24	1.24	10.00	3.16	1.08	0.08	0.00	272.51	0.04	0.01	251.05
	Drainage/Utilities/Sub-Grade	6.45	63.97	61.92	12.81	2.81	10.00	4.59	2.51	0.25	0.02	1,809.53	0.36	0.06	1,666.99
	Paving	3.47	34.33	32.98	1.39	1.39	0.00	1.27	1.27	0.00	0.00	294.12	0.07	0.01	269.92
	Maximum (pounds/day)	**12.85**	**128.39**	**119.92**	**35.17**	**5.45**	**30.00**	**10.87**	**4.87**	**0.25**	**0.02**	**1,809.53**	**0.36**	**0.06**	**1,666.99**
	Total (tons/construction project)	**1.11**	**11.09**	**10.47**	**2.38**	**0.48**	**1.90**	**0.82**	**0.43**	**0.39**	**0.02**	**2,544.84**	**0.50**	**0.09**	**2,343.00**
Stage 1C	Grubbing/Land Clearing	3.07	30.85	27.74	6.20	1.20	5.00	2.13	1.09	1.04	0.07	6,807.32	1.66	0.14	6,889.10
	Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	Maximum (pounds/day)	**3.07**	**30.85**	**27.74**	**6.20**	**1.20**	**5.00**	**2.13**	**1.09**	**1.04**	**0.07**	**6,807.32**	**1.66**	**0.14**	**6,889.10**
	Total (tons/construction project)	**0.03**	**0.31**	**0.28**	**0.06**	**0.01**	**0.05**	**0.02**	**0.01**	**0.01**	**0.00**	**68.07**	**0.02**	**0.00**	**68.89**
Stage 1D	Grubbing/Land Clearing	0.61	5.94	5.02	5.26	0.26	5.00	1.27	0.23	1.04	0.01	1,163.54	0.22	0.04	1,179.68
	Grading/Excavation	5.41	46.32	52.98	7.23	2.23	5.00	3.00	1.96	1.04	0.13	12,364.04	2.99	0.33	12,536.24
	Drainage/Utilities/Sub-Grade	3.55	38.87	33.85	6.57	1.57	5.00	2.41	1.37	1.04	0.09	8,985.90	1.48	0.39	9,139.37
	Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum (pounds/day)	**9.57**	**91.14**	**91.85**	**19.06**	**4.06**	**15.00**	**6.68**	**3.56**	**3.12**	**0.23**	**22,513.48**	**4.69**	**0.75**	**22,855.28**
	Total (tons/construction project)	**0.13**	**1.30**	**1.26**	**0.26**	**0.06**	**0.20**	**0.09**	**0.05**	**0.04**	**0.00**	**314.99**	**0.06**	**0.01**	**319.95**
Stage 2A	Grubbing/Land Clearing	5.50	50.61	51.95	7.13	2.13	5.00	2.95	1.91	1.04	0.14	13,386.88	3.10	0.43	13,593.40
	Grading/Excavation	2.95	28.84	30.61	6.34	1.34	5.00	2.19	1.15	1.04	0.08	7,653.41	1.78	0.30	7,786.77
	Drainage/Utilities/Sub-Grade	3.93	39.44	35.00	6.50	1.50	5.00	2.38	1.34	1.04	0.10	9,481.27	1.97	0.31	9,622.59
	Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum (pounds/day)	**12.38**	**118.89**	**117.56**	**19.97**	**4.97**	**15.00**	**7.52**	**4.40**	**3.12**	**0.31**	**30,521.56**	**6.84**	**1.04**	**31,002.76**
	Total (tons/construction project)	**0.53**	**5.08**	**4.96**	**0.81**	**0.21**	**0.60**	**0.31**	**0.19**	**0.12**	**0.01**	**1,296.48**	**0.29**	**0.04**	**1,316.53**
Stage 2B	Grubbing/Land Clearing	6.15	65.04	46.80	11.94	1.94	10.00	3.87	1.79	2.08	0.16	15,217.75	4.05	0.21	15,381.02
	Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum (pounds/day)	**6.15**	**65.04**	**46.80**	**11.94**	**1.94**	**10.00**	**3.87**	**1.79**	**2.08**	**0.16**	**15,217.75**	**4.05**	**0.21**	**15,381.02**
	Total (tons/construction project)	**0.18**	**1.95**	**1.40**	**0.36**	**0.06**	**0.30**	**0.12**	**0.05**	**0.06**	**0.00**	**456.53**	**0.12**	**0.01**	**461.43**
Stage 2C	Grubbing/Land Clearing	2.86	29.45	25.11	11.11	1.11	10.00	3.09	1.01	2.08	0.07	6,368.71	1.44	0.13	6,443.27
	Grading/Excavation	3.08	31.52	26.10	11.20	1.20	10.00	3.16	1.08	2.08	0.07	6,809.23	1.57	0.09	6,875.15
	Drainage/Utilities/Sub-Grade	3.43	38.33	35.49	11.51	1.51	10.00	3.35	1.27	2.08	0.11	10,905.16	1.67	0.65	11,139.92
	Paving	3.84	41.78	32.74	1.47	1.47	0.00	1.36	1.36	0.00	0.08	7,985.27	1.81	0.10	8,058.90
	Maximum (pounds/day)	**13.21**	**141.08**	**119.44**	**35.29**	**5.29**	**30.00**	**10.96**	**4.72**	**6.24**	**0.33**	**32,068.37**	**6.50**	**0.96**	**32,517.24**
	Total (tons/construction project)	**0.42**	**4.42**	**3.72**	**1.16**	**0.16**	**1.00**	**0.36**	**0.15**	**0.21**	**0.01**	**975.97**	**0.21**	**0.03**	**988.66**
Stage 2D	Grubbing/Land Clearing	2.64	26.72	26.83	6.15	1.15	5.00	2.01	0.97	1.04	0.08	7,986.54	1.37	0.46	8,156.72
	Grading/Excavation	2.03	20.49	17.32	5.79	0.79	5.00	1.71	0.67	1.04	0.05	5,315.58	1.05	0.18	5,394.19
	Drainage/Utilities/Sub-Grade	2.47	25.95	21.50	5.99	0.99	5.00	1.91	0.87	1.04	0.06	6,074.45	1.25	0.18	6,159.32
	Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum (pounds/day)	**7.13**	**73.17**	**65.65**	**17.93**	**2.93**	**15.00**	**5.63**	**2.51**	**3.12**	**0.20**	**19,376.57**	**3.68**	**0.81**	**19,710.24**
	Total (tons/construction project)	**0.14**	**1.46**	**1.31**	**0.36**	**0.06**	**0.30**	**0.11**	**0.05**	**0.06**	**0.00**	**387.53**	**0.07**	**0.02**	**394.20**
Stage 2E	Grubbing/Land Clearing	0.95	7.76	7.42	20.33	0.33	20.00	4.43	0.27	4.16	0.03	2,725.07	0.56	0.13	2,776.53
	Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Maximum (pounds/day)	**0.95**	**7.76**	**7.42**	**20.33**	**0.33**	**20.00**	**4.43**	**0.27**	**4.16**	**0.03**	**2,725.07**	**0.56**	**0.13**	**2,776.53**
	Total (tons/construction project)	**0.01**	**0.08**	**0.07**	**0.20**	**0.00**	**0.20**	**0.04**	**0.00**	**0.04**	**0.00**	**27.25**	**0.01**	**0.00**	**27.77**

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The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Stage 1: Construct Webster Tube Bike/Ped Walkway -Subphase 1A

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	2.32	26.19	19.04	5.91	0.91	5.00	1.88	0.84	1.04	0.05	5,101.65	1.13	0.07	5,150.84
Grading/Excavation	5.76	49.01	54.23	7.36	2.36	5.00	3.17	2.13	1.04	0.12	11,946.13	3.09	0.14	12,065.65
Drainage/Utilities/Sub-Grade	4.20	43.16	36.32	6.64	1.64	5.00	2.55	1.51	1.04	0.09	8,680.13	1.89	0.11	8,759.18
Paving	0.35	2.82	2.38	0.14	0.14	0.00	0.10	0.10	0.00	0.01	728.85	0.06	0.03	740.27
Maximum (pounds/day)	12.63	121.18	111.97	20.04	5.04	15.00	7.71	4.59	3.12	0.28	26,456.76	6.18	0.35	26,715.93
Total (tons/construction project)	0.42	4.12	3.67	0.67	0.17	0.50	0.26	0.15	0.10	0.01	869.05	0.20	0.01	877.28

Notes:

Project Start Year ->	2023
Project Length (months) ->	11
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	32	0	0	0	320	40
Grading/Excavation	0	0	0	0	1,200	40
Drainage/Utilities/Sub-Grade	0	0	0	0	800	40
Paving	0	0	0	0	400	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Stage 1: Construct Webster Tube Bike/Ped Walkway -Subphase 1A

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.05	0.52	0.38	0.12	0.02	0.10	0.04	0.02	0.02	0.00	102.03	0.02	0.00	93.46
Grading/Excavation	0.12	0.98	1.08	0.15	0.05	0.10	0.06	0.04	0.02	0.00	238.92	0.06	0.00	218.92
Drainage/Utilities/Sub-Grade	0.25	2.59	2.18	0.40	0.10	0.30	0.15	0.09	0.06	0.01	520.81	0.11	0.01	476.78
Paving	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.29	0.00	0.00	6.72
Maximum (tons/phase)	0.25	2.59	2.18	0.40	0.10	0.30	0.15	0.09	0.06	0.01	520.81	0.11	0.01	476.78
Total (tons/construction project)	0.42	4.12	3.67	0.67	0.17	0.50	0.26	0.15	0.10	0.01	869.05	0.20	0.01	795.87

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Stage 1: Construct Webster Tube Bike/Ped Walkway -Subphase 1A	
Construction Start Year	2023	Enter a Year between 2014 and 2040 (inclusive)
Project Type	3	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway□ 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane□ 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	11.00	months
Working Days per Month	20.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.30	miles
Total Project Area	2.00	acres
Maximum Area Disturbed/Day	0.50	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		32.00
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		
	Paving	12.00		
Asphalt	Grubbing/Land Clearing	12.00		
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		
	Paving	12.00		

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer□
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	2.00	1.10	1/2/2023	1/1/2023
Grading/Excavation	2.00	4.40	2/27/2023	3/3/2023
Drainage/Utilities/Sub-Grade	6.00	3.85	2/27/2023	5/3/2023
Paving	1.00	1.65	7/17/2023	11/2/2023
Totals (Months)	11			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	0.00	30.00	0	3	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	0.00	30.00	0	0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values		
Miles/ one-way trip		20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		8	16	320.00
No. of employees: Grading/Excavation		30	60	1,200.00
No. of employees: Drainage/Utilities/Sub-Grade		20	40	800.00
No. of employees: Paving		10	20	400.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grading/Excavation (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Paving (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grubbing/Land Clearing (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Grading/Excavation (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Draining/Utilities/Sub-Grade (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Paving (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50

Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.05	0.74	0.06	0.03	0.01	0.00	226.51	0.01	0.01	228.33
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	4.53	0.00	0.00	4.57
Pounds per day - Grading/Excavation	0.18	2.78	0.23	0.12	0.05	0.01	849.41	0.02	0.02	856.25
Tons per const. Period - Grading/Excavation	0.00	0.06	0.00	0.00	0.00	0.00	16.99	0.00	0.00	17.13
Pounds per day - Drainage/Utilities/Sub-Grade	0.12	1.85	0.15	0.08	0.03	0.01	566.28	0.01	0.01	570.83
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.01	0.11	0.01	0.00	0.00	0.00	33.98	0.00	0.00	34.25
Pounds per day - Paving	0.06	0.93	0.08	0.04	0.02	0.00	283.14	0.01	0.01	285.42
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.83	0.00	0.00	2.85
Total tons per construction project	0.01	0.19	0.02	0.01	0.00	0.00	58.33	0.00	0.00	58.80

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.31	0.01	0.00	0.00	151.24	0.00	0.02	158.32
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	3.02	0.00	0.00	3.17
Pounds per day - Grading/Excavation	0.00	0.04	0.31	0.01	0.00	0.00	151.24	0.00	0.02	158.32
Tons per const. Period - Grading/Excavation	0.00	0.00	0.01	0.00	0.00	0.00	3.02	0.00	0.00	3.17
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.31	0.01	0.00	0.00	151.24	0.00	0.02	158.32
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.02	0.00	0.00	0.00	9.07	0.00	0.00	9.50
Pounds per day - Paving	0.00	0.04	0.31	0.01	0.00	0.00	151.24	0.00	0.02	158.32
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	1.51	0.00	0.00	1.58
Total tons per construction project	0.00	0.00	0.03	0.00	0.00	0.00	16.64	0.00	0.00	17.42

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.50	5.00	0.10	1.04	0.02
Fugitive Dust - Grading/Excavation		0.50	5.00	0.10	1.04	0.02
Fugitive Dust - Drainage/Utilities/Subgrade		0.50	5.00	0.30	1.04	0.06

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Excavators	0.19	3.26	1.55	0.08	0.07	0.01	500.11	0.16	0.00	505.50
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Generator Sets	0.61	7.34	5.43	0.26	0.26	0.01	1,246.07	0.05	0.01	1,250.23
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Tractors	0.19	3.02	1.72	0.08	0.08	0.00	455.15	0.15	0.00	460.06
1.00			Model Default Tier	Off-Highway Trucks	0.50	3.29	3.57	0.13	0.12	0.01	1,279.89	0.41	0.01	1,293.67
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Other Material Handling Equipm	0.26	3.76	2.10	0.11	0.10	0.01	559.68	0.18	0.01	565.71
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pressure Washers	0.04	0.24	0.30	0.01	0.01	0.00	39.09	0.00	0.00	39.28
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.07	1.39	0.86	0.03	0.03	0.00	200.49	0.06	0.00	202.65
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Sweepers/Scrubbers	0.18	1.92	1.71	0.11	0.10	0.00	246.18	0.08	0.00	248.83
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	2.27	25.42	18.67	0.86	0.82	0.05	4,723.90	1.13	0.04	4,764.18
Grubbing/Land Clearing	tons per phase	0.05	0.51	0.37	0.02	0.02	0.00	94.48	0.02	0.00	95.28

Grading/Excavation	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Air Compressors	0.06	0.60	0.43	0.02	0.02	0.00	93.82	0.01	0.00	94.17
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.02	0.10	0.12	0.00	0.00	0.00	16.42	0.00	0.00	16.50
1.00			Model Default Tier	Concrete/Industrial Saws	0.33	3.66	2.58	0.13	0.13	0.01	592.67	0.03	0.00	594.72
	1		Model Default Tier	Cranes	0.35	1.83	3.82	0.16	0.15	0.01	558.82	0.18	0.01	564.84
	2		Model Default Tier	Crawler Tractors	0.89	4.49	10.25	0.40	0.37	0.02	1,516.54	0.49	0.01	1,532.90
1.00			Model Default Tier	Crushing/Proc. Equipment	0.15	1.41	0.97	0.05	0.05	0.00	215.97	0.01	0.00	216.78
1.00	4		Model Default Tier	Excavators	0.19	3.26	1.55	0.08	0.07	0.01	500.11	0.16	0.00	505.50
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Generator Sets	0.31	3.67	2.72	0.13	0.13	0.01	623.04	0.03	0.00	625.12
1.00	2		Model Default Tier	Graders	0.38	1.69	4.65	0.15	0.14	0.01	640.86	0.21	0.01	647.76
1.00			Model Default Tier	Off-Highway Tractors	0.19	3.02	1.72	0.08	0.08	0.00	455.15	0.15	0.00	460.06
1.00			Model Default Tier	Off-Highway Trucks	0.50	3.29	3.57	0.13	0.12	0.01	1,279.89	0.41	0.01	1,293.67
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.05	0.72	0.47	0.02	0.02	0.00	113.80	0.04	0.00	115.03
1.00			Model Default Tier	Paving Equipment	0.04	0.64	0.40	0.02	0.02	0.00	98.62	0.03	0.00	99.68
1.00			Model Default Tier	Plate Compactors	0.01	0.05	0.06	0.00	0.00	0.00	8.62	0.00	0.00	8.66
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3		Model Default Tier	Rollers	0.04	0.46	0.40	0.02	0.02	0.00	63.53	0.02	0.00	64.21
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Rubber Tired Loaders	0.81	4.53	7.96	0.27	0.25	0.02	1,816.68	0.59	0.02	1,836.30
1.00	4		Model Default Tier	Scrapers	0.20	1.53	2.07	0.08	0.07	0.00	367.53	0.12	0.00	371.49
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.07	1.39	0.86	0.03	0.03	0.00	200.49	0.06	0.00	202.65
1.00			Model Default Tier	Surfacing Equipment	0.18	1.62	2.05	0.08	0.07	0.01	654.55	0.21	0.01	661.62
1.00			Model Default Tier	Sweepers/Scrubbers	0.18	1.92	1.71	0.11	0.10	0.00	246.18	0.08	0.00	248.83
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.30	4.46	3.07	0.15	0.14	0.01	603.15	0.20	0.01	609.64
1.00			Model Default Tier	Trenchers	0.09	0.65	0.81	0.06	0.05	0.00	81.80	0.03	0.00	82.68
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation	pounds per day		5.57	46.20	53.69	2.22	2.08	0.11	10,945.49	3.07	0.10	11,051.07
	Grading/Excavation	tons per phase		0.11	0.92	1.07	0.04	0.04	0.00	218.91	0.06	0.00	221.02

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.06	0.60	0.43	0.02	0.02	0.00	93.82	0.01	0.00	94.17
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.02	0.10	0.12	0.00	0.00	0.00	16.42	0.00	0.00	16.50
1.00			Model Default Tier	Concrete/Industrial Saws	0.33	3.66	2.58	0.13	0.13	0.01	592.67	0.03	0.00	594.72
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.15	1.41	0.97	0.05	0.05	0.00	215.97	0.01	0.00	216.78
1.00			Model Default Tier	Excavators	0.19	3.26	1.55	0.08	0.07	0.01	500.11	0.16	0.00	505.50
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Generator Sets	0.31	3.67	2.72	0.13	0.13	0.01	623.04	0.03	0.00	625.12
1.00	2		Model Default Tier	Graders	0.38	1.69	4.65	0.15	0.14	0.01	640.86	0.21	0.01	647.76
1.00			Model Default Tier	Off-Highway Tractors	0.19	3.02	1.72	0.08	0.08	0.00	455.15	0.15	0.00	460.06
1.00			Model Default Tier	Off-Highway Trucks	0.50	3.29	3.57	0.13	0.12	0.01	1,279.89	0.41	0.01	1,293.67
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Plate Compactors	0.01	0.05	0.06	0.00	0.00	0.00	8.62	0.00	0.00	8.66
1.00			Model Default Tier	Pressure Washers	0.04	0.24	0.30	0.01	0.01	0.00	39.09	0.00	0.00	39.28
	1		Model Default Tier	Pumps	0.33	3.73	2.75	0.13	0.13	0.01	623.04	0.03	0.00	625.14
1.00			Model Default Tier	Rollers	0.04	0.46	0.40	0.02	0.02	0.00	63.53	0.02	0.00	64.21
1.00	1		Model Default Tier	Rough Terrain Forklifts	0.11	2.29	1.40	0.04	0.04	0.00	333.80	0.11	0.00	337.40
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	4		Model Default Tier	Scrapers	0.20	1.53	2.07	0.08	0.07	0.00	367.53	0.12	0.00	371.49
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.07	1.39	0.86	0.03	0.03	0.00	200.49	0.06	0.00	202.65
1.00			Model Default Tier	Surfacing Equipment	0.18	1.62	2.05	0.08	0.07	0.01	654.55	0.21	0.01	661.62
1.00			Model Default Tier	Sweepers/Scrubbers	0.18	1.92	1.71	0.11	0.10	0.00	246.18	0.08	0.00	248.83
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.30	4.46	3.07	0.15	0.14	0.01	603.15	0.20	0.01	609.64
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.25	1.68	1.42	0.06	0.06	0.00	207.48	0.02	0.00	208.56

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	pounds per day		4.08	41.27	35.85	1.55	1.47	0.08	7,962.62	1.88	0.07	8,030.02
	Drainage/Utilities/Sub-Grade	tons per phase		0.24	2.48	2.15	0.09	0.09	0.01	477.76	0.11	0.00	481.80

Paving	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Other Construction Equipment	0.06	0.65	0.56	0.03	0.03	0.00	97.22	0.03	0.00	98.27
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			Model Default Tier	Scrapers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	3		Model Default Tier	Signal Boards		0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
			Model Default Tier	Skid Steer Loaders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles		Equipment Tier		Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving			pounds per day		0.29	1.85	2.00	0.08	0.08	0.00	294.47	0.05	0.00	296.53
	Paving			tons per phase		0.00	0.02	0.02	0.00	0.00	0.00	2.94	0.00	0.00	2.97
Total Emissions all Phases (tons per construction period) =>						0.40	3.93	3.62	0.16	0.15	0.01	794.09	0.20	0.01	801.07

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78	2.00	8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9	2.60	8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85	2.60	8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172	1.30	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	2.00	8
Paving Equipment		132	2.00	8
Plate Compactors		8	2.00	8
Pressure Washers		13		8
Pumps		84		8
Rollers		80	2.00	8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367	2.00	8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78	2.00	8
Welders		46		8

END OF DATA ENTRY SHEET

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Stage 1: Construct Jackson Horseshoe - Subphase 1B Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	2.80	27.92	23.82	11.12	1.12	10.00	3.11	1.03	2.08	0.06	5,622.71	0.88	0.17	5,696.61
Grading/Excavation	2.94	30.10	25.02	11.24	1.24	10.00	3.16	1.08	2.08	0.07	6,812.75	0.90	0.28	6,918.24
Drainage/Utilities/Sub-Grade	6.45	63.97	61.92	12.81	2.81	10.00	4.59	2.51	2.08	0.16	15,079.44	3.02	0.53	15,312.69
Paving	3.47	34.33	32.98	1.39	1.39	0.00	1.27	1.27	0.00	0.08	7,353.01	1.74	0.14	7,438.24
Maximum (pounds/day)	12.85	128.39	119.92	35.17	5.45	30.00	10.87	4.87	6.24	0.30	29,245.19	5.65	0.98	29,669.18
Total (tons/construction project)	1.11	11.09	10.47	2.38	0.48	1.90	0.82	0.43	0.40	0.03	2,544.84	0.49	0.09	2,582.68

Notes:

Project Start Year ->	2023
Project Length (months) ->	23
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	32	32	90	90	280	40
Grading/Excavation	128	0	330	0	1,160	40
Drainage/Utilities/Sub-Grade	128	128	330	330	760	40
Paving	32	0	90	0	360	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Stage 1: Construct Jackson Horseshoe - Subphase 1B Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.08	0.84	0.71	0.33	0.03	0.30	0.09	0.03	0.06	0.00	168.68	0.03	0.01	155.04
Grading/Excavation	0.12	1.20	1.00	0.45	0.05	0.40	0.13	0.04	0.08	0.00	272.51	0.04	0.01	251.05
Drainage/Utilities/Sub-Grade	0.77	7.68	7.43	1.54	0.34	1.20	0.55	0.30	0.25	0.02	1,809.53	0.36	0.06	1,666.99
Paving	0.14	1.37	1.32	0.06	0.06	0.00	0.05	0.05	0.00	0.00	294.12	0.07	0.01	269.92
Maximum (tons/phase)	0.77	7.68	7.43	1.54	0.34	1.20	0.55	0.30	0.25	0.02	1809.53	0.36	0.06	1,666.99
Total (tons/construction project)	1.11	11.09	10.47	2.38	0.48	1.90	0.82	0.43	0.40	0.03	2544.84	0.49	0.09	2,342.99

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Stage 1: Construct Jackson Horseshoe - Subphase 1B	
Construction Start Year	2023	Enter a Year between 2014 and 2040 (inclusive)
Project Type	3	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway□ 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane□ 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	23.00	months
Working Days per Month	20.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.55	miles
Total Project Area	1.20	acres
Maximum Area Disturbed/Day	1.00	acre
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		32.00
	Grading/Excavation	12.00		128.00
	Drainage/Utilities/Sub-Grade	12.00		128.00
	Paving	12.00		32.00
Asphalt	Grubbing/Land Clearing	12.00		32.00
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		128.00
	Paving	12.00		

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer□
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	3.00	2.30	1/30/2023	1/1/2023
Grading/Excavation	4.00	9.20	4/24/2023	4/3/2023
Drainage/Utilities/Sub-Grade	12.00	8.05	7/17/2023	8/3/2023
Paving	4.00	3.45	12/4/2023	8/2/2024
Totals (Months)	23			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		3	90.00
Miles/round trip: Grading/Excavation		30.00		11	330.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		11	330.00
Miles/round trip: Paving		30.00		3	90.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.00	0.11	0.05	0.02	1,703.36	0.00	0.27	1,783.18
Paving (grams/mile)	0.03	0.41	3.01	0.11	0.05	0.02	1,698.31	0.00	0.27	1,777.90
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.08	0.62	0.02	0.01	0.00	340.28	0.00	0.05	356.23
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.02	0.00	0.00	0.00	10.21	0.00	0.00	10.69
Pounds per day - Grading/Excavation	0.02	0.29	2.28	0.08	0.04	0.01	1,247.70	0.00	0.20	1,306.17
Tons per const. Period - Grading/Excavation	0.00	0.01	0.09	0.00	0.00	0.00	49.91	0.00	0.01	52.25
Pounds per day - Drainage/Utilities/Sub-Grade	0.02	0.30	2.29	0.08	0.04	0.01	1,239.24	0.00	0.19	1,297.31
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.04	0.28	0.01	0.00	0.00	148.71	0.00	0.02	155.68
Pounds per day - Paving	0.01	0.08	0.63	0.02	0.01	0.00	336.97	0.00	0.05	352.76
Tons per const. Period - Paving	0.00	0.00	0.03	0.00	0.00	0.00	13.48	0.00	0.00	14.11
Total tons per construction project	0.00	0.05	0.41	0.01	0.01	0.00	222.30	0.00	0.03	232.72

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		3	90.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		11	330.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.00	0.11	0.05	0.02	1,703.36	0.00	0.27	1,783.18
Paving (grams/mile)	0.03	0.41	3.01	0.11	0.05	0.02	1,698.31	0.00	0.27	1,777.90
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.08	0.62	0.02	0.01	0.00	340.28	0.00	0.05	356.23
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.02	0.00	0.00	0.00	10.21	0.00	0.00	10.69
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.02	0.30	2.29	0.08	0.04	0.01	1,239.24	0.00	0.19	1,297.31
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.04	0.28	0.01	0.00	0.00	148.71	0.00	0.02	155.68
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.04	0.29	0.01	0.00	0.00	158.92	0.00	0.02	166.36

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values		
Miles/ one-way trip		20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		7	14	280.00
No. of employees: Grading/Excavation		29	58	1,160.00
No. of employees: Drainage/Utilities/Sub-Grade		19	38	760.00
No. of employees: Paving		9	18	360.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grading/Excavation (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.87	0.07	0.05	0.02	0.00	311.71	0.00	0.01	313.64
Paving (grams/mile)	0.01	0.86	0.07	0.05	0.02	0.00	309.13	0.00	0.01	311.01
Grubbing/Land Clearing (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Grading/Excavation (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Draining/Utilities/Sub-Grade (grams/trip)	1.01	2.70	0.28	0.00	0.00	0.00	67.03	0.07	0.03	77.94
Paving (grams/trip)	0.99	2.68	0.27	0.00	0.00	0.00	66.49	0.07	0.03	77.25

Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.04	0.65	0.05	0.03	0.01	0.00	198.20	0.00	0.00	199.79
Tons per const. Period - Grubbing/Land Clearing	0.00	0.02	0.00	0.00	0.00	0.00	5.95	0.00	0.00	5.99
Pounds per day - Grading/Excavation	0.17	2.69	0.22	0.12	0.05	0.01	821.10	0.02	0.02	827.71
Tons per const. Period - Grading/Excavation	0.01	0.11	0.01	0.00	0.00	0.00	32.84	0.00	0.00	33.11
Pounds per day - Drainage/Utilities/Sub-Grade	0.11	1.69	0.14	0.08	0.03	0.01	527.90	0.01	0.01	532.03
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.01	0.20	0.02	0.01	0.00	0.00	63.35	0.00	0.00	63.84
Pounds per day - Paving	0.05	0.78	0.06	0.04	0.02	0.00	247.99	0.01	0.01	249.91
Tons per const. Period - Paving	0.00	0.03	0.00	0.00	0.00	0.00	9.92	0.00	0.00	10.00
Total tons per construction project	0.02	0.36	0.03	0.02	0.01	0.00	112.06	0.00	0.00	112.94

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.00	0.11	0.05	0.02	1,703.36	0.00	0.27	1,783.18
Paving (grams/mile)	0.03	0.41	3.01	0.11	0.05	0.02	1,698.31	0.00	0.27	1,777.90
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.31	0.01	0.00	0.00	151.24	0.00	0.02	158.32
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	4.54	0.00	0.00	4.75
Pounds per day - Grading/Excavation	0.00	0.04	0.31	0.01	0.00	0.00	151.24	0.00	0.02	158.32
Tons per const. Period - Grading/Excavation	0.00	0.00	0.01	0.00	0.00	0.00	6.05	0.00	0.00	6.33
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.31	0.01	0.00	0.00	150.21	0.00	0.02	157.25
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.04	0.00	0.00	0.00	18.03	0.00	0.00	18.87
Pounds per day - Paving	0.00	0.04	0.31	0.01	0.00	0.00	149.77	0.00	0.02	156.78
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	5.99	0.00	0.00	6.27
Total tons per construction project	0.00	0.01	0.07	0.00	0.00	0.00	34.60	0.00	0.01	36.22

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		1.00	10.00	0.30	2.08	0.06
Fugitive Dust - Grading/Excavation		1.00	10.00	0.40	2.08	0.08
Fugitive Dust - Drainage/Utilities/Subgrade		1.00	10.00	1.20	2.08	0.25

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
1.00			Model Default Tier	Aerial Lifts	0.03	1.09	0.53	0.01	0.01	0.00	162.62	0.05	0.00	164.37
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.05	0.27	0.32	0.01	0.01	0.00	44.20	0.00	0.00	44.43
1.00			Model Default Tier	Concrete/Industrial Saws	0.33	3.66	2.58	0.13	0.13	0.01	592.67	0.03	0.00	594.72
1.00			Model Default Tier	Cranes	0.35	1.83	3.82	0.16	0.15	0.01	558.82	0.18	0.01	564.84
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.45	4.33	2.98	0.15	0.15	0.01	664.53	0.04	0.00	667.01
1.00	2		Model Default Tier	Excavators	0.19	3.26	1.55	0.08	0.07	0.01	500.11	0.16	0.00	505.50
1.00			Model Default Tier	Forklifts	0.10	1.14	0.96	0.06	0.05	0.00	148.03	0.05	0.00	149.63
1.00			Model Default Tier	Generator Sets	0.31	3.67	2.72	0.13	0.13	0.01	623.04	0.03	0.00	625.12
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Tractors	0.10	1.51	0.86	0.04	0.04	0.00	227.58	0.07	0.00	230.03
1.00			Model Default Tier	Off-Highway Trucks	0.13	0.82	0.89	0.03	0.03	0.00	319.97	0.10	0.00	323.42
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	2		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.43	0.01	0.01	0.00	100.24	0.03	0.00	101.32
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Sweepers/Scrubbers	0.18	1.92	1.71	0.11	0.10	0.00	246.18	0.08	0.00	248.83
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.25	1.68	1.42	0.06	0.06	0.00	207.48	0.02	0.00	208.56

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	2.74	27.08	22.21	1.03	0.99	0.05	4,592.71	0.88	0.04	4,626.04
Grubbing/Land Clearing	tons per phase	0.08	0.81	0.67	0.03	0.03	0.00	137.78	0.03	0.00	138.78

Grading/Excavation	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
1.00			Model Default Tier	Aerial Lifts	0.03	1.09	0.53	0.01	0.01	0.00	162.62	0.05	0.00	164.37
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.05	0.27	0.32	0.01	0.01	0.00	44.20	0.00	0.00	44.43
1.00			Model Default Tier	Concrete/Industrial Saws	0.33	3.66	2.58	0.13	0.13	0.01	592.67	0.03	0.00	594.72
1.00	1		Model Default Tier	Cranes	0.35	1.83	3.82	0.16	0.15	0.01	558.82	0.18	0.01	564.84
0.00	2		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.45	4.33	2.98	0.15	0.15	0.01	664.53	0.04	0.00	667.01
1.00	4		Model Default Tier	Excavators	0.19	3.26	1.55	0.08	0.07	0.01	500.11	0.16	0.00	505.50
1.00			Model Default Tier	Forklifts	0.10	1.14	0.96	0.06	0.05	0.00	148.03	0.05	0.00	149.63
1.00			Model Default Tier	Generator Sets	0.31	3.67	2.72	0.13	0.13	0.01	623.04	0.03	0.00	625.12
0.00	2		Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Tractors	0.10	1.51	0.86	0.04	0.04	0.00	227.58	0.07	0.00	230.03
1.00			Model Default Tier	Off-Highway Trucks	0.13	0.82	0.89	0.03	0.03	0.00	319.97	0.10	0.00	323.42
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	4		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	2		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.43	0.01	0.01	0.00	100.24	0.03	0.00	101.32
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Sweepers/Scrubbers	0.18	1.92	1.71	0.11	0.10	0.00	246.18	0.08	0.00	248.83
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.25	1.68	1.42	0.06	0.06	0.00	207.48	0.02	0.00	208.56

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation	pounds per day	2.74	27.08	22.21	1.03	0.99	0.05	4,592.71	0.88	0.04	4,626.04
	Grading/Excavation	tons per phase	0.11	1.08	0.89	0.04	0.04	0.00	183.71	0.04	0.00	185.04

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
1.00			Model Default Tier	Aerial Lifts	0.03	1.09	0.53	0.01	0.01	0.00	162.62	0.05	0.00	164.37
1.00	1		Model Default Tier	Air Compressors	0.25	2.41	1.68	0.09	0.09	0.00	375.26	0.02	0.00	376.65
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.05	0.27	0.32	0.01	0.01	0.00	44.20	0.00	0.00	44.43
1.00			Model Default Tier	Concrete/Industrial Saws	0.32	3.65	2.49	0.12	0.12	0.01	592.67	0.03	0.00	594.71
2.00			Model Default Tier	Cranes	0.68	3.60	7.29	0.30	0.28	0.01	1,117.63	0.36	0.01	1,129.67
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.44	4.32	2.88	0.14	0.14	0.01	664.53	0.04	0.00	666.98
2.00			Model Default Tier	Excavators	0.37	6.52	2.94	0.14	0.13	0.01	1,000.39	0.32	0.01	1,011.17
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Generator Sets	0.29	3.67	2.62	0.12	0.12	0.01	623.04	0.03	0.00	625.09
1.00	2		Model Default Tier	Graders	0.37	1.67	4.38	0.14	0.13	0.01	640.67	0.21	0.01	647.57
1.00			Model Default Tier	Off-Highway Tractors	0.09	1.51	0.78	0.04	0.03	0.00	227.60	0.07	0.00	230.06
4.00			Model Default Tier	Off-Highway Trucks	0.50	3.27	3.44	0.12	0.11	0.01	1,280.14	0.41	0.01	1,293.92
1.00			Model Default Tier	Other Construction Equipment	0.34	4.01	3.31	0.17	0.16	0.01	598.25	0.19	0.01	604.71
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.19	2.89	1.81	0.08	0.08	0.00	455.19	0.15	0.00	460.10
1.00			Model Default Tier	Paving Equipment	0.17	2.56	1.54	0.07	0.07	0.00	394.47	0.13	0.00	398.72
1.00	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.32	3.72	2.66	0.13	0.13	0.01	623.04	0.03	0.00	625.13
1.00			Model Default Tier	Rollers	0.15	1.85	1.56	0.08	0.08	0.00	254.13	0.08	0.00	256.87
1.00	1		Model Default Tier	Rough Terrain Forklifts	0.05	1.14	0.69	0.02	0.02	0.00	166.88	0.05	0.00	168.68
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	4		Model Default Tier	Scrapers	0.77	6.04	7.96	0.31	0.29	0.02	1,469.57	0.48	0.01	1,485.41
4.00	2		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.42	0.01	0.01	0.00	100.27	0.03	0.00	101.35
1.00			Model Default Tier	Surfacing Equipment	0.09	0.81	1.03	0.04	0.04	0.00	327.23	0.11	0.00	330.76
1.00			Model Default Tier	Sweepers/Scrubbers	0.18	1.92	1.65	0.10	0.09	0.00	246.18	0.08	0.00	248.83
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Trenchers	0.34	2.59	3.19	0.22	0.20	0.00	327.18	0.11	0.00	330.70
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	pounds per day	6.29	61.65	56.88	2.56	2.41	0.12	11,922.85	3.01	0.10	12,028.79
	Drainage/Utilities/Sub-Grade	tons per phase	0.76	7.40	6.83	0.31	0.29	0.01	1,430.74	0.36	0.01	1,443.45

Paving	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.05	0.27	0.32	0.01	0.01	0.00	44.20	0.00	0.00	44.43
1.00			Model Default Tier	Concrete/Industrial Saws	0.32	3.65	2.45	0.11	0.11	0.01	592.67	0.03	0.00	594.70
1.00			Model Default Tier	Cranes	0.34	1.79	3.57	0.15	0.14	0.01	558.81	0.18	0.01	564.83
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.18	3.26	1.44	0.07	0.06	0.01	500.23	0.16	0.00	505.62
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Generator Sets	0.29	3.67	2.58	0.11	0.11	0.01	623.04	0.03	0.00	625.07
1.00			Model Default Tier	Graders	0.36	1.66	4.27	0.14	0.13	0.01	640.59	0.21	0.01	647.49
1.00			Model Default Tier	Off-Highway Tractors	0.09	1.51	0.75	0.04	0.03	0.00	227.61	0.07	0.00	230.07
1.00			Model Default Tier	Off-Highway Trucks	0.12	0.81	0.85	0.03	0.03	0.00	320.06	0.10	0.00	323.51
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Pavers	0.19	2.89	1.77	0.08	0.08	0.00	455.17	0.15	0.00	460.08
1.00	1		Model Default Tier	Paving Equipment	0.17	2.57	1.52	0.07	0.07	0.00	394.47	0.13	0.00	398.72
1.00			Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
1.00			Model Default Tier	Pressure Washers	0.04	0.24	0.30	0.01	0.01	0.00	39.09	0.00	0.00	39.28
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Rollers	0.15	1.85	1.54	0.08	0.08	0.00	254.14	0.08	0.00	256.88
1.00			Model Default Tier	Rough Terrain Forklifts	0.05	1.14	0.68	0.02	0.02	0.00	166.88	0.05	0.00	168.67
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1.00			Model Default Tier	Scrapers	0.77	6.00	7.83	0.31	0.28	0.02	1,469.33	0.48	0.01	1,485.16
4.00	2		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.42	0.01	0.01	0.00	100.27	0.03	0.00	101.36
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	pounds per day		3.41	33.43	31.97	1.33	1.25	0.07	6,618.29	1.73	0.06	6,678.79
	Paving	tons per phase		0.14	1.34	1.28	0.05	0.05	0.00	264.73	0.07	0.00	267.15
Total Emissions all Phases (tons per construction period) =>				1.08	10.63	9.66	0.43	0.41	0.02	2,016.96	0.49	0.02	2,034.43

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9	7.00	8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124	4.00	8
Off-Highway Trucks		402	2.00	8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100	4.00	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65	4.00	8
Surfacing Equipment		263	4.00	8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Stage 1: Construct 5th Street curb/gutter. SW and apvement - Subph

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	3.07	30.85	27.74	6.20	1.20	5.00	2.13	1.09	1.04	0.07	6,807.32	1.66	0.14	6,889.10
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	3.07	30.85	27.74	6.20	1.20	5.00	2.13	1.09	1.04	0.07	6,807.32	1.66	0.14	6,889.10
Total (tons/construction project)	0.03	0.31	0.28	0.06	0.01	0.05	0.02	0.01	0.01	0.00	68.07	0.02	0.00	68.89

Notes:

Project Start Year ->	2024
Project Length (months) ->	1
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	32	0	90	0	320	40
Grading/Excavation	0	0	0	0	1,200	40
Drainage/Utilities/Sub-Grade	0	0	0	0	800	40
Paving	0	0	0	0	400	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Stage 1: Construct 5th Street curb/gutter. SW and apvement - Subph

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.03	0.31	0.28	0.06	0.01	0.05	0.02	0.01	0.01	0.00	68.07	0.02	0.00	62.50
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.03	0.31	0.28	0.06	0.01	0.05	0.02	0.01	0.01	0.00	68.07	0.02	0.00	62.50
Total (tons/construction project)	0.03	0.31	0.28	0.06	0.01	0.05	0.02	0.01	0.01	0.00	68.07	0.02	0.00	62.50

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Stage 1: Construct 5th Street curb/gutter. SW and apvement - Subphase 1C	
Construction Start Year	2024	Enter a Year between 2014 and 2040 (inclusive)
Project Type	3	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway□ 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane□ 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	1.00	month
Working Days per Month	20.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.30	miles
Total Project Area	2.00	acres
Maximum Area Disturbed/Day	0.50	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		32.00
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		
	Paving	12.00		
Asphalt	Grubbing/Land Clearing	12.00		
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		
	Paving	12.00		

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer□
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	1.00	0.10	2/26/2024	1/1/2024
Grading/Excavation	0.00	0.40		2/1/2024
Drainage/Utilities/Sub-Grade	0.00	0.35		2/1/2024
Paving	0.00	0.15		2/1/2024
Totals (Months)	1		Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used.	

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		3	90.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.08	0.63	0.02	0.01	0.00	336.03	0.00	0.05	351.78
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	3.36	0.00	0.00	3.52
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	3.36	0.00	0.00	3.52

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values		
Miles/ one-way trip		20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		8	16	320.00
No. of employees: Grading/Excavation		30	60	1,200.00
No. of employees: Drainage/Utilities/Sub-Grade		20	40	800.00
No. of employees: Paving		10	20	400.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.04	0.69	0.05	0.03	0.01	0.00	218.70	0.00	0.01	220.37
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.19	0.00	0.00	2.20
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.00	0.00	0.00	0.00	2.19	0.00	0.00	2.20

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.32	0.01	0.00	0.00	149.35	0.00	0.02	156.34
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.49	0.00	0.00	1.56
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	1.49	0.00	0.00	1.56

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.50	5.00	0.05	1.04	0.01
Fugitive Dust - Grading/Excavation		0.00	0.00	0.00	0.00	0.00
Fugitive Dust - Drainage/Utilities/Subgrade		0.00	0.00	0.00	0.00	0.00

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.03	0.15	0.18	0.01	0.01	0.00	25.26	0.00	0.00	25.39
1.00			Model Default Tier	Concrete/Industrial Saws	0.16	1.83	1.21	0.06	0.06	0.00	296.33	0.01	0.00	297.35
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.42	2.20	4.75	0.18	0.17	0.01	758.65	0.25	0.01	766.83
1.00			Model Default Tier	Crushing/Proc. Equipment	0.21	2.16	1.40	0.07	0.07	0.00	332.27	0.02	0.00	333.48
	2		Model Default Tier	Excavators	0.36	6.53	2.81	0.14	0.13	0.01	1,000.53	0.32	0.01	1,011.32
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Generator Sets	0.14	1.83	1.27	0.06	0.06	0.00	311.52	0.01	0.00	312.53
1.00			Model Default Tier	Graders	0.18	0.83	2.08	0.07	0.06	0.00	320.25	0.10	0.00	323.70
1.00			Model Default Tier	Off-Highway Tractors	0.13	2.26	1.08	0.05	0.05	0.00	341.44	0.11	0.00	345.12
1.00			Model Default Tier	Off-Highway Trucks	0.25	1.63	1.66	0.06	0.06	0.01	640.18	0.21	0.01	647.07
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.09	1.45	0.87	0.04	0.04	0.00	227.58	0.07	0.00	230.04
1.00			Model Default Tier	Paving Equipment	0.08	1.28	0.75	0.04	0.03	0.00	197.23	0.06	0.00	199.36
1.00			Model Default Tier	Plate Compactors	0.02	0.11	0.13	0.00	0.00	0.00	17.24	0.00	0.00	17.33
1.00			Model Default Tier	Pressure Washers	0.03	0.18	0.22	0.01	0.01	0.00	29.32	0.00	0.00	29.46
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Scrapers	0.38	2.98	3.85	0.15	0.14	0.01	734.55	0.24	0.01	742.47
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.41	0.01	0.01	0.00	100.28	0.03	0.00	101.36
1.00			Model Default Tier	Surfacing Equipment	0.09	0.81	1.03	0.04	0.04	0.00	327.19	0.11	0.00	330.72
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.92	1.61	0.10	0.09	0.00	246.18	0.08	0.00	248.83
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	3.02	30.05	26.74	1.13	1.06	0.06	6,103.25	1.66	0.05	6,160.61
Grubbing/Land Clearing	tons per phase	0.03	0.30	0.27	0.01	0.01	0.00	61.03	0.02	0.00	61.61

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	4		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	4		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation		pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation		tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Drainage/Utilities/Subgrade

Override of Default Number of Vehicles	Default Number of Vehicles Program-estimate	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	4		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade		pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade		tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving

Override of Default Number of Vehicles	Default Number of Vehicles Program-estimate	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			Model Default Tier	Scrapers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Signal Boards		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Paving	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>			0.03	0.30	0.27	0.01	0.01	0.00	61.03	0.02	0.00	61.61

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9	4.00	8
Concrete/Industrial Saws		81	4.00	8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85	4.00	8
Excavators		158		8
Forklifts		89		8
Generator Sets		84	4.00	8
Graders		187	4.00	8
Off-Highway Tractors		124	6.00	8
Off-Highway Trucks		402	4.00	8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	4.00	8
Paving Equipment		132	4.00	8
Plate Compactors		8	4.00	8
Pressure Washers		13	6.00	8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367	4.00	8
Signal Boards		6		8
Skid Steer Loaders		65	4.00	8
Surfacing Equipment		263	4.00	8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Stage 1: Construct Jackson Horseshoe - Subphase 1D				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Pounds)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**	**CO2 (lbs/day)**	**CH4 (lbs/day)**	**N2O (lbs/day)**	**CO2e (lbs/day)**
Grubbing/Land Clearing	0.61	5.94	5.02	5.26	0.26	5.00	1.27	0.23	1.04	0.01	1,163.54	0.22	0.04	1,179.68
Grading/Excavation	5.41	46.32	52.98	7.23	2.23	5.00	3.00	1.96	1.04	0.13	12,364.04	2.99	0.33	12,536.24
Drainage/Utilities/Sub-Grade	3.55	38.87	33.85	6.57	1.57	5.00	2.41	1.37	1.04	0.09	8,985.90	1.48	0.39	9,139.37
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	9.57	91.14	91.85	19.06	4.06	15.00	6.68	3.56	3.12	0.23	22,513.48	4.69	0.75	22,855.28
Total (tons/construction project)	0.13	1.30	1.26	0.26	0.06	0.20	0.09	0.05	0.04	0.00	314.99	0.06	0.01	319.95

Notes:

Project Start Year ->	2024
Project Length (months) ->	4
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	320	40
Grading/Excavation	128	0	330	0	1,200	40
Drainage/Utilities/Sub-Grade	64	128	180	330	800	40
Paving	0	0	0	0	400	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Stage 1: Construct Jackson Horseshoe - Subphase 1D				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**SOx (tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.01	0.06	0.05	0.05	0.00	0.05	0.01	0.00	0.01	0.00	11.64	0.00	0.00	10.70
Grading/Excavation	0.05	0.46	0.53	0.07	0.02	0.05	0.03	0.02	0.01	0.00	123.64	0.03	0.00	113.73
Drainage/Utilities/Sub-Grade	0.07	0.78	0.68	0.13	0.03	0.10	0.05	0.03	0.02	0.00	179.72	0.03	0.01	165.82
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.07	0.78	0.68	0.13	0.03	0.10	0.05	0.03	0.02	0.00	179.72	0.03	0.01	165.82
Total (tons/construction project)	0.13	1.30	1.26	0.26	0.06	0.20	0.09	0.05	0.04	0.00	314.99	0.06	0.01	290.25

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Stage 1: Construct Jackson Horseshoe - Subphase 1D	
Construction Start Year	2024	Enter a Year between 2014 and 2040 (inclusive)
Project Type	3	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway□ 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane□ 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	4.00	months
Working Days per Month	20.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.30	miles
Total Project Area	2.00	acres
Maximum Area Disturbed/Day	0.50	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		
	Grading/Excavation	12.00		128.00
	Drainage/Utilities/Sub-Grade	12.00		64.00
	Paving	12.00		
Asphalt	Grubbing/Land Clearing	12.00		
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00	128.00	
	Paving	12.00		

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer□
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	1.00	0.40	2/26/2024	1/1/2024
Grading/Excavation	1.00	1.60	3/25/2024	2/1/2024
Drainage/Utilities/Sub-Grade	2.00	1.40	4/22/2024	3/3/2024
Paving	0.00	0.60		5/3/2024
Totals (Months)	4		Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used.	

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		11	330.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		6	180.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.02	0.30	2.31	0.08	0.04	0.01	1,232.10	0.00	0.19	1,289.84
Tons per const. Period - Grading/Excavation	0.00	0.00	0.02	0.00	0.00	0.00	12.32	0.00	0.00	12.90
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.16	1.26	0.04	0.02	0.01	672.06	0.00	0.11	703.55
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.03	0.00	0.00	0.00	13.44	0.00	0.00	14.07
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.05	0.00	0.00	0.00	25.76	0.00	0.00	26.97

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		11	330.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.02	0.30	2.31	0.08	0.04	0.01	1,232.10	0.00	0.19	1,289.84
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.05	0.00	0.00	0.00	24.64	0.00	0.00	25.80
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.05	0.00	0.00	0.00	24.64	0.00	0.00	25.80

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values		
Miles/ one-way trip		20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		8	16	320.00
No. of employees: Grading/Excavation		30	60	1,200.00
No. of employees: Drainage/Utilities/Sub-Grade		20	40	800.00
No. of employees: Paving		10	20	400.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Grading/Excavation (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Grading/Excavation (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Draining/Utilities/Sub-Grade (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.04	0.69	0.05	0.03	0.01	0.00	218.70	0.00	0.01	220.37
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.19	0.00	0.00	2.20
Pounds per day - Grading/Excavation	0.17	2.57	0.20	0.12	0.05	0.01	820.12	0.02	0.02	826.39
Tons per const. Period - Grading/Excavation	0.00	0.03	0.00	0.00	0.00	0.00	8.20	0.00	0.00	8.26
Pounds per day - Drainage/Utilities/Sub-Grade	0.11	1.71	0.14	0.08	0.03	0.01	546.75	0.01	0.01	550.93
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	10.93	0.00	0.00	11.02
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.07	0.01	0.00	0.00	0.00	21.32	0.00	0.00	21.49

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.32	0.01	0.00	0.00	149.35	0.00	0.02	156.34
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.49	0.00	0.00	1.56
Pounds per day - Grading/Excavation	0.00	0.04	0.32	0.01	0.00	0.00	149.35	0.00	0.02	156.34
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	1.49	0.00	0.00	1.56
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.32	0.01	0.00	0.00	149.35	0.00	0.02	156.34
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	2.99	0.00	0.00	3.13
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	5.97	0.00	0.00	6.25

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.50	5.00	0.05	1.04	0.01
Fugitive Dust - Grading/Excavation		0.50	5.00	0.05	1.04	0.01
Fugitive Dust - Drainage/Utilities/Subgrade		0.50	5.00	0.10	1.04	0.02

Off-Road Equipment Emissions

Override of Default Number of Vehicles	Default Number of Vehicles Program-estimate	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
Grubbing/Land Clearing														
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Other Construction Equipment	0.33	4.01	3.21	0.17	0.15	0.01	598.25	0.19	0.01	604.71
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing		pounds per day	0.56	5.22	4.65	0.22	0.21	0.01	795.50	0.21	0.01	802.96
Grubbing/Land Clearing		tons per phase	0.01	0.05	0.05	0.00	0.00	0.00	7.95	0.00	0.00	8.03

Override of Default Number of Vehicles	Default Number of Vehicles Program-estimate	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
Grading/Excavation														
1.00			Model Default Tier	Aerial Lifts	0.03	1.09	0.53	0.01	0.01	0.00	162.62	0.05	0.00	164.37
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.03	0.15	0.18	0.01	0.01	0.00	25.26	0.00	0.00	25.39
1.00			Model Default Tier	Concrete/Industrial Saws	0.23	2.74	1.81	0.08	0.08	0.00	444.50	0.02	0.00	446.02
	1		Model Default Tier	Cranes	0.08	0.44	0.88	0.04	0.03	0.00	139.70	0.05	0.00	141.21
	2		Model Default Tier	Crawler Tractors	0.85	4.41	9.50	0.37	0.34	0.02	1,517.30	0.49	0.01	1,533.67
1.00			Model Default Tier	Crushing/Proc. Equipment	0.11	1.08	0.70	0.03	0.03	0.00	166.13	0.01	0.00	166.74
1.00	4		Model Default Tier	Excavators	0.05	0.82	0.35	0.02	0.02	0.00	125.07	0.04	0.00	126.41
1.00			Model Default Tier	Forklifts	0.09	1.14	0.88	0.05	0.05	0.00	148.03	0.05	0.00	149.63
1.00			Model Default Tier	Generator Sets	0.14	1.83	1.27	0.06	0.06	0.00	311.52	0.01	0.00	312.53
	2		Model Default Tier	Graders	0.18	0.83	2.08	0.07	0.06	0.00	320.25	0.10	0.00	323.70
1.00			Model Default Tier	Off-Highway Tractors	0.09	1.51	0.72	0.03	0.03	0.00	227.62	0.07	0.00	230.08
1.00			Model Default Tier	Off-Highway Trucks	0.19	1.22	1.25	0.04	0.04	0.00	480.13	0.16	0.00	485.30
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Rollers	0.11	1.39	1.14	0.06	0.06	0.00	190.61	0.06	0.00	192.66
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Rubber Tired Loaders	0.76	4.49	6.98	0.23	0.21	0.02	1,816.54	0.59	0.02	1,836.15
	4		Model Default Tier	Scrapers	1.52	11.93	15.39	0.61	0.56	0.03	2,938.20	0.95	0.03	2,969.87
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.02	0.35	0.21	0.01	0.01	0.00	50.14	0.02	0.00	50.68
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.92	1.61	0.10	0.09	0.00	246.18	0.08	0.00	248.83
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.29	4.47	2.90	0.13	0.12	0.01	603.53	0.20	0.01	610.03
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.06	0.42	0.35	0.01	0.01	0.00	51.87	0.01	0.00	52.13

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation	pounds per day		5.23	43.42	50.16	2.01	1.87	0.11	10,162.47	2.97	0.09	10,263.66
	Grading/Excavation	tons per phase		0.05	0.43	0.50	0.02	0.02	0.00	101.62	0.03	0.00	102.64

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
1.00			Model Default Tier	Aerial Lifts	0.03	1.09	0.53	0.01	0.01	0.00	162.62	0.05	0.00	164.37
1.00	1		Model Default Tier	Air Compressors	0.24	2.41	1.63	0.08	0.08	0.00	375.26	0.02	0.00	376.63
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.03	0.15	0.18	0.01	0.01	0.00	25.26	0.00	0.00	25.39
1.00			Model Default Tier	Concrete/Industrial Saws	0.23	2.74	1.81	0.08	0.08	0.00	444.50	0.02	0.00	446.02
1.00			Model Default Tier	Cranes	0.08	0.44	0.88	0.04	0.03	0.00	139.70	0.05	0.00	141.21
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.11	1.08	0.70	0.03	0.03	0.00	166.13	0.01	0.00	166.74
1.00			Model Default Tier	Excavators	0.05	0.82	0.35	0.02	0.02	0.00	125.07	0.04	0.00	126.41
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Generator Sets	0.14	1.83	1.27	0.06	0.06	0.00	311.52	0.01	0.00	312.53
1.00	2		Model Default Tier	Graders	0.09	0.41	1.04	0.03	0.03	0.00	160.13	0.05	0.00	161.85
1.00			Model Default Tier	Off-Highway Tractors	0.09	1.51	0.72	0.03	0.03	0.00	227.62	0.07	0.00	230.08
1.00			Model Default Tier	Off-Highway Trucks	0.19	1.22	1.25	0.04	0.04	0.00	480.13	0.16	0.00	485.30
1.00			Model Default Tier	Other Construction Equipment	0.33	4.01	3.21	0.17	0.15	0.01	598.25	0.19	0.01	604.71
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.05	0.72	0.44	0.02	0.02	0.00	113.79	0.04	0.00	115.02
1.00			Model Default Tier	Paving Equipment	0.04	0.64	0.37	0.02	0.02	0.00	98.62	0.03	0.00	99.68
1.00	1		Model Default Tier	Plate Compactors	0.02	0.11	0.13	0.00	0.00	0.00	17.24	0.00	0.00	17.33
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.31	3.72	2.58	0.12	0.12	0.01	623.04	0.03	0.00	625.12
1.00			Model Default Tier	Rollers	0.04	0.46	0.38	0.02	0.02	0.00	63.54	0.02	0.00	64.22
1.00	1		Model Default Tier	Rough Terrain Forklifts	0.03	0.57	0.34	0.01	0.01	0.00	83.43	0.03	0.00	84.33
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	4		Model Default Tier	Scrapers	0.38	2.98	3.85	0.15	0.14	0.01	734.55	0.24	0.01	742.47
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.02	0.35	0.21	0.01	0.01	0.00	50.14	0.02	0.00	50.68
1.00			Model Default Tier	Surfacing Equipment	0.05	0.41	0.51	0.02	0.02	0.00	163.60	0.05	0.00	165.36
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.92	1.61	0.10	0.09	0.00	246.18	0.08	0.00	248.83
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.29	4.47	2.90	0.13	0.12	0.01	603.53	0.20	0.01	610.03
1.00			Model Default Tier	Trenchers	0.13	0.97	1.18	0.08	0.08	0.00	122.69	0.04	0.00	124.01
1.00			Model Default Tier	Welders	0.06	0.42	0.35	0.01	0.01	0.00	51.87	0.01	0.00	52.13

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	pounds per day		3.40	36.67	29.83	1.35	1.28	0.07	6,385.65	1.47	0.05	6,438.70
	Drainage/Utilities/Sub-Grade	tons per phase		0.07	0.73	0.60	0.03	0.03	0.00	127.71	0.03	0.00	128.77

Paving	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			Model Default Tier	Scrapers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Signal Boards		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>				0.13	1.22	1.14	0.05	0.05	0.00	237.29	0.06	0.00	239.44

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9	4.00	8
Concrete/Industrial Saws		81	6.00	8
Cranes		231	2.00	8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85	2.00	8
Excavators		158	2.00	8
Forklifts		89		8
Generator Sets		84	4.00	8
Graders		187	2.00	8
Off-Highway Tractors		124	4.00	8
Off-Highway Trucks		402	3.00	8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	2.00	8
Paving Equipment		132	2.00	8
Plate Compactors		8	4.00	8
Pressure Washers		13		8
Pumps		84		8
Rollers		80	2.00	8
Rough Terrain Forklifts		100	2.00	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367	4.00	8
Signal Boards		6		8
Skid Steer Loaders		65	2.00	8
Surfacing Equipment		263	2.00	8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78	3.00	8
Welders		46	2.00	8

END OF DATA ENTRY SHEET

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for ->	Stage 2: Widen Oak Street off-ramp and Prepare 6th Street Subphase			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Pounds)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**	**CO2 (lbs/day)**	**CH4 (lbs/day)**	**N2O (lbs/day)**	**CO2e (lbs/day)**
Grubbing/Land Clearing	5.50	50.61	51.95	7.13	2.13	5.00	2.95	1.91	1.04	0.14	13,386.88	3.10	0.43	13,593.40
Grading/Excavation	2.95	28.84	30.61	6.34	1.34	5.00	2.19	1.15	1.04	0.08	7,653.41	1.78	0.30	7,786.77
Drainage/Utilities/Sub-Grade	3.93	39.44	35.00	6.50	1.50	5.00	2.38	1.34	1.04	0.10	9,481.27	1.97	0.31	9,622.59
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	12.38	118.89	117.56	19.97	4.97	15.00	7.52	4.40	3.12	0.31	30,521.56	6.84	1.04	31,002.76
Total (tons/construction project)	0.53	5.08	4.96	0.81	0.21	0.60	0.31	0.19	0.12	0.01	1,296.48	0.29	0.04	1,316.53

Notes:

Project Start Year ->	2024
Project Length (months) ->	12
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	64	32	263	263	200	40
Grading/Excavation	64	64	180	180	800	40
Drainage/Utilities/Sub-Grade	64	64	180	180	560	40
Paving	0	0	0	0	400	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for ->	Stage 2: Widen Oak Street off-ramp and Prepare 6th Street Subphase			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**SOx (tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.28	2.53	2.60	0.36	0.11	0.25	0.15	0.10	0.05	0.01	669.34	0.15	0.02	616.59
Grading/Excavation	0.06	0.58	0.61	0.13	0.03	0.10	0.04	0.02	0.02	0.00	153.07	0.04	0.01	141.28
Drainage/Utilities/Sub-Grade	0.20	1.97	1.75	0.33	0.08	0.25	0.12	0.07	0.05	0.00	474.06	0.10	0.02	436.48
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.28	2.53	2.60	0.36	0.11	0.25	0.15	0.10	0.05	0.01	669.34	0.15	0.02	616.59
Total (tons/construction project)	0.53	5.08	4.96	0.81	0.21	0.60	0.31	0.19	0.12	0.01	1296.48	0.29	0.04	1,194.35

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Stage 2: Widen Oak Street off-ramp and Prepare 6th Street Subphase 2A	
Construction Start Year	2024	Enter a Year between 2014 and 2040 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway□ 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane□ 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	12.00	months
Working Days per Month	20.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.36	miles
Total Project Area	0.70	acres
Maximum Area Disturbed/Day	0.50	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		64.00
	Grading/Excavation	12.00		64.00
	Drainage/Utilities/Sub-Grade	12.00		64.00
	Paving	12.00		
Asphalt	Grubbing/Land Clearing	12.00	32.00	
	Grading/Excavation	12.00	64.00	
	Drainage/Utilities/Sub-Grade	12.00	64.00	
	Paving	12.00		

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer□
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	5.00	1.20	2/26/2024	1/1/2024
Grading/Excavation	2.00	4.80	7/15/2024	6/2/2024
Drainage/Utilities/Sub-Grade	5.00	4.20	9/9/2024	8/2/2024
Paving	0.00	1.80		1/2/2025
Totals (Months)	12		Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used.	

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	87.60	30.00	3	6	262.80
Miles/round trip: Grading/Excavation		30.00		6	180.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		6	180.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.03	0.11	0.05	0.02	1,688.24	0.00	0.27	1,767.36
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.02	0.24	1.78	0.06	0.03	0.01	981.20	0.00	0.15	1,027.18
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.09	0.00	0.00	0.00	49.06	0.00	0.01	51.36
Pounds per day - Grading/Excavation	0.01	0.16	1.26	0.04	0.02	0.01	672.06	0.00	0.11	703.55
Tons per const. Period - Grading/Excavation	0.00	0.00	0.03	0.00	0.00	0.00	13.44	0.00	0.00	14.07
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.16	1.26	0.04	0.02	0.01	669.95	0.00	0.11	701.34
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.06	0.00	0.00	0.00	33.50	0.00	0.01	35.07
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.02	0.18	0.01	0.00	0.00	96.00	0.00	0.02	100.50

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	87.60	30.00	3	3	262.80
Miles/round trip: Grading/Excavation		30.00		6	180.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		6	180.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.03	0.11	0.05	0.02	1,688.24	0.00	0.27	1,767.36
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.02	0.24	1.78	0.06	0.03	0.01	981.20	0.00	0.15	1,027.18
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.09	0.00	0.00	0.00	49.06	0.00	0.01	51.36
Pounds per day - Grading/Excavation	0.01	0.16	1.26	0.04	0.02	0.01	672.06	0.00	0.11	703.55
Tons per const. Period - Grading/Excavation	0.00	0.00	0.03	0.00	0.00	0.00	13.44	0.00	0.00	14.07
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.16	1.26	0.04	0.02	0.01	669.95	0.00	0.11	701.34
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.06	0.00	0.00	0.00	33.50	0.00	0.01	35.07
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.02	0.18	0.01	0.00	0.00	96.00	0.00	0.02	100.50

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values		
Miles/ one-way trip		20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		5	10	200.00
No. of employees: Grading/Excavation		20	40	800.00
No. of employees: Drainage/Utilities/Sub-Grade		14	28	560.00
No. of employees: Paving		10	20	400.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Grading/Excavation (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.82	0.06	0.05	0.02	0.00	303.91	0.00	0.01	305.71
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Grading/Excavation (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Draining/Utilities/Sub-Grade (grams/trip)	0.97	2.63	0.26	0.00	0.00	0.00	65.41	0.06	0.03	75.88
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.03	0.43	0.03	0.02	0.01	0.00	136.69	0.00	0.00	137.73
Tons per const. Period - Grubbing/Land Clearing	0.00	0.02	0.00	0.00	0.00	0.00	6.83	0.00	0.00	6.89
Pounds per day - Grading/Excavation	0.11	1.71	0.14	0.08	0.03	0.01	546.75	0.01	0.01	550.93
Tons per const. Period - Grading/Excavation	0.00	0.03	0.00	0.00	0.00	0.00	10.93	0.00	0.00	11.02
Pounds per day - Drainage/Utilities/Sub-Grade	0.08	1.18	0.09	0.06	0.02	0.00	379.24	0.01	0.01	382.11
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.06	0.00	0.00	0.00	0.00	18.96	0.00	0.00	19.11
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.01	0.11	0.01	0.01	0.00	0.00	36.73	0.00	0.00	37.01

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.03	0.11	0.05	0.02	1,688.24	0.00	0.27	1,767.36
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.32	0.01	0.00	0.00	149.35	0.00	0.02	156.34
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.02	0.00	0.00	0.00	7.47	0.00	0.00	7.82
Pounds per day - Grading/Excavation	0.00	0.04	0.32	0.01	0.00	0.00	149.35	0.00	0.02	156.34
Tons per const. Period - Grading/Excavation	0.00	0.00	0.01	0.00	0.00	0.00	2.99	0.00	0.00	3.13
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.32	0.01	0.00	0.00	148.88	0.00	0.02	155.85
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.02	0.00	0.00	0.00	7.44	0.00	0.00	7.79
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.04	0.00	0.00	0.00	17.90	0.00	0.00	18.74

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.50	5.00	0.25	1.04	0.05
Fugitive Dust - Grading/Excavation		0.50	5.00	0.10	1.04	0.02
Fugitive Dust - Drainage/Utilities/Subgrade		0.50	5.00	0.25	1.04	0.05

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
1.00			Model Default Tier	Aerial Lifts	0.03	0.87	0.42	0.01	0.01	0.00	130.10	0.04	0.00	131.50
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.05	0.25	0.29	0.01	0.01	0.00	40.41	0.00	0.00	40.62
1.00			Model Default Tier	Concrete/Industrial Saws	0.25	2.92	1.93	0.09	0.09	0.01	474.13	0.02	0.00	475.76
1.00			Model Default Tier	Cranes	0.27	1.42	2.80	0.12	0.11	0.00	447.05	0.14	0.00	451.87
	1		Model Default Tier	Crawler Tractors	0.42	2.20	4.75	0.18	0.17	0.01	758.65	0.25	0.01	766.83
1.00			Model Default Tier	Crushing/Proc. Equipment	0.34	3.46	2.23	0.10	0.10	0.01	531.62	0.03	0.00	533.56
1.00	2		Model Default Tier	Excavators	0.18	3.27	1.40	0.07	0.06	0.01	500.27	0.16	0.00	505.66
1.00			Model Default Tier	Forklifts	0.02	0.23	0.18	0.01	0.01	0.00	29.61	0.01	0.00	29.93
1.00			Model Default Tier	Generator Sets	0.23	2.93	2.04	0.09	0.09	0.01	498.43	0.02	0.00	500.05
1.00			Model Default Tier	Graders	0.35	1.66	4.16	0.13	0.12	0.01	640.51	0.21	0.01	647.41
1.00			Model Default Tier	Off-Highway Tractors	0.18	3.01	1.44	0.07	0.06	0.00	455.25	0.15	0.00	460.16
2.00			Model Default Tier	Off-Highway Trucks	0.99	6.50	6.66	0.24	0.22	0.03	2,560.70	0.83	0.02	2,588.27
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.18	2.89	1.74	0.08	0.07	0.00	455.16	0.15	0.00	460.07
1.00			Model Default Tier	Paving Equipment	0.16	2.57	1.50	0.07	0.07	0.00	394.47	0.13	0.00	398.72
1.00			Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rollers	0.15	1.85	1.52	0.08	0.07	0.00	254.15	0.08	0.00	256.88
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Scrapers	0.76	5.97	7.70	0.30	0.28	0.02	1,469.10	0.48	0.01	1,484.93
4.00	1		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.06	1.38	0.83	0.03	0.02	0.00	200.57	0.06	0.00	202.73
1.00			Model Default Tier	Surfacing Equipment	0.19	1.62	2.06	0.08	0.07	0.01	654.38	0.21	0.01	661.45
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.92	1.61	0.10	0.09	0.00	246.18	0.08	0.00	248.83
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.19	1.33	1.10	0.04	0.04	0.00	165.98	0.02	0.00	166.82

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	5.44	49.67	48.04	1.97	1.84	0.12	11,138.44	3.09	0.10	11,244.95
Grubbing/Land Clearing	tons per phase	0.27	2.48	2.40	0.10	0.09	0.01	556.92	0.15	0.00	562.25

Grading/Excavation	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	0		Model Default Tier	Cranes	0.27	1.42	2.80	0.12	0.11	0.00	447.05	0.14	0.00	451.87
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3		Model Default Tier	Excavators	0.18	3.27	1.40	0.07	0.06	0.01	500.27	0.16	0.00	505.66
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Graders	0.35	1.66	4.16	0.13	0.12	0.01	640.51	0.21	0.01	647.41
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Other Construction Equipment	0.07	0.80	0.64	0.03	0.03	0.00	119.65	0.04	0.00	120.94
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.18	2.89	1.74	0.08	0.07	0.00	455.16	0.15	0.00	460.07
1.00			Model Default Tier	Paving Equipment	0.16	2.57	1.50	0.07	0.07	0.00	394.47	0.13	0.00	398.72
1.00			Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Rollers	0.15	1.85	1.52	0.08	0.07	0.00	254.15	0.08	0.00	256.88
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Scrapers	0.76	5.97	7.70	0.30	0.28	0.02	1,469.10	0.48	0.01	1,484.93
4.00	1		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.06	1.38	0.83	0.03	0.02	0.00	200.57	0.06	0.00	202.73
1.00			Model Default Tier	Surfacing Equipment	0.19	1.62	2.06	0.08	0.07	0.01	654.38	0.21	0.01	661.45
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.92	1.61	0.10	0.09	0.00	246.18	0.08	0.00	248.83
0.00	4		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase	Units	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grading/Excavation	pounds per day	2.81	26.77	27.64	1.16	1.07	0.06	5,613.20	1.76	0.05	5,672.40
Grading/Excavation	tons per phase	0.06	0.54	0.55	0.02	0.02	0.00	112.26	0.04	0.00	113.45

Drainage/Utilities/Subgrade

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
1.00			Model Default Tier	Aerial Lifts	0.03	0.87	0.42	0.01	0.01	0.00	130.10	0.04	0.00	131.50
0.00	1		Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.05	0.25	0.29	0.01	0.01	0.00	40.41	0.00	0.00	40.62
1.00			Model Default Tier	Concrete/Industrial Saws	0.25	2.92	1.90	0.08	0.08	0.01	474.13	0.02	0.00	475.75
2.00			Model Default Tier	Cranes	0.52	2.82	5.47	0.23	0.21	0.01	894.10	0.29	0.01	903.74
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.34	3.46	2.20	0.10	0.10	0.01	531.62	0.03	0.00	533.56
2.00			Model Default Tier	Excavators	0.35	6.53	2.71	0.13	0.12	0.01	1,000.57	0.32	0.01	1,011.36
1.00			Model Default Tier	Forklifts	0.02	0.23	0.17	0.01	0.01	0.00	29.61	0.01	0.00	29.93
1.00	1		Model Default Tier	Generator Sets	0.22	2.93	2.00	0.09	0.09	0.01	498.43	0.02	0.00	500.04
0.00	1		Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Tractors	0.17	3.02	1.40	0.07	0.06	0.00	455.30	0.15	0.00	460.21
1.00			Model Default Tier	Off-Highway Trucks	0.49	3.23	3.21	0.12	0.11	0.01	1,280.18	0.41	0.01	1,293.96
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Scrapers	0.74	5.82	7.36	0.29	0.27	0.02	1,468.85	0.47	0.01	1,484.69
4.00	1		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.06	1.38	0.82	0.03	0.02	0.00	200.54	0.06	0.00	202.71
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.91	1.57	0.09	0.09	0.00	246.18	0.08	0.00	248.83
0.00	3		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.19	1.33	1.10	0.04	0.04	0.00	165.98	0.02	0.00	166.81

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase	Units	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	3.82	37.90	32.07	1.35	1.27	0.08	7,613.26	1.96	0.07	7,681.94
Drainage/Utilities/Sub-Grade	tons per phase	0.19	1.90	1.60	0.07	0.06	0.00	380.66	0.10	0.00	384.10

Paving

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			Model Default Tier	Scrapers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Signal Boards		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Tractors/Loaders/Backhoes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles		Equipment Tier		Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving			pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving			tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>						0.52	4.91	4.56	0.19	0.18	0.01	1,049.85	0.29	0.01	1,059.79

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63	6.40	8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9	6.40	8
Concrete/Industrial Saws		81	6.40	8
Cranes		231	6.40	8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85	6.40	8
Excavators		158		8
Forklifts		89	1.60	8
Generator Sets		84	6.40	8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172	1.60	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46	6.40	8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for ->	Stage 2: Remove Broadway off-ramp structure and approach Subphas			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Pounds)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**	**CO2 (lbs/day)**	**CH4 (lbs/day)**	**N2O (lbs/day)**	**CO2e (lbs/day)**
Grubbing/Land Clearing	6.15	65.04	46.80	11.94	1.94	10.00	3.87	1.79	2.08	0.16	15,217.75	4.05	0.21	15,381.02
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	6.15	65.04	46.80	11.94	1.94	10.00	3.87	1.79	2.08	0.16	15,217.75	4.05	0.21	15,381.02
Total (tons/construction project)	0.18	1.95	1.40	0.36	0.06	0.30	0.12	0.05	0.06	0.00	456.53	0.12	0.01	461.43

Notes:

Project Start Year ->	2024
Project Length (months) ->	3
Total Project Area (acres) ->	3
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	32	0	90	0	280	40
Grading/Excavation	0	0	0	0	1,160	40
Drainage/Utilities/Sub-Grade	0	0	0	0	760	40
Paving	0	0	0	0	360	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for ->	Stage 2: Remove Broadway off-ramp structure and approach Subphas			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**SOx (tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.18	1.95	1.40	0.36	0.06	0.30	0.12	0.05	0.06	0.00	456.53	0.12	0.01	418.61
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.18	1.95	1.40	0.36	0.06	0.30	0.12	0.05	0.06	0.00	456.53	0.12	0.01	418.61
Total (tons/construction project)	0.18	1.95	1.40	0.36	0.06	0.30	0.12	0.05	0.06	0.00	456.53	0.12	0.01	418.61

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Stage 2: Remove Broadway off-ramp structure and approach Subphase 2B	
Construction Start Year	2024	Enter a Year between 2014 and 2040 (inclusive)
Project Type	3	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway□ 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane□ 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	3.00	months
Working Days per Month	20.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.70	miles
Total Project Area	2.60	acres
Maximum Area Disturbed/Day	1.00	acre
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		32.00
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		
	Paving	12.00		
Asphalt	Grubbing/Land Clearing	12.00		
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		
	Paving	12.00		

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer□
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	3.00	0.30	9/9/2024	1/1/2024
Grading/Excavation	0.00	1.20	7/1/2026	4/2/2024
Drainage/Utilities/Sub-Grade	0.00	1.05	8/1/2026	4/2/2024
Paving	0.00	0.45	9/1/2026	4/2/2024
Totals (Months)	3			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		3	90.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.08	0.63	0.02	0.01	0.00	336.03	0.00	0.05	351.78
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.02	0.00	0.00	0.00	10.08	0.00	0.00	10.55
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.02	0.00	0.00	0.00	10.08	0.00	0.00	10.55

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values		
Miles/ one-way trip		20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		7	14	280.00
No. of employees: Grading/Excavation		29	58	1,160.00
No. of employees: Drainage/Utilities/Sub-Grade		19	38	760.00
No. of employees: Paving		9	18	360.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.04	0.60	0.05	0.03	0.01	0.00	191.36	0.00	0.00	192.82
Tons per const. Period - Grubbing/Land Clearing	0.00	0.02	0.00	0.00	0.00	0.00	5.74	0.00	0.00	5.78
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.02	0.00	0.00	0.00	0.00	5.74	0.00	0.00	5.78

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.32	0.01	0.00	0.00	149.35	0.00	0.02	156.34
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	4.48	0.00	0.00	4.69
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	4.48	0.00	0.00	4.69

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		1.00	10.00	0.30	2.08	0.06
Fugitive Dust - Grading/Excavation		0.00	0.00	0.00	0.00	0.00
Fugitive Dust - Drainage/Utilities/Subgrade		0.00	0.00	0.00	0.00	0.00

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Air Compressors	0.24	2.41	1.63	0.08	0.08	0.00	375.26	0.02	0.00	376.63
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Concrete/Industrial Saws	0.31	3.65	2.41	0.11	0.11	0.01	592.67	0.03	0.00	594.70
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.43	4.32	2.79	0.13	0.13	0.01	664.53	0.04	0.00	666.96
5.00	2		Model Default Tier	Excavators	0.90	16.33	7.01	0.35	0.32	0.03	2,501.33	0.81	0.02	2,528.30
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Generator Sets	0.29	3.66	2.54	0.11	0.11	0.01	623.04	0.03	0.00	625.06
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Tractors	0.18	3.01	1.44	0.07	0.06	0.00	455.25	0.15	0.00	460.16
6.00			Model Default Tier	Off-Highway Trucks	2.98	19.50	19.97	0.72	0.66	0.08	7,682.11	2.48	0.07	7,764.81
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	2		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
6.00			Model Default Tier	Skid Steer Loaders	0.37	8.31	4.96	0.16	0.15	0.01	1,203.40	0.39	0.01	1,216.37
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Sweepers/Scrubbers	0.17	1.92	1.61	0.10	0.09	0.00	246.18	0.08	0.00	248.83
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	6.10	64.32	45.80	1.88	1.77	0.15	14,541.02	4.04	0.13	14,680.07
Grubbing/Land Clearing	tons per phase	0.18	1.93	1.37	0.06	0.05	0.00	436.23	0.12	0.00	440.40

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	4		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	4		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Drainage/Utilities/Subgrade

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	4		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Paving	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>		0.18	1.93	1.37	0.06	0.05	0.00	436.23	0.12	0.00	440.40

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Stage 2: Construct 6th Street Subphase 2C Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	2.86	29.45	25.11	11.11	1.11	10.00	3.09	1.01	2.08	0.07	6,368.71	1.44	0.13	6,443.27
Grading/Excavation	3.08	31.52	26.10	11.20	1.20	10.00	3.16	1.08	2.08	0.07	6,809.23	1.57	0.09	6,875.15
Drainage/Utilities/Sub-Grade	3.43	38.33	35.49	11.51	1.51	10.00	3.35	1.27	2.08	0.11	10,905.16	1.67	0.65	11,139.92
Paving	3.84	41.78	32.74	1.47	1.47	0.00	1.36	1.36	0.00	0.08	7,985.27	1.81	0.10	8,058.90
Maximum (pounds/day)	13.21	141.08	119.44	35.29	5.29	30.00	10.96	4.72	6.24	0.33	32,068.37	6.50	0.96	32,517.24
Total (tons/construction project)	0.42	4.42	3.72	1.16	0.16	1.00	0.36	0.15	0.21	0.01	975.97	0.21	0.03	988.66

Notes:

Project Start Year ->	2024
Project Length (months) ->	13
Total Project Area (acres) ->	4
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	32	0	90	0	280	40
Grading/Excavation	0	0	0	0	880	40
Drainage/Utilities/Sub-Grade	0	384	0	960	600	40
Paving	0	0	0	0	480	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Stage 2: Construct 6th Street Subphase 2C Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.17	1.77	1.51	0.67	0.07	0.60	0.19	0.06	0.12	0.00	382.12	0.09	0.01	350.72
Grading/Excavation	0.06	0.63	0.52	0.22	0.02	0.20	0.06	0.02	0.04	0.00	136.18	0.03	0.00	124.74
Drainage/Utilities/Sub-Grade	0.07	0.77	0.71	0.23	0.03	0.20	0.07	0.03	0.04	0.00	218.10	0.03	0.01	202.12
Paving	0.12	1.25	0.98	0.04	0.04	0.00	0.04	0.04	0.00	0.00	239.56	0.05	0.00	219.33
Maximum (tons/phase)	0.17	1.77	1.51	0.67	0.07	0.60	0.19	0.06	0.12	0.00	382.12	0.09	0.01	350.72
Total (tons/construction project)	0.42	4.42	3.72	1.16	0.16	1.00	0.36	0.15	0.21	0.01	975.97	0.21	0.03	896.91

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Stage 2: Construct 6th Street Subphase 2C	
Construction Start Year	2024	Enter a Year between 2014 and 2040 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway□ 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane□ 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	13.00	months
Working Days per Month	20.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.60	miles
Total Project Area	3.50	acres
Maximum Area Disturbed/Day	1.00	acre
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		32.00
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		
	Paving	12.00		
Asphalt	Grubbing/Land Clearing	12.00		
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00	384.00	
	Paving	12.00		

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer□
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	6.00	1.30	12/2/2024	1/1/2024
Grading/Excavation	2.00	5.20	1/27/2025	7/2/2024
Drainage/Utilities/Sub-Grade	2.00	4.55	3/24/2025	9/1/2024
Paving	3.00	1.95	5/19/2025	11/1/2024
Totals (Months)	13			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		3	90.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,676.17	0.00	0.26	1,754.72
Grading/Excavation (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Paving (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.08	0.64	0.02	0.01	0.00	332.58	0.00	0.05	348.16
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.04	0.00	0.00	0.00	19.95	0.00	0.00	20.89
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.04	0.00	0.00	0.00	19.95	0.00	0.00	20.89

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		32	960.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,676.17	0.00	0.26	1,754.72
Grading/Excavation (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Paving (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.06	0.87	6.80	0.24	0.10	0.03	3,540.56	0.00	0.56	3,706.48
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.02	0.14	0.00	0.00	0.00	70.81	0.00	0.01	74.13
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.02	0.14	0.00	0.00	0.00	70.81	0.00	0.01	74.13

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values		
Miles/ one-way trip		20		
One-way trips/day		2	Calculated Daily Trips	Calculated Daily VMT
No. of employees: Grubbing/Land Clearing		7	14	280.00
No. of employees: Grading/Excavation		22	44	880.00
No. of employees: Drainage/Utilities/Sub-Grade		15	30	600.00
No. of employees: Paving		12	24	480.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.01	0.79	0.06	0.05	0.02	0.00	297.56	0.00	0.01	299.27
Grading/Excavation (grams/mile)	0.01	0.78	0.06	0.05	0.02	0.00	295.84	0.00	0.01	297.52
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.78	0.06	0.05	0.02	0.00	295.84	0.00	0.01	297.52
Paving (grams/mile)	0.01	0.78	0.06	0.05	0.02	0.00	295.84	0.00	0.01	297.52
Grubbing/Land Clearing (grams/trip)	0.93	2.58	0.25	0.00	0.00	0.00	64.09	0.06	0.03	74.22
Grading/Excavation (grams/trip)	0.93	2.56	0.25	0.00	0.00	0.00	63.73	0.06	0.03	73.77
Draining/Utilities/Sub-Grade (grams/trip)	0.93	2.56	0.25	0.00	0.00	0.00	63.73	0.06	0.03	73.77
Paving (grams/trip)	0.93	2.56	0.25	0.00	0.00	0.00	63.73	0.06	0.03	73.77

Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.04	0.56	0.04	0.03	0.01	0.00	185.66	0.00	0.00	187.03
Tons per const. Period - Grubbing/Land Clearing	0.00	0.03	0.00	0.00	0.00	0.00	11.14	0.00	0.00	11.22
Pounds per day - Grading/Excavation	0.11	1.75	0.13	0.09	0.04	0.01	580.13	0.01	0.01	584.37
Tons per const. Period - Grading/Excavation	0.00	0.04	0.00	0.00	0.00	0.00	11.60	0.00	0.00	11.69
Pounds per day - Drainage/Utilities/Sub-Grade	0.08	1.20	0.09	0.06	0.03	0.00	395.54	0.01	0.01	398.43
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.02	0.00	0.00	0.00	0.00	7.91	0.00	0.00	7.97
Pounds per day - Paving	0.06	0.96	0.07	0.05	0.02	0.00	316.43	0.01	0.01	318.75
Tons per const. Period - Paving	0.00	0.03	0.00	0.00	0.00	0.00	9.49	0.00	0.00	9.56
Total tons per construction project	0.01	0.12	0.01	0.01	0.00	0.00	40.15	0.00	0.00	40.44

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,676.17	0.00	0.26	1,754.72
Grading/Excavation (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Paving (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.32	0.01	0.00	0.00	147.81	0.00	0.02	154.74
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.02	0.00	0.00	0.00	8.87	0.00	0.00	9.28
Pounds per day - Grading/Excavation	0.00	0.04	0.32	0.01	0.00	0.00	147.52	0.00	0.02	154.44
Tons per const. Period - Grading/Excavation	0.00	0.00	0.01	0.00	0.00	0.00	2.95	0.00	0.00	3.09
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.32	0.01	0.00	0.00	147.52	0.00	0.02	154.44
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	2.95	0.00	0.00	3.09
Pounds per day - Paving	0.00	0.04	0.32	0.01	0.00	0.00	147.52	0.00	0.02	154.44
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	4.43	0.00	0.00	4.63
Total tons per construction project	0.00	0.00	0.04	0.00	0.00	0.00	19.20	0.00	0.00	20.09

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		1.00	10.00	0.60	2.08	0.12
Fugitive Dust - Grading/Excavation		1.00	10.00	0.20	2.08	0.04
Fugitive Dust - Drainage/Utilities/Subgrade		1.00	10.00	0.20	2.08	0.04

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.05	0.25	0.30	0.01	0.01	0.00	41.68	0.00	0.00	41.89
1.00			Model Default Tier	Concrete/Industrial Saws	0.15	1.82	1.15	0.05	0.05	0.00	296.33	0.01	0.00	297.33
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.20	2.16	1.33	0.06	0.06	0.00	332.27	0.02	0.00	333.47
1.00	2		Model Default Tier	Excavators	0.08	1.63	0.63	0.03	0.03	0.00	250.16	0.08	0.00	252.86
1.00			Model Default Tier	Forklifts	0.04	0.57	0.41	0.02	0.02	0.00	74.02	0.02	0.00	74.81
1.00			Model Default Tier	Generator Sets	0.27	3.66	2.42	0.10	0.10	0.01	623.04	0.02	0.00	625.02
1.00			Model Default Tier	Graders	0.16	0.80	1.78	0.06	0.05	0.00	320.14	0.10	0.00	323.59
1.00			Model Default Tier	Off-Highway Tractors	0.08	1.51	0.66	0.03	0.03	0.00	227.71	0.07	0.00	230.16
1.00			Model Default Tier	Off-Highway Trucks	0.24	1.60	1.47	0.05	0.05	0.01	639.89	0.21	0.01	646.78
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.09	1.45	0.80	0.04	0.03	0.00	227.51	0.07	0.00	229.96
1.00			Model Default Tier	Paving Equipment	0.07	1.28	0.65	0.03	0.03	0.00	197.17	0.06	0.00	199.30
1.00			Model Default Tier	Plate Compactors	0.02	0.11	0.13	0.00	0.00	0.00	17.24	0.00	0.00	17.33
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rollers	0.11	1.52	1.20	0.06	0.06	0.00	209.61	0.07	0.00	211.87
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Scrapers	0.57	4.52	5.43	0.21	0.20	0.01	1,211.35	0.39	0.01	1,224.40
4.00	2		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.40	0.01	0.01	0.00	100.24	0.03	0.00	101.33
1.00			Model Default Tier	Surfacing Equipment	0.09	0.81	0.94	0.04	0.03	0.00	327.21	0.11	0.00	330.74
1.00			Model Default Tier	Sweepers/Scrubbers	0.16	1.90	1.49	0.09	0.08	0.00	246.18	0.08	0.00	248.83
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Trenchers	0.16	1.29	1.49	0.10	0.09	0.00	163.66	0.05	0.00	165.42
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	2.81	28.77	24.11	1.05	0.99	0.06	5,702.65	1.44	0.05	5,753.34
Grubbing/Land Clearing	tons per phase	0.17	1.73	1.45	0.06	0.06	0.00	342.16	0.09	0.00	345.20

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.05	0.25	0.30	0.01	0.01	0.00	41.68	0.00	0.00	41.89
1.00			Model Default Tier	Concrete/Industrial Saws	0.15	1.82	1.13	0.05	0.05	0.00	296.33	0.01	0.00	297.32
	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.19	1.05	1.98	0.08	0.07	0.00	379.13	0.12	0.00	383.22
1.00			Model Default Tier	Crushing/Proc. Equipment	0.20	2.16	1.31	0.06	0.06	0.00	332.27	0.02	0.00	333.46
1.00	3		Model Default Tier	Excavators	0.08	1.63	0.61	0.03	0.03	0.00	250.17	0.08	0.00	252.87
1.00			Model Default Tier	Forklifts	0.04	0.57	0.41	0.02	0.02	0.00	74.02	0.02	0.00	74.81
1.00			Model Default Tier	Generator Sets	0.27	3.66	2.40	0.10	0.10	0.01	623.04	0.02	0.00	625.01
1.00	2		Model Default Tier	Graders	0.16	0.80	1.73	0.06	0.05	0.00	320.12	0.10	0.00	323.57
1.00			Model Default Tier	Off-Highway Tractors	0.08	1.51	0.65	0.03	0.03	0.00	227.72	0.07	0.00	230.18
1.00			Model Default Tier	Off-Highway Trucks	0.24	1.59	1.43	0.05	0.05	0.01	639.84	0.21	0.01	646.73
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.09	1.45	0.79	0.04	0.03	0.00	227.50	0.07	0.00	229.95
1.00			Model Default Tier	Paving Equipment	0.07	1.27	0.63	0.03	0.03	0.00	197.16	0.06	0.00	199.29
1.00			Model Default Tier	Plate Compactors	0.02	0.11	0.13	0.00	0.00	0.00	17.24	0.00	0.00	17.33
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Rollers	0.11	1.52	1.19	0.06	0.06	0.00	209.60	0.07	0.00	211.86
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Scrapers	0.55	4.44	5.26	0.21	0.19	0.01	1,211.22	0.39	0.01	1,224.28
4.00	2		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.40	0.01	0.01	0.00	100.24	0.03	0.00	101.32
1.00			Model Default Tier	Surfacing Equipment	0.09	0.81	0.92	0.04	0.03	0.00	327.21	0.11	0.00	330.74
1.00			Model Default Tier	Sweepers/Scrubbers	0.16	1.90	1.46	0.08	0.08	0.00	246.18	0.08	0.00	248.83
0.00	4		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Trenchers	0.16	1.28	1.47	0.10	0.09	0.00	163.67	0.05	0.00	165.43
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles		Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation		pounds per day	2.97	29.73	25.64	1.10	1.03	0.06	6,081.58	1.56	0.05	6,136.34
	Grading/Excavation		tons per phase	0.06	0.59	0.51	0.02	0.02	0.00	121.63	0.03	0.00	122.73

Drainage/Utilities/Subgrade

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.11	1.21	0.76	0.03	0.03	0.00	187.63	0.01	0.00	188.31
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.05	0.25	0.30	0.01	0.01	0.00	41.68	0.00	0.00	41.89
1.00			Model Default Tier	Concrete/Industrial Saws	0.15	1.82	1.13	0.05	0.05	0.00	296.33	0.01	0.00	297.32
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.20	2.16	1.31	0.06	0.06	0.00	332.27	0.02	0.00	333.46
1.00			Model Default Tier	Excavators	0.08	1.63	0.61	0.03	0.03	0.00	250.17	0.08	0.00	252.87
1.00			Model Default Tier	Forklifts	0.04	0.57	0.41	0.02	0.02	0.00	74.02	0.02	0.00	74.81
1.00	1		Model Default Tier	Generator Sets	0.27	3.66	2.40	0.10	0.10	0.01	623.04	0.02	0.00	625.01
1.00	1		Model Default Tier	Graders	0.16	0.80	1.73	0.06	0.05	0.00	320.12	0.10	0.00	323.57
1.00			Model Default Tier	Off-Highway Tractors	0.08	1.51	0.65	0.03	0.03	0.00	227.72	0.07	0.00	230.18
1.00			Model Default Tier	Off-Highway Trucks	0.24	1.59	1.43	0.05	0.05	0.01	639.84	0.21	0.01	646.73
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.09	1.45	0.79	0.04	0.03	0.00	227.50	0.07	0.00	229.95
1.00			Model Default Tier	Paving Equipment	0.07	1.27	0.63	0.03	0.03	0.00	197.16	0.06	0.00	199.29
1.00	1		Model Default Tier	Plate Compactors	0.02	0.11	0.13	0.00	0.00	0.00	17.24	0.00	0.00	17.33
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.14	1.86	1.21	0.05	0.05	0.00	311.52	0.01	0.00	312.53
1.00			Model Default Tier	Rollers	0.11	1.52	1.19	0.06	0.06	0.00	209.60	0.07	0.00	211.86
	1		Model Default Tier	Rough Terrain Forklifts	0.05	1.14	0.64	0.02	0.02	0.00	166.86	0.05	0.00	168.66
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Scrapers	0.55	4.44	5.26	0.21	0.19	0.01	1,211.22	0.39	0.01	1,224.28
4.00	2		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.40	0.01	0.01	0.00	100.24	0.03	0.00	101.32
1.00			Model Default Tier	Surfacing Equipment	0.09	0.81	0.92	0.04	0.03	0.00	327.21	0.11	0.00	330.74
1.00			Model Default Tier	Sweepers/Scrubbers	0.16	1.90	1.46	0.08	0.08	0.00	246.18	0.08	0.00	248.83
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.20	3.34	2.00	0.08	0.07	0.00	453.08	0.15	0.00	457.96
1.00			Model Default Tier	Trenchers	0.16	1.28	1.47	0.10	0.09	0.00	163.67	0.05	0.00	165.43
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles		Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade		pounds per day	3.28	36.23	28.29	1.21	1.14	0.07	6,821.54	1.66	0.06	6,880.57
	Drainage/Utilities/Sub-Grade		tons per phase	0.07	0.72	0.57	0.02	0.02	0.00	136.43	0.03	0.00	137.61

Paving

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.05	0.25	0.30	0.01	0.01	0.00	41.68	0.00	0.00	41.89
1.00			Model Default Tier	Concrete/Industrial Saws	0.15	1.82	1.13	0.05	0.05	0.00	296.33	0.01	0.00	297.32
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.20	2.16	1.31	0.06	0.06	0.00	332.27	0.02	0.00	333.46
1.00			Model Default Tier	Excavators	0.08	1.63	0.61	0.03	0.03	0.00	250.17	0.08	0.00	252.87
1.00			Model Default Tier	Forklifts	0.04	0.57	0.41	0.02	0.02	0.00	74.02	0.02	0.00	74.81
2.00			Model Default Tier	Generator Sets	0.53	7.32	4.79	0.19	0.19	0.01	1,246.07	0.05	0.01	1,250.01
1.00			Model Default Tier	Graders	0.16	0.80	1.73	0.06	0.05	0.00	320.12	0.10	0.00	323.57
1.00			Model Default Tier	Off-Highway Tractors	0.08	1.51	0.65	0.03	0.03	0.00	227.72	0.07	0.00	230.18
1.00			Model Default Tier	Off-Highway Trucks	0.24	1.59	1.43	0.05	0.05	0.01	639.84	0.21	0.01	646.73
1.00			Model Default Tier	Other Construction Equipment	0.15	2.00	1.38	0.07	0.07	0.00	299.31	0.10	0.00	302.54
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Pavers	0.09	1.45	0.79	0.04	0.03	0.00	227.50	0.07	0.00	229.95
1.00	1		Model Default Tier	Paving Equipment	0.07	1.27	0.63	0.03	0.03	0.00	197.16	0.06	0.00	199.29
1.00			Model Default Tier	Plate Compactors	0.02	0.11	0.13	0.00	0.00	0.00	17.24	0.00	0.00	17.33
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Rollers	0.11	1.52	1.19	0.06	0.06	0.00	209.60	0.07	0.00	211.86
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1.00			Model Default Tier	Scrapers		0.55	4.44	5.26	0.21	0.19	0.01	1,211.22	0.39	0.01	1,224.28
8.00	2		Model Default Tier	Signal Boards		0.46	2.41	2.88	0.11	0.11	0.01	394.51	0.04	0.00	396.52
1.00			Model Default Tier	Skid Steer Loaders		0.03	0.69	0.40	0.01	0.01	0.00	100.24	0.03	0.00	101.32
1.00			Model Default Tier	Surfacing Equipment		0.09	0.81	0.92	0.04	0.03	0.00	327.21	0.11	0.00	330.74
2.00			Model Default Tier	Sweepers/Scrubbers		0.31	3.80	2.93	0.17	0.15	0.01	492.35	0.16	0.00	497.66
	3		Model Default Tier	Tractors/Loaders/Backhoes		0.20	3.34	2.00	0.08	0.07	0.00	453.08	0.15	0.00	457.96
1.00			Model Default Tier	Trenchers		0.16	1.28	1.47	0.10	0.09	0.00	163.67	0.05	0.00	165.43
			Model Default Tier	Welders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles		Equipment Tier		Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving			pounds per day		3.78	40.79	32.35	1.41	1.33	0.08	7,521.31	1.80	0.06	7,585.71
	Paving			tons per phase		0.11	1.22	0.97	0.04	0.04	0.00	225.64	0.05	0.00	227.57
Total Emissions all Phases (tons per construction period) =>						0.41	4.27	3.50	0.15	0.14	0.01	825.86	0.20	0.01	833.11

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63	4.00	8
Air Compressors		78	4.00	8
Bore/Drill Rigs		221	4.00	8
Cement and Mortar Mixers		9	6.60	8
Concrete/Industrial Saws		81	4.00	8
Cranes		231	4.00	8
Crawler Tractors		212	4.00	8
Crushing/Proc. Equipment		85	4.00	8
Excavators		158	4.00	8
Forklifts		89	4.00	8
Generator Sets		84		8
Graders		187	4.00	8
Off-Highway Tractors		124	4.00	8
Off-Highway Trucks		402	4.00	8
Other Construction Equipment		172	4.00	8
Other General Industrial Equipment		88	4.00	8
Other Material Handling Equipment		168	4.00	8
Pavers		130	4.00	8
Paving Equipment		132	4.00	8
Plate Compactors		8	4.00	8
Pressure Washers		13	4.00	8
Pumps		84	4.00	8
Rollers		80	6.60	8
Rough Terrain Forklifts		100	4.00	8
Rubber Tired Dozers		247	4.00	8
Rubber Tired Loaders		203	4.00	8
Scrapers		367	6.60	8
Signal Boards		6		8
Skid Steer Loaders		65	4.00	8
Surfacing Equipment		263	4.00	8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	4.00	8
Trenchers		78	4.00	8
Welders		46	4.00	8

END OF DATA ENTRY SHEET

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for ->	Stage 2: Construct Bike Paths and Cycle Tracks on Local Streets Sut			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Pounds)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**	**CO2 (lbs/day)**	**CH4 (lbs/day)**	**N2O (lbs/day)**	**CO2e (lbs/day)**
Grubbing/Land Clearing	2.64	26.72	26.83	6.15	1.15	5.00	2.01	0.97	1.04	0.08	7,986.54	1.37	0.46	8,156.72
Grading/Excavation	2.03	20.49	17.32	5.79	0.79	5.00	1.71	0.67	1.04	0.05	5,315.58	1.05	0.18	5,394.19
Drainage/Utilities/Sub-Grade	2.47	25.95	21.50	5.99	0.99	5.00	1.91	0.87	1.04	0.06	6,074.45	1.25	0.18	6,159.32
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	7.13	73.17	65.65	17.93	2.93	15.00	5.63	2.51	3.12	0.20	19,376.57	3.68	0.81	19,710.24
Total (tons/construction project)	0.14	1.46	1.31	0.36	0.06	0.30	0.11	0.05	0.06	0.00	387.53	0.07	0.02	394.20

Notes:

Project Start Year ->	2025
Project Length (months) ->	6
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	64	192	180	480	320	40
Grading/Excavation	64	0	180	0	920	40
Drainage/Utilities/Sub-Grade	64	0	180	0	680	40
Paving	0	0	0	0	520	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for ->	Stage 2: Construct Bike Paths and Cycle Tracks on Local Streets Sut			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**SOx (tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.05	0.53	0.54	0.12	0.02	0.10	0.04	0.02	0.02	0.00	159.73	0.03	0.01	147.99
Grading/Excavation	0.04	0.41	0.35	0.12	0.02	0.10	0.03	0.01	0.02	0.00	106.31	0.02	0.00	97.87
Drainage/Utilities/Sub-Grade	0.05	0.52	0.43	0.12	0.02	0.10	0.04	0.02	0.02	0.00	121.49	0.03	0.00	111.75
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.05	0.53	0.54	0.12	0.02	0.10	0.04	0.02	0.02	0.00	159.73	0.03	0.01	147.99
Total (tons/construction project)	0.14	1.46	1.31	0.36	0.06	0.30	0.11	0.05	0.06	0.00	387.53	0.07	0.02	357.62

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Stage 2: Construct Bike Paths and Cycle Tracks on Local Streets Subphase 2D	
Construction Start Year	2025	Enter a Year between 2014 and 2040 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway□ 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane□ 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	20.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.20	miles
Total Project Area	1.00	acre
Maximum Area Disturbed/Day	0.50	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		64.00
	Grading/Excavation	12.00		64.00
	Drainage/Utilities/Sub-Grade	12.00		64.00
	Paving	12.00		
Asphalt	Grubbing/Land Clearing	12.00	192.00	
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		
	Paving	12.00		

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer□
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	2.00	0.60	7/14/2025	1/1/2025
Grading/Excavation	2.00	2.40	9/8/2025	3/3/2025
Drainage/Utilities/Sub-Grade	2.00	2.10	9/8/2025	5/3/2025
Paving	0.00	0.90	9/1/2026	7/3/2025
Totals (Months)	6			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		6	180.00
Miles/round trip: Grading/Excavation		30.00		6	180.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		6	180.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Grading/Excavation (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.16	1.27	0.04	0.02	0.01	663.85	0.00	0.10	694.96
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.03	0.00	0.00	0.00	13.28	0.00	0.00	13.90
Pounds per day - Grading/Excavation	0.01	0.16	1.27	0.04	0.02	0.01	663.85	0.00	0.10	694.96
Tons per const. Period - Grading/Excavation	0.00	0.00	0.03	0.00	0.00	0.00	13.28	0.00	0.00	13.90
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.16	1.27	0.04	0.02	0.01	663.85	0.00	0.10	694.96
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.03	0.00	0.00	0.00	13.28	0.00	0.00	13.90
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.08	0.00	0.00	0.00	39.83	0.00	0.01	41.70

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		16	480.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Grading/Excavation (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.03	0.44	3.40	0.12	0.05	0.02	1,770.28	0.00	0.28	1,853.24
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.07	0.00	0.00	0.00	35.41	0.00	0.01	37.06
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.07	0.00	0.00	0.00	35.41	0.00	0.01	37.06

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values		
Miles/ one-way trip		20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		8	16	320.00
No. of employees: Grading/Excavation		23	46	920.00
No. of employees: Drainage/Utilities/Sub-Grade		17	34	680.00
No. of employees: Paving		13	26	520.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.01	0.78	0.06	0.05	0.02	0.00	295.84	0.00	0.01	297.52
Grading/Excavation (grams/mile)	0.01	0.78	0.06	0.05	0.02	0.00	295.84	0.00	0.01	297.52
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.78	0.06	0.05	0.02	0.00	295.84	0.00	0.01	297.52
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.93	2.56	0.25	0.00	0.00	0.00	63.73	0.06	0.03	73.77
Grading/Excavation (grams/trip)	0.93	2.56	0.25	0.00	0.00	0.00	63.73	0.06	0.03	73.77
Draining/Utilities/Sub-Grade (grams/trip)	0.93	2.56	0.25	0.00	0.00	0.00	63.73	0.06	0.03	73.77
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.04	0.64	0.05	0.03	0.01	0.00	210.95	0.00	0.00	212.50
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	4.22	0.00	0.00	4.25
Pounds per day - Grading/Excavation	0.12	1.83	0.14	0.09	0.04	0.01	606.49	0.01	0.01	610.93
Tons per const. Period - Grading/Excavation	0.00	0.04	0.00	0.00	0.00	0.00	12.13	0.00	0.00	12.22
Pounds per day - Drainage/Utilities/Sub-Grade	0.09	1.35	0.10	0.07	0.03	0.00	448.28	0.01	0.01	451.56
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	8.97	0.00	0.00	9.03
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.08	0.01	0.00	0.00	0.00	25.31	0.00	0.00	25.50

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Grading/Excavation (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.32	0.01	0.00	0.00	147.52	0.00	0.02	154.44
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	2.95	0.00	0.00	3.09
Pounds per day - Grading/Excavation	0.00	0.04	0.32	0.01	0.00	0.00	147.52	0.00	0.02	154.44
Tons per const. Period - Grading/Excavation	0.00	0.00	0.01	0.00	0.00	0.00	2.95	0.00	0.00	3.09
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.32	0.01	0.00	0.00	147.52	0.00	0.02	154.44
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	2.95	0.00	0.00	3.09
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.02	0.00	0.00	0.00	8.85	0.00	0.00	9.27

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.50	5.00	0.10	1.04	0.02
Fugitive Dust - Grading/Excavation		0.50	5.00	0.10	1.04	0.02
Fugitive Dust - Drainage/Utilities/Subgrade		0.50	5.00	0.10	1.04	0.02

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.03	0.15	0.18	0.01	0.01	0.00	25.26	0.00	0.00	25.39
1.00			Model Default Tier	Concrete/Industrial Saws	0.15	1.82	1.13	0.05	0.05	0.00	296.33	0.01	0.00	297.32
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.19	1.05	1.98	0.08	0.07	0.00	379.13	0.12	0.00	383.22
1.00			Model Default Tier	Crushing/Proc. Equipment	0.20	2.16	1.31	0.06	0.06	0.00	332.27	0.02	0.00	333.46
1.00	2		Model Default Tier	Excavators	0.08	1.63	0.61	0.03	0.03	0.00	250.17	0.08	0.00	252.87
1.00			Model Default Tier	Forklifts	0.04	0.57	0.41	0.02	0.02	0.00	74.02	0.02	0.00	74.81
1.00			Model Default Tier	Generator Sets	0.13	1.83	1.20	0.05	0.05	0.00	311.52	0.01	0.00	312.50
1.00			Model Default Tier	Graders	0.16	0.80	1.73	0.06	0.05	0.00	320.12	0.10	0.00	323.57
1.00			Model Default Tier	Off-Highway Tractors	0.08	1.51	0.65	0.03	0.03	0.00	227.72	0.07	0.00	230.18
1.00			Model Default Tier	Off-Highway Trucks	0.24	1.59	1.43	0.05	0.05	0.01	639.84	0.21	0.01	646.73
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.09	1.45	0.79	0.04	0.03	0.00	227.50	0.07	0.00	229.95
1.00			Model Default Tier	Paving Equipment	0.07	1.27	0.63	0.03	0.03	0.00	197.16	0.06	0.00	199.29
1.00			Model Default Tier	Plate Compactors	0.02	0.11	0.13	0.00	0.00	0.00	17.24	0.00	0.00	17.33
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rollers	0.07	0.92	0.72	0.04	0.03	0.00	127.03	0.04	0.00	128.40
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Scrapers	0.34	2.69	3.19	0.13	0.12	0.01	734.07	0.24	0.01	741.99
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.40	0.01	0.01	0.00	100.24	0.03	0.00	101.32
1.00			Model Default Tier	Surfacing Equipment	0.09	0.81	0.92	0.04	0.03	0.00	327.21	0.11	0.00	330.74
1.00			Model Default Tier	Sweepers/Scrubbers	0.16	1.90	1.46	0.08	0.08	0.00	246.18	0.08	0.00	248.83
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Trenchers	0.16	1.28	1.47	0.10	0.09	0.00	163.67	0.05	0.00	165.43
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles		Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing		pounds per day	2.55	25.45	21.79	0.94	0.89	0.05	5,193.93	1.37	0.05	5,241.59
	Grubbing/Land Clearing		tons per phase	0.05	0.51	0.44	0.02	0.02	0.00	103.88	0.03	0.00	104.83

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.03	0.15	0.18	0.01	0.01	0.00	25.26	0.00	0.00	25.39
1.00			Model Default Tier	Concrete/Industrial Saws	0.15	1.82	1.13	0.05	0.05	0.00	296.33	0.01	0.00	297.32
	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.20	2.16	1.31	0.06	0.06	0.00	332.27	0.02	0.00	333.46
1.00	3		Model Default Tier	Excavators	0.08	1.63	0.61	0.03	0.03	0.00	250.17	0.08	0.00	252.87
1.00			Model Default Tier	Forklifts	0.04	0.57	0.41	0.02	0.02	0.00	74.02	0.02	0.00	74.81
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Graders	0.16	0.80	1.73	0.06	0.05	0.00	320.12	0.10	0.00	323.57
1.00			Model Default Tier	Off-Highway Tractors	0.08	1.51	0.65	0.03	0.03	0.00	227.72	0.07	0.00	230.18
1.00			Model Default Tier	Off-Highway Trucks	0.24	1.59	1.43	0.05	0.05	0.01	639.84	0.21	0.01	646.73
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Rollers	0.07	0.92	0.72	0.04	0.03	0.00	127.03	0.04	0.00	128.40
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Scrapers	0.34	2.69	3.19	0.13	0.12	0.01	734.07	0.24	0.01	741.99
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.40	0.01	0.01	0.00	100.24	0.03	0.00	101.32
1.00			Model Default Tier	Surfacing Equipment	0.09	0.81	0.92	0.04	0.03	0.00	327.21	0.11	0.00	330.74
1.00			Model Default Tier	Sweepers/Scrubbers	0.16	1.90	1.46	0.08	0.08	0.00	246.18	0.08	0.00	248.83
0.00	4		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grading/Excavation	pounds per day	1.89	18.46	15.59	0.65	0.61	0.04	3,897.71	1.04	0.03	3,933.86
Grading/Excavation	tons per phase	0.04	0.37	0.31	0.01	0.01	0.00	77.95	0.02	0.00	78.68

Drainage/Utilities/Subgrade

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.03	0.15	0.18	0.01	0.01	0.00	25.26	0.00	0.00	25.39
1.00			Model Default Tier	Concrete/Industrial Saws	0.15	1.82	1.13	0.05	0.05	0.00	296.33	0.01	0.00	297.32
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crushing/Proc. Equipment	0.20	2.16	1.31	0.06	0.06	0.00	332.27	0.02	0.00	333.46
1.00			Model Default Tier	Excavators	0.08	1.63	0.61	0.03	0.03	0.00	250.17	0.08	0.00	252.87
1.00			Model Default Tier	Forklifts	0.04	0.57	0.41	0.02	0.02	0.00	74.02	0.02	0.00	74.81
1.00	1		Model Default Tier	Generator Sets	0.13	1.83	1.20	0.05	0.05	0.00	311.52	0.01	0.00	312.50
1.00	1		Model Default Tier	Graders	0.16	0.80	1.73	0.06	0.05	0.00	320.12	0.10	0.00	323.57
1.00			Model Default Tier	Off-Highway Tractors	0.08	1.51	0.65	0.03	0.03	0.00	227.72	0.07	0.00	230.18
1.00			Model Default Tier	Off-Highway Trucks	0.24	1.59	1.43	0.05	0.05	0.01	639.84	0.21	0.01	646.73
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.09	1.45	0.79	0.04	0.03	0.00	227.50	0.07	0.00	229.95
1.00			Model Default Tier	Paving Equipment	0.07	1.27	0.63	0.03	0.03	0.00	197.16	0.06	0.00	199.29
1.00	1		Model Default Tier	Plate Compactors	0.02	0.11	0.13	0.00	0.00	0.00	17.24	0.00	0.00	17.33
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rollers	0.07	0.92	0.72	0.04	0.03	0.00	127.03	0.04	0.00	128.40
0.00	1		Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Scrapers	0.34	2.69	3.19	0.13	0.12	0.01	734.07	0.24	0.01	741.99
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
1.00			Model Default Tier	Skid Steer Loaders	0.03	0.69	0.40	0.01	0.01	0.00	100.24	0.03	0.00	101.32
1.00			Model Default Tier	Surfacing Equipment	0.09	0.81	0.92	0.04	0.03	0.00	327.21	0.11	0.00	330.74
1.00			Model Default Tier	Sweepers/Scrubbers	0.16	1.90	1.46	0.08	0.08	0.00	246.18	0.08	0.00	248.83
0.00	3		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Trenchers	0.16	1.28	1.47	0.10	0.09	0.00	163.67	0.05	0.00	165.43
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	2.36	24.40	19.81	0.87	0.81	0.05	4,814.80	1.24	0.04	4,858.36
Drainage/Utilities/Sub-Grade	tons per phase	0.05	0.49	0.40	0.02	0.02	0.00	96.30	0.02	0.00	97.17

Paving

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			Model Default Tier	Scrapers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Signal Boards		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Tractors/Loaders/Backhoes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles		Equipment Tier		Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving			pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving			tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>						0.14	1.37	1.14	0.05	0.05	0.00	278.13	0.07	0.00	280.68

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63	4.00	8
Air Compressors		78	4.00	8
Bore/Drill Rigs		221	4.00	8
Cement and Mortar Mixers		9	4.00	8
Concrete/Industrial Saws		81	4.00	8
Cranes		231	4.00	8
Crawler Tractors		212	4.00	8
Crushing/Proc. Equipment		85	4.00	8
Excavators		158	4.00	8
Forklifts		89	4.00	8
Generator Sets		84	4.00	8
Graders		187	4.00	8
Off-Highway Tractors		124	4.00	8
Off-Highway Trucks		402	4.00	8
Other Construction Equipment		172	4.00	8
Other General Industrial Equipment		88	4.00	8
Other Material Handling Equipment		168	4.00	8
Pavers		130	4.00	8
Paving Equipment		132	4.00	8
Plate Compactors		8	4.00	8
Pressure Washers		13	4.00	8
Pumps		84	4.00	8
Rollers		80	4.00	8
Rough Terrain Forklifts		100	4.00	8
Rubber Tired Dozers		247	4.00	8
Rubber Tired Loaders		203	4.00	8
Scrapers		367	4.00	8
Signal Boards		6		8
Skid Steer Loaders		65	4.00	8
Surfacing Equipment		263	4.00	8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	4.00	8
Trenchers		78	4.00	8
Welders		46	4.00	8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Stage 2: Landscaping Subphase 2E

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.95	7.76	7.42	20.33	0.33	20.00	4.43	0.27	4.16	0.03	2,725.07	0.56	0.13	2,776.53
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	0.95	7.76	7.42	20.33	0.33	20.00	4.43	0.27	4.16	0.03	2,725.07	0.56	0.13	2,776.53
Total (tons/construction project)	0.01	0.08	0.07	0.20	0.00	0.20	0.04	0.00	0.04	0.00	27.25	0.01	0.00	27.77

Notes:

Project Start Year ->	2025
Project Length (months) ->	1
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	32	32	90	90	320	0
Grading/Excavation	0	0	0	0	1,200	0
Drainage/Utilities/Sub-Grade	0	0	0	0	800	0
Paving	0	0	0	0	400	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Stage 2: Landscaping Subphase 2E

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.08	0.07	0.20	0.00	0.20	0.04	0.00	0.04	0.00	27.25	0.01	0.00	25.19
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.01	0.08	0.07	0.20	0.00	0.20	0.04	0.00	0.04	0.00	27.25	0.01	0.00	25.19
Total (tons/construction project)	0.01	0.08	0.07	0.20	0.00	0.20	0.04	0.00	0.04	0.00	27.25	0.01	0.00	25.19

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Stage 2: Landscaping Subphase 2E	
Construction Start Year	2025	Enter a Year between 2014 and 2040 (inclusive)
Project Type	3	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway□ 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane□ 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	1.00	month
Working Days per Month	20.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.20	miles
Total Project Area	1.00	acre
Maximum Area Disturbed/Day	1.00	acre
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		32.00
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		
	Paving	12.00		
Asphalt	Grubbing/Land Clearing	12.00	32.00	
	Grading/Excavation	12.00		
	Drainage/Utilities/Sub-Grade	12.00		
	Paving	12.00		

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer□
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	1.00	0.10	11/3/2025	1/1/2025
Grading/Excavation	0.00	0.40	7/1/2026	2/1/2025
Drainage/Utilities/Sub-Grade	0.00	0.35	8/1/2026	2/1/2025
Paving	0.00	0.15	9/1/2026	2/1/2025
Totals (Months)	1			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		3	90.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.08	0.64	0.02	0.01	0.00	331.93	0.00	0.05	347.48
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	3.32	0.00	0.00	3.47
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	3.32	0.00	0.00	3.47

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		3	90.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.08	0.64	0.02	0.01	0.00	331.93	0.00	0.05	347.48
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	3.32	0.00	0.00	3.47
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	3.32	0.00	0.00	3.47

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values		
Miles/ one-way trip		20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		8	16	320.00
No. of employees: Grading/Excavation		30	60	1,200.00
No. of employees: Drainage/Utilities/Sub-Grade		20	40	800.00
No. of employees: Paving		10	20	400.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.01	0.78	0.06	0.05	0.02	0.00	295.84	0.00	0.01	297.52
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.93	2.56	0.25	0.00	0.00	0.00	63.73	0.06	0.03	73.77
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.04	0.64	0.05	0.03	0.01	0.00	210.95	0.00	0.00	212.50
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.11	0.00	0.00	2.12
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.00	0.00	0.00	0.00	2.11	0.00	0.00	2.12

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust		0		5	0		8.00	0.00
Grading/Excavation - Exhaust		0		5	0		8.00	0.00
Drainage/Utilities/Subgrade		0		5	0		8.00	0.00
Paving		0		5	0		8.00	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		1.00	20.00	0.20	4.16	0.04
Fugitive Dust - Grading/Excavation		0.00	0.00	0.00	0.00	0.00
Fugitive Dust - Drainage/Utilities/Subgrade		0.00	0.00	0.00	0.00	0.00

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Forklifts	0.04	0.57	0.41	0.02	0.02	0.00	74.02	0.02	0.00	74.81
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Off-Highway Trucks	0.48	3.19	2.87	0.10	0.09	0.01	1,279.68	0.41	0.01	1,293.45
1.00			Model Default Tier	Other Construction Equipment	0.15	2.00	1.38	0.07	0.07	0.00	299.31	0.10	0.00	302.54
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	3		Model Default Tier	Signal Boards	0.23	1.20	1.44	0.06	0.06	0.00	197.25	0.02	0.00	198.26
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing		pounds per day	0.90	6.95	6.09	0.25	0.24	0.02	1,850.26	0.56	0.02	1,869.07
Grubbing/Land Clearing		tons per phase	0.01	0.07	0.06	0.00	0.00	0.00	18.50	0.01	0.00	18.69

Grading/Excavation	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	4		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	4		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation		pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation		tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Drainage/Utilities/Subgrade

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	4		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade		pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade		tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	3		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab				ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving			pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving			tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>					0.01	0.07	0.06	0.00	0.00	0.00	18.50	0.01	0.00	18.69

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89	4.00	8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	4.00	8
Other Construction Equipment		172	4.00	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Appendix E – Operational Roadway Input Assumptions, CT-EMFAC2017 Output, CARB Off-Model SAFE Adjustment Factors

This document contains blank pages to accommodate two-sided printing.

Table 10: Freeway Truck Percentages

Direction	Locations	AM Peak	PM Peak	Daily
NB I-880	Between 23rd Ave Off and 23rd Ave On	15.2%	6.6%	11.5%
	Between Union St On and 7th St Off	15.0%	8.9%	12.9%
SB I-880	Between 7th St On and Union St Off	10.9%	8.6%	11.0%
	Between 23rd Ave Off and 23rd Ave On	11.4%	12.0%	11.7%
WB I-980	Between 18th Street off and 12th Street off	2.7%	3.6%	3.4%
EB I-980	Between 12th Street on and 18th Street on	7.0%	1.6%	3.4%

Source: DKS Associates, 2015

Used highlighted truck percentages for Operational Analysis

This document contains blank pages to accommodate two-sided printing.

Table 21: Average **Annual Daily** Traffic Volumes – Existing and Future Year

Location	AADT (vehicles)						
	Existing	2025		2040		2045	
		No Build	Build	No Build	Build	No Build	Build
I-880							
Northbound between 23rd Avenue off and on	98,219	102,245	102,459	104,889	105,211	105,770	106,128
Southbound between 23rd Avenue/Kennedy Street off and on	94,289	101,033	101,101	104,578	104,652	105,759	105,835
Northbound between Union Street on and 7th Street off	68,024	71,812	72,208	75,849	75,828	77,194	77,034
Southbound between 7th Street on and Union Street off	57,378	61,587	61,625	65,366	65,441	66,626	66,713
I-980							
Westbound between 18th Street off and 12th Street off	56,934	61,427	61,195	63,412	63,147	64,073	63,797
Eastbound between 12th Street on and 18th Street on	54,457	57,197	57,116	59,319	59,744	60,026	60,620
SR 260							
Webster Tube	28,681	34,742	35,346	40,001	40,583	41,754	42,328
Posey Tube	23,111	28,187	28,625	31,659	32,048	32,816	33,189

Source: DKS Associates, 2015

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Location	AADT Volume													
	Existing		2025				2040				2045			
		Truck AADT	No Build	Truck AADT	Build	Truck AADT	No Build	Truck AADT	Build	Truck AADT	No Build	Truck AADT	Build	Truck AADT
I-880														
Northbound between 23rd Avenue off and on	98,219	11,295	102,245	11,758	102,459	11,783	104,889	12,062	105,211	12,099	105,770	12,164	106,128	12,205
Southbound between 23rd Avenue/Kennedy Street off	94,289	11,032	101,033	11,821	101,101	11,829	104,578	12,236	104,652	12,244	105,759	12,374	105,835	12,383
Northbound between Union Street on and 7th Street off	68,024	8,775	71,812	9,264	72,208	9,315	75,849	9,784	75,828	9,782	77,194	9,958	77,034	9,937
Southbound between 7th Street on and Union Street off	57,378	6,312	61,587	6,775	61,625	6,779	65,366	7,190	65,441	7,199	66,626	7,329	66,713	7,338
I-980														
Westbound between 18th Street off and 12th Street off	56,934	1,936	61,427	2,089	61,195	2,081	63,412	2,156	63,147	2,147	64,073	2,178	63,797	2,169
Eastbound between 12th Street on and 18th Street on	54,457	1,852	57,197	1,945	57,116	1,942	59,319	2,017	59,744	2,031	60,026	2,041	60,620	2,061
SR 260														
Webster Tube	28,681		34,742		35,346		40,001		40,583		41,754		42,328	
Posey Tube	23,111		28,187		28,625		31,659		32,048		32,816		33,189	

Location	Truck %
Northbound between 23rd Avenue off and on	11.5%
Southbound between 23rd Avenue/Kennedy Street off	11.7%
Northbound between Union Street on and 7th Street off	12.9%
Southbound between 7th Street on and Union Street off	11.0%
Westbound between 18th Street off and 12th Street off	3.4%
Eastbound between 12th Street on and 18th Street on	3.4%

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Table A1: Study Area Daily VMT by Speed Bin (Freeway & Local Facilities*)

Daily VMT							
		2025		2040**		2045	
Speed Bin	2015	NoBuild	Build	NoBuild	Build	NoBuild	Build
0.00-7.50	396	393	397	98	2642	-	3,390
7.51-12.50	2,632	2,897	6,225	3318	4149	3,458	3,457
12.51-17.50	16,848	22,404	18,462	22879	19097	23,038	19,308
17.51-22.50	30,328	35,635	32,347	38401	34666	39,323	35,438
22.51-27.50	157,968	183,948	184,408	208372	209182	216,514	217,440
27.51-32.50	61,676	69,389	69,270	77400	76722	80,070	79,206
32.51-37.50	5,672	6,340	4,688	25739	24438	32,206	31,021
37.51-42.50	1,438	25,225	26,097	8069	8803	2,350	3,038
42.51-47.60	24,010	57,725	56,706	72923	71184	77,989	76,010
47.61-52.50	116,580	128,045	127,133	173508	152389	188,663	160,808
52.51-57.50	212,855	174,478	180,010	137137	163757	124,690	158,339
57.51-62.50	47,570	51,962	51,689	54280	54172	55,052	54,999
62.51-67.50	-	-	-	-	-	-	-
67.51-72.50	-	-	-	-	-	-	-
TOTAL	677,973	758,440	757,430	822,125	821,198	843,353	842,454
Change			-1010		-927		-899

Table A4: Study Area 4 Hour AM Period VMT by Speed Bin (Freeway & Local Facilities*)

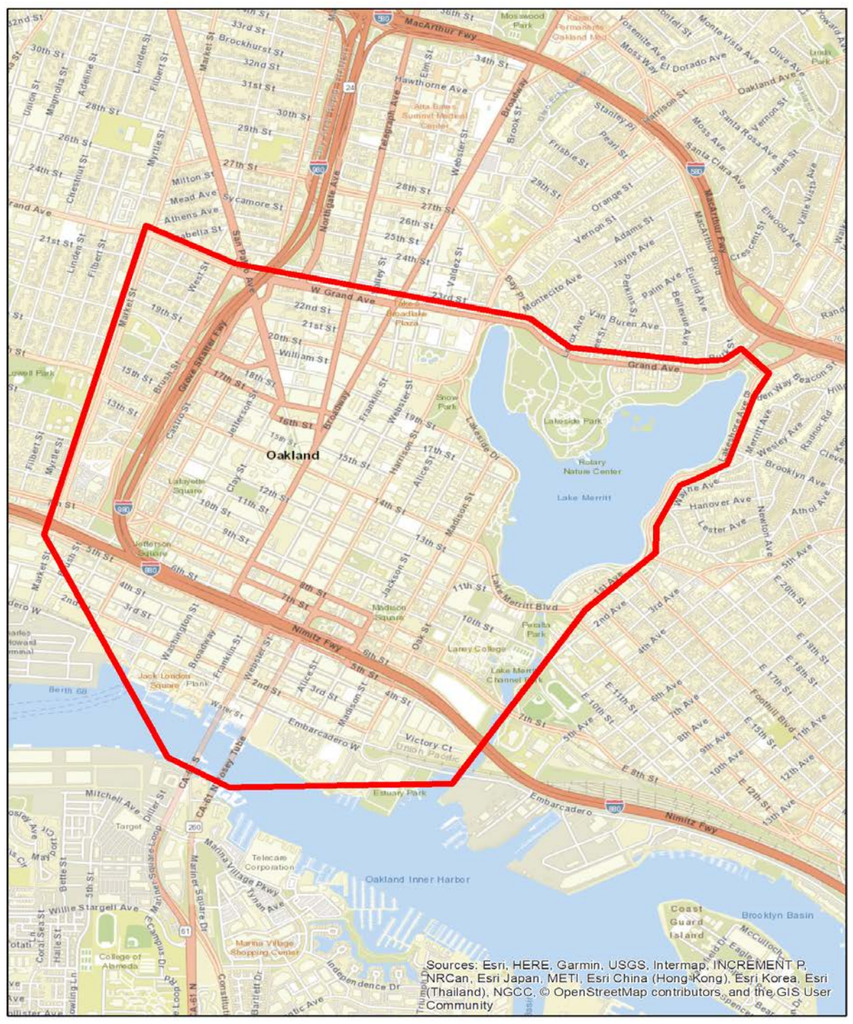
AM 4 Hour VMT							
		2025		2040**		2045	
Speed Bin	2015	NoBuild	Build	NoBuild	Build	NoBuild	Build
0.00-7.50	-	136	-	136	102	136	136
7.51-12.50	590	649	1,569	706	1534	725	1,523
12.51-17.50	3,881	4,310	4,203	5142	4385	5,420	4,445
17.51-22.50	7,368	9,298	8,627	9780	8423	9,940	8,355
22.51-27.50	39,902	46,328	46,445	52120	52874	54,051	55,017
27.51-32.50	16,217	17,986	16,777	24556	23827	26,745	26,177
32.51-37.50	1,416	7,585	6,967	3293	2958	1,862	1,622
37.51-42.50	6,156	405	693	9304	6430	12,271	8,342
42.51-47.60	486	17,060	13,115	12785	17049	11,360	18,360
47.61-52.50	28,160	46,249	43,822	45660	42594	45,464	42,184
52.51-57.50	51,846	24,319	32,332	25017	28267	25,250	26,912
57.51-62.50	12,901	13,830	13,931	14026	14046	14,091	14,085
62.51-67.50	-	-	-	-	-	-	-
67.51-72.50	-	-	-	-	-	-	-
TOTAL	168,923	188,156	188,481	202,525	202,488	207,315	207,157
Change			325		-37		-158

Table A7: Study Area 4 Hour PM Period VMT by Speed Bin (Freeway & Local Facilities*)

PM 4 Hour VMT							
		2025		2040**		2045	
Speed Bin	2015	NoBuild	Build	NoBuild	Build	NoBuild	Build
0.00-7.50	99	95	920	3493	3706	4,626	4,635
7.51-12.50	1,608	1,698	876	5559	5852	6,846	7,511
12.51-17.50	4,928	5,563	5,397	5535	5426	5,526	5,435
17.51-22.50	9,021	10,439	9,271	11028	9891	11,225	10,097
22.51-27.50	47,470	60,684	61,822	65682	66764	67,348	68,412
27.51-32.50	17,931	24,864	24,440	35241	33559	38,700	36,598
32.51-37.50	1,581	7,743	7,408	11431	8196	12,660	8,459
37.51-42.50	6,277	15,822	15,994	4500	7927	726	5,238
42.51-47.60	18,739	4,673	4,250	14793	14425	18,166	17,817
47.61-52.50	30,258	43,512	43,371	42964	42922	42,782	42,772
52.51-57.50	41,953	26,058	27,200	18480	19519	15,954	16,959
57.51-62.50	13,829	15,247	14,857	15856	15632	16,059	15,890
62.51-67.50	-	-	-	-	-	-	-
67.51-72.50	-	-	-	-	-	-	-
TOTAL	193,694	216,398	215,806	234,563	233,819	240,618	239,824
Change			-591		-744		-795

MD VMT							
Speed Bin	2015	2025 NB	2025 Build	2040 NB	2040 Build	2045 NB	2045 Build
0.00-7.50	122	124	125	31	121	-	119
7.51-12.50	839	1,935	1,935	2033	1949	2,065	1,954
12.51-17.50	5,131	5,844	5,660	5891	5763	5,907	5,797
17.51-22.50	9,461	10,274	9,384	11080	10031	11,349	10,246
22.51-27.50	42,226	50,040	50,004	56692	56005	58,910	58,005
27.51-32.50	16,988	19,519	19,380	21663	21711	22,378	22,488
32.51-37.50	1,639	1,842	1,353	1320	1521	1,146	1,578
37.51-42.50	357	455	728	6405	6669	8,389	8,649
42.51-47.60	7,123	7,622	14,747	20042	17687	24,182	18,666
47.61-52.50	34,411	38,843	31,161	46240	47888	48,705	53,464
52.51-57.50	57,838	69,348	70,722	52214	54030	46,502	48,466
57.51-62.50	19,371	13,888	13,866	15006	15057	15,378	15,453
62.51-67.50	-	-	-	-	-	-	-
67.51-72.50	-	-	-	-	-	-	-
TOTAL	195,504	219,733	219,065	238,617	238,430	244,912	244,886
Change			(668)		-187		(26)

EV VMT							
Speed Bin	2015	2025 NB	2025 Build	2040 NB	2040 Build	2045 NB	2045 Build
0.00-7.50	88	88	89	88	89	88	89
7.51-12.50	493	530	523	1097	1096	1,286	1,287
12.51-17.50	3,067	3,522	3,348	3695	3560	3,753	3,630
17.51-22.50	5,322	6,249	6,552	7539	7202	7,969	7,418
22.51-27.50	25,960	30,341	30,358	34909	34911	36,432	36,429
27.51-32.50	11,138	12,962	12,221	13649	13437	13,878	13,842
32.51-37.50	1,035	1,236	927	1548	1222	1,652	1,321
37.51-42.50	222	273	445	3809	3999	4,988	5,183
42.51-47.60	263	4,672	4,514	9787	9644	11,493	11,355
47.61-52.50	21,976	23,185	23,043	30466	30297	32,893	32,715
52.51-57.50	37,430	42,100	43,023	30440	31566	26,553	27,747
57.51-62.50	12,858	8,997	9,035	9392	9437	9,524	9,571
62.51-67.50	-	-	-	-	-	-	-
67.51-72.50	-	-	-	-	-	-	-
TOTAL	119,852	134,153	134,077	146,419	146,460	150,508	150,588
Change			(76)		41		80



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AM 4 Hour VMT

Speed Bin	2015	2025					2040**				2045			
		VMT %	NoBuild	VMT %	Build	VMT %	NoBuild	VMT %	Build	VMT %	NoBuild	VMT %	Build	VMT %
0.00-7.50	-	0.00%	136	0.07%	-	0.00%	136	0.07%	102	0.05%	136	0.05%	136	0.05%
7.51-12.50	590	0.35%	649	0.34%	1,569	0.83%	706	0.35%	1534	0.76%	725	0.76%	1,523	0.76%
12.51-17.5	3,881	2.30%	4,310	2.29%	4,203	2.23%	5142	2.54%	4385	2.17%	5,420	2.17%	4,445	2.17%
17.51-22.5	7,368	4.36%	9,298	4.94%	8,627	4.58%	9780	4.83%	8423	4.16%	9,940	4.16%	8,355	4.16%
22.51-27.5	39,902	23.62%	46,328	24.62%	46,445	24.64%	52120	25.74%	52874	26.11%	54,051	26.11%	55,017	26.11%
27.51-32.5	16,217	9.60%	17,986	9.56%	16,777	8.90%	24556	12.12%	23827	11.77%	26,745	11.77%	26,177	11.77%
32.51-37.5	1,416	0.84%	7,585	4.03%	6,967	3.70%	3293	1.63%	2958	1.46%	1,862	1.46%	1,622	1.46%
37.51-42.5	6,156	3.64%	405	0.22%	693	0.37%	9304	4.59%	6430	3.18%	12,271	3.18%	8,342	3.18%
42.51-47.6	486	0.29%	17,060	9.07%	13,115	6.96%	12785	6.31%	17049	8.42%	11,360	8.42%	18,360	8.42%
47.61-52.5	28,160	16.67%	46,249	24.58%	43,822	23.25%	45660	22.55%	42594	21.04%	45,464	21.04%	42,184	21.04%
52.51-57.5	51,846	30.69%	24,319	12.92%	32,332	17.15%	25017	12.35%	28267	13.96%	25,250	13.96%	26,912	13.96%
57.51-62.5	12,901	7.64%	13,830	7.35%	13,931	7.39%	14026	6.93%	14046	6.94%	14,091	6.94%	14,085	6.94%
62.51-67.5	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%
67.51-72.5	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%
TOTAL	168,923	**100.00%**	188,156	**100.00%**	188,481	**100.00%**	202,525	**100.00%**	202,488	**100.00%**	207,315	**100.00%**	207,157	**100.00%**
Change					325				-37				-158	

PM 4 Hour VMT

Speed Bin	2015		2025				2040**				2045			
		VMT %	NoBuild	VMT %	Build	VMT %	NoBuild	VMT %	Build	VMT %	NoBuild	VMT %	Build	VMT %
0.00-7.50	99	0.05%	95	0.04%	920	0.43%	3493	1.49%	3706	1.59%	4,626	1.92%	4,635	1.93%
7.51-12.50	1,608	0.83%	1,698	0.78%	876	0.41%	5559	2.37%	5852	2.50%	6,846	2.84%	7,511	3.13%
12.51-17.5	4,928	2.54%	5,563	2.57%	5,397	2.50%	5535	2.36%	5426	2.32%	5,526	2.30%	5,435	2.27%
17.51-22.5	9,021	4.66%	10,439	4.82%	9,271	4.30%	11028	4.70%	9891	4.23%	11,225	4.66%	10,097	4.21%
22.51-27.5	47,470	24.51%	60,684	28.04%	61,822	28.65%	65682	28.00%	66764	28.55%	67,348	27.99%	68,412	28.53%
27.51-32.5	17,931	9.26%	24,864	11.49%	24,440	11.32%	35241	15.02%	33559	14.35%	38,700	16.08%	36,598	15.26%
32.51-37.5	1,581	0.82%	7,743	3.58%	7,408	3.43%	11431	4.87%	8196	3.51%	12,660	5.26%	8,459	3.53%
37.51-42.5	6,277	3.24%	15,822	7.31%	15,994	7.41%	4500	1.92%	7927	3.39%	726	0.30%	5,238	2.18%
42.51-47.6	18,739	9.67%	4,673	2.16%	4,250	1.97%	14793	6.31%	14425	6.17%	18,166	7.55%	17,817	7.43%
47.61-52.5	30,258	15.62%	43,512	20.11%	43,371	20.10%	42964	18.32%	42922	18.36%	42,782	17.78%	42,772	17.83%
52.51-57.5	41,953	21.66%	26,058	12.04%	27,200	12.60%	18480	7.88%	19519	8.35%	15,954	6.63%	16,959	7.07%
57.51-62.5	13,829	7.14%	15,247	7.05%	14,857	6.88%	15856	6.76%	15632	6.69%	16,059	6.67%	15,890	6.63%
62.51-67.5	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%
67.51-72.5	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%
TOTAL	193,694	**100.00%**	216,398	**100.00%**	215,806	**100.00%**	234,563	**100.00%**	233,819	**100.00%**	240,618	**100.00%**	239,824	**100.00%**
Change					-591				-744				-795	

MD VMT

Speed Bin	2015	VMT %	2025 NB	VMT %	2025 Build	VMT %	2040 NB	VMT %	2040 Build	VMT %	2045 NB	VMT %	2045 Build	VMT %
0.00-7.50	122	0.06%	124	0.06%	125	0.06%	31	0.01%	121	0.05%	-	0.00%	119	0.05%
7.51-12.50	839	0.43%	1,935	0.88%	1,935	0.88%	2033	0.85%	1949	0.82%	2,065	0.84%	1,954	0.80%
12.51-17.5	5,131	2.62%	5,844	2.66%	5,660	2.58%	5891	2.47%	5763	2.42%	5,907	2.41%	5,797	2.37%
17.51-22.5	9,461	4.84%	10,274	4.68%	9,384	4.28%	11080	4.64%	10031	4.21%	11,349	4.63%	10,246	4.18%
22.51-27.5	42,226	21.60%	50,040	22.77%	50,004	22.83%	56692	23.76%	56005	23.49%	58,910	24.05%	58,005	23.69%
27.51-32.5	16,988	8.69%	19,519	8.88%	19,380	8.85%	21663	9.08%	21711	9.11%	22,378	9.14%	22,488	9.18%
32.51-37.5	1,639	0.84%	1,842	0.84%	1,353	0.62%	1320	0.55%	1521	0.64%	1,146	0.47%	1,578	0.64%
37.51-42.5	357	0.18%	455	0.21%	728	0.33%	6405	2.68%	6669	2.80%	8,389	3.43%	8,649	3.53%
42.51-47.6	7,123	3.64%	7,622	3.47%	14,747	6.73%	20042	8.40%	17687	7.42%	24,182	9.87%	18,666	7.62%
47.61-52.5	34,411	17.60%	38,843	17.68%	31,161	14.22%	46240	19.38%	47888	20.08%	48,705	19.89%	53,464	21.83%
52.51-57.5	57,838	29.58%	69,348	31.56%	70,722	32.28%	52214	21.88%	54030	22.66%	46,502	18.99%	48,466	19.79%
57.51-62.5	19,371	9.91%	13,888	6.32%	13,866	6.33%	15006	6.29%	15057	6.31%	15,378	6.28%	15,453	6.31%
62.51-67.5	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%
67.51-72.5	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%
TOTAL	195,504	**100.00%**	219,733	**100.00%**	219,065	**100.00%**	238,617	**100.00%**	238,430	**100.00%**	244,912	**100.00%**	244,886	**100.00%**
Change					(668)				-187				(26)	

EV VMT

Speed Bin	2015	VMT %	2025 NB	VMT %	2025 Build	VMT %	2040 NB	VMT %	2040 Build	VMT %	2045 NB	VMT %	2045 Build	VMT %
0.00-7.50	88	0.07%	88	0.07%	89	0.07%	88	0.06%	89	0.06%	88	0.06%	89	0.06%
7.51-12.50	493	0.41%	530	0.39%	523	0.39%	1097	0.75%	1096	0.75%	1,286	0.85%	1,287	0.85%
12.51-17.5	3,067	2.56%	3,522	2.63%	3,348	2.50%	3695	2.52%	3560	2.43%	3,753	2.49%	3,630	2.41%
17.51-22.5	5,322	4.44%	6,249	4.66%	6,552	4.89%	7539	5.15%	7202	4.92%	7,969	5.29%	7,418	4.93%
22.51-27.5	25,960	21.66%	30,341	22.62%	30,358	22.64%	34909	23.84%	34911	23.84%	36,432	24.21%	36,429	24.19%
27.51-32.5	11,138	9.29%	12,962	9.66%	12,221	9.12%	13649	9.32%	13437	9.17%	13,878	9.22%	13,842	9.19%
32.51-37.5	1,035	0.86%	1,236	0.92%	927	0.69%	1548	1.06%	1222	0.83%	1,652	1.10%	1,321	0.88%
37.51-42.5	222	0.18%	273	0.20%	445	0.33%	3809	2.60%	3999	2.73%	4,988	3.31%	5,183	3.44%
42.51-47.6	263	0.22%	4,672	3.48%	4,514	3.37%	9787	6.68%	9644	6.59%	11,493	7.64%	11,355	7.54%
47.61-52.5	21,976	18.34%	23,185	17.28%	23,043	17.19%	30466	20.81%	30297	20.69%	32,893	21.85%	32,715	21.72%
52.51-57.5	37,430	31.23%	42,100	31.38%	43,023	32.09%	30440	20.79%	31566	21.55%	26,553	17.64%	27,747	18.43%
57.51-62.5	12,858	10.73%	8,997	6.71%	9,035	6.74%	9392	6.41%	9437	6.44%	9,524	6.33%	9,571	6.36%
62.51-67.5	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%
67.51-72.5	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%
TOTAL	119,852	**100.00%**	134,153	**100.00%**	134,077	**100.00%**	146,419	**100.00%**	146,460	**100.00%**	150,508	**100.00%**	150,588	**100.00%**
Change					(76)				41				80	

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Total Emissions

General*	2015 Base	2025 No Build	SAFE Off-Model Adjustment Factor	2025 Build	SAFE Off-Model Adjustment Factor	2040 No Build	SAFE Off-Model Adjustment Factor	2040 Build	SAFE Off-Model Adjustment Factor	2045 No Build	SAFE Off-Model Adjustment Factor	2045 Build	SAFE Off-Model Adjustment Factor	
**$PM_{2.5}$	0.035	0.028	*1.0074*	0.028	*1.0074*	0.030	*1.0270*	0.030	*1.0270*	0.030	*1.0300*	0.030	*1.0300*	tons/day
**PM_{10}	0.105	0.105	*1.0074*	0.105	*1.0074*	0.113	*1.0270*	0.113	*1.0270*	0.116	*1.0300*	0.116	*1.0300*	tons/day
NO_x	0.566	0.193	*1.0018*	0.193	*1.0018*	0.176	*1.0109*	0.175	*1.0109*	0.181	*1.0124*	0.180	*1.0124*	tons/day
CO	1.389	0.567	*1.0065*	0.561	*1.0065*	0.451	*1.0281*	0.449	*1.0281*	0.453	*1.0306*	0.452	*1.0306*	tons/day
HC	0.127	0.058		0.059		0.042		0.042		0.041		0.041		tons/day
TOG	0.145	0.064	*1.0016*	0.064	*1.0016*	0.046	*1.0174*	0.045	*1.0174*	0.045	*1.0225*	0.045	*1.0225*	tons/day
ROG	0.125	0.055	*1.0016*	0.056	*1.0016*	0.039	*1.0174*	0.039	*1.0174*	0.038	*1.0225*	0.038	*1.0225*	tons/day

*The off-model adjustment factors are applied to Nox, TOG, ROG, PM10, and PM2.5, and CO for emissions from the years 2021 to 2050

**Only PM exhaust emissions were adjusted. (The total PM emissions = Adjusted PM exhaust emissions + Non-Exhaust Emissions)

General	2015 Base	2025 No Build	2025 Build	2040 No Build	2040 Build	2045 No Build	2045 Build	
$PM_{2.5}$	70	56	56	59	59	61	61	pounds/day
PM_{10}	209	210	209	226	226	232	232	pounds/day
NO_x	1,132	386	386	352	350	362	360	pounds/day
CO	2,776	1,125	1,122	903	899	907	905	pounds/day
HC	256	117	118	84	84	82	82	pounds/day
TOG	289	126	128	92	90	90	90	pounds/day
ROG	250	110.30	112.18	77	77	76	76	pounds/day

GHGS***	2015 Base	2025 No Build	2025 Build	2040 No Build	2040 Build	2045 No Build	2045 Build	
CO_2	339.52	290.6	290.22	247.99	247.51	250.44	250.01	tons/day
N_2O	0.02	0.0	0.02	0.01	0.01	0.01	0.01	tons/day
CH_4	0.02	0.0	0.01	0.01	0.01	0.01	0.01	tons/day
BC	0.00	0.0	0.00	0.00	0.00	0.00	0.00	tons/day
HFC	0.00	0.0	0.00	0.00	0.00	0.00	0.00	tons/day

***The off-model adjustment factors provided by CARB did not include adjustments for CO2 emissions although these may become available at a later date

GHGS	2015 Base	2025 No Build	2025 Build	2040 No Build	2040 Build	2045 No Build	2045 Build	
CO_2	308	264	263	225	225	227	227	Metric Ton/Day
N_2O	0	0	0	0	0	0	0	Metric Ton/Day
CH_4	0	0	0	0	0	0	0	Metric Ton/Day
BC	0	0	0	0	0	0	0	Metric Ton/Day
HFC	0	0	0	0	0	0	0	Metric Ton/Day
CO2e (Annual MT)	114,861	97,934	97,823	83,598	83,435	84,427	84,281	
Difference			-112		-163		-146	
Changes over Existing			-17,038		-31,427		-30,581	
	1.00E+06							

MSATS****	2015 Base	2025 No Build	SAFE Off-Model Adjustment Factor	2025 Build	SAFE Off-Model Adjustment Factor	2040 No Build	SAFE Off-Model Adjustment Factor	2040 Build	SAFE Off-Model Adjustment Factor	2045 No Build	SAFE Off-Model Adjustment Factor	2045 Build	SAFE Off-Model Adjustment Factor	
1,3-Butadiene	370.50	121.69	*1.0016*	121.79	*1.0016*	97.98	*1.0174*	97.67	*1.0174*	99.80	*1.0225*	99.59	*1.0225*	g/day
Acetaldehyde	2085.20	256.01	*1.0016*	256.11	*1.0016*	242.24	*1.0174*	241.84	*1.0174*	251.02	*1.0225*	250.31	*1.0225*	g/day
Acrolein	75.50	27.04	*1.0016*	26.94	*1.0016*	21.16	*1.0174*	21.16	*1.0174*	21.68	*1.0225*	21.57	*1.0225*	g/day
Benzene	2408.70	880.51	*1.0016*	881.51	*1.0016*	656.12	*1.0174*	654.29	*1.0174*	654.91	*1.0225*	652.97	*1.0225*	g/day
Diesel PM	9976.70	902.20	*1.0*	907.10	*1.0*	797.40	*1.0*	802.90	*1.0*	806.30	*1.0*	810.20	*1.0*	g/day
Ethylbenzene	1512.70	764.62	*1.0016*	766.62	*1.0016*	528.74	*1.0174*	527.73	*1.0174*	516.26	*1.0225*	514.62	*1.0225*	g/day
Formaldehyde	4701.80	701.42	*1.0016*	701.72	*1.0016*	628.96	*1.0174*	627.74	*1.0174*	648.16	*1.0225*	646.63	*1.0225*	g/day
Naphthalene	128.90	63.00	*1.0016*	63.10	*1.0016*	45.27	*1.0174*	44.97	*1.0174*	44.38	*1.0225*	44.17	*1.0225*	g/day
POM	111.00	21.43	*1.0016*	21.33	*1.0016*	15.26	*1.0174*	15.16	*1.0174*	15.54	*1.0225*	15.44	*1.0225*	g/day
DEOG	24995.10	2198.90	*1.0*	2202.40	*1.0*	2138.50	*1.0*	2137.30	*1.0*	2217.10	*1.0*	2212.70	*1.0*	g/day

****For 1,3-Butadiene, Acetaldehyde, Acrolein, Benzene, Ethylbenzene, Formaldehyde, Naphthalene, and POM, use a greater adjustment factor of TOG exhaust and TOG evaporative.
For Diesel PM and DEOG, use adjustment factor = 1.0

MSATS	2015 Base	2025 No Build	2025 Build	2040 No Build	2040 Build	2045 No Build	2045 Build	
1,3-Butadiene	0.82	0.27	0.27	0.22	0.22	0.22	0.22	pounds/day
Acetaldehyde	4.60	0.56	0.56	0.53	0.53	0.55	0.55	pounds/day
Acrolein	0.17	0.06	0.06	0.05	0.05	0.05	0.05	pounds/day
Benzene	5.31	1.94	1.94	1.45	1.44	1.44	1.44	pounds/day
Diesel PM	21.99	1.99	2.00	1.76	1.77	1.78	1.79	pounds/day
Ethylbenzene	3.33	1.69	1.69	1.17	1.16	1.14	1.13	pounds/day
Formaldehyde	10.37	1.55	1.55	1.39	1.38	1.43	1.43	pounds/day
Naphthalene	0.28	0.14	0.14	0.10	0.10	0.10	0.10	pounds/day
POM	0.24	0.05	0.05	0.03	0.03	0.03	0.03	pounds/day
DEOG	55.10	4.85	4.86	4.71	4.71	4.89	4.88	pounds/day
VMT	677,973	758,440	757,430	822,125	821,198	843,353	842,454	
Annual VMT	235,256,461	263,178,651	262,828,049	285,277,280	284,955,630	292,643,489	292,331,491	
*multiply by 347								
Difference			-1,010		-927		-899	
			-0.1%		-0.1%		-0.1%	

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Difference over No Build vs. Build								
	2015 Base	**2025 No Build**	**2025 Build**	**2040 No Build**	**2040 Build**	**2045 No Build**	**2045 Build**	
PM2.5	70.03	55.97	55.91	59.25	59.20	60.68	60.63	pounds/day
PM10	209.15	209.73	209.48	225.97	225.74	231.79	231.57	pounds/day
NOx	1132.29	386.06	386.00	351.79	349.77	362.44	360.41	pounds/day
CO	2775.57	1124.91	1122.00	902.67	898.56	906.93	904.87	pounds/day
HC	255.86	116.92	118.00	84.00	84.00	82.00	82.00	pounds/day
TOG	288.83	126.38	128.20	91.57	89.53	89.98	89.98	pounds/day
ROG	250.13	110.30	112.18	77.32	77.32	75.67	75.67	pounds/day
Changes		**2025**		**2040**		**2045**		
PM2.5		-0.06	-0.10%	-0.05	-0.09%	-0.05	-0.09%	
PM10		-0.25	-0.12%	-0.23	-0.10%	-0.22	-0.10%	
NOx		-0.06	-0.02%	-2.02	-0.57%	-2.02	-0.56%	
CO		-2.91	-0.26%	-4.11	-0.46%	-2.06	-0.23%	
HC		1.08	0.92%	0.00	0.00%	0.00	0.00%	
TOG		1.83	1.44%	-2.03	-2.22%	0.00	0.00%	
ROG		1.88	1.71%	0.00	0.00%	0.00	0.00%	

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EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One

November 20, 2019

Summary

Staff at the California Air Resources Board's (CARB) have estimated the vehicle tailpipe and evaporative emissions impacts from the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program" adopted by the U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA). The SAFE Vehicle Rule Part One impacts some of the underlying assumptions in the EMFAC2014 and EMFAC2017 models. This document provides the off-model adjustment factors that can be used to adjust emissions output from EMFAC model (only EMFAC2014 and EMFAC2017) to account for the impacts of this rule.

What is the SAFE Vehicle Rule Part One?

On September 27, 2019, the United States Environmental Protection Agency (U.S. EPA) and the National Highway Traffic Safety Administration (NHTSA) published the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program." (84 Fed. Reg. 51,310 (Sept. 27, 2019.) The Part One Rule revokes California's authority to set its own greenhouse gas emissions standards and set zero-emission vehicle mandates in California. California expects Part Two of these regulations to be adopted later in the Fall of 2019. We will not know the full impacts of these rules until Part Two is released.

How Does the SAFE Vehicle Rule Impact Criteria Emissions?

As CARB has previously stated[1], both the GHG emission standards and the ZEV sales standards reduce criteria pollutants. As a result of the loss of the ZEV sales requirements, there may be fewer ZEVs sold and thus additional gasoline-fueled vehicles sold in future years. This would increase criteria pollutant emissions in multiple ways. A ZEV inherently has zero evaporative emissions of hydrocarbons in the form of gasoline vapors, which escape from the tank and fuel lines during operation and while parked. A gasoline-fueled vehicle with evaporative emissions is assumed to take the place of each ZEV that will not be sold. This leads to an overall increase in hydrocarbon emissions. Additionally, tailpipe emissions of NOx, hydrocarbons, carbon monoxide, and particulate matter also increase as a result of each additional gasoline-fueled vehicle. This increase occurs for several reasons despite the presence of a criteria pollutant "fleet average" standard[2] that CARB has in place for hydrocarbons

[1] https://ww2.arb.ca.gov/carbs-comments-safe-proposal

[2] The Low Emission Vehicle III program requires manufacturers to average emissions from all vehicles in their fleet to meet the standard. In theory, the elimination of some ZEVs (which are counted in such an

and NOx. First, the fleet average does not apply to particulate matter and carbon monoxide, meaning each incremental gasoline-fueled vehicle generates additional tailpipe emissions of both pollutants. Second, because the fleet average is based on a single test cycle and does not fully capture all operating conditions, additional tailpipe emissions of all criteria pollutants occur for every incremental gasoline-fueled vehicle. Third and most significantly, both tailpipe and evaporative criteria pollutant emissions substantially increase over time due to deterioration of the emission controls on gasoline-fueled vehicles. ZEVs have no such deterioration. Thus, even with the fleet-average standard offsetting a portion of the tailpipe emissions by starting some gasoline-fueled vehicles at lower emission levels early in their life, this slight difference is overwhelmed by the increase in emissions from deterioration over the life of the vehicle.

More stringent ZEV and GHG standards are critical to reach attainment of air quality standards and meet climate needs. If standards cannot become more stringent, these mandates will be very difficult to meet. ZEV technologies, in particular, are needed in both light-duty and heavy-duty fleets to help commercialize this technology. As a result, the long-term threat to air quality is substantial as cleaner technologies, especially ZEVs, do not penetrate the fleet at the scale necessary and emissions are not reduced as needed.

What is EMFAC?

EMission FACtors (EMFAC) is California's federally-approved on-road mobile source emission inventory model that reflects California-specific driving and environmental conditions, fleet mix, and most importantly the impact of California's unique mobile source regulations such as the Low-Emission Vehicle (LEV) program including the LEV II and LEV III standards, California inspection and maintenance programs, and its in-use diesel fleet rules. The EMFAC model supports CARB's regulatory and air quality planning efforts and fulfills the federal Clean Air Act and the Federal Highway Administration's transportation planning requirements. The U.S. EPA has approved both EMFAC2014 and EMFAC2017 for use in state implementation plan (SIP) and transportation conformity analyses. For more information on EMFAC, please visit: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools.

How Did CARB Analyze the SAFE Vehicle Rule Part One's impact on vehicle emissions?

CARB estimated the change in vehicle emissions of the California light-duty vehicle fleet using its EMission FACtor (EMFAC) model. Both EMFAC2014 and EMFAC2017 default models, with an "annual average" setting, were run to estimate statewide vehicle emissions by calendar year, vehicle category, fuel type, and model year

average as zero emissions) would cause some of the remaining or increased number of gasoline-fueled vehicles to need to be certified to lower (cleaner) levels in order to still meet the same fleet average.

projected to occur under the existing Federal and CARB GHG standards and CARB ZEV requirements that were in place at the time of the analysis. These default results were then adjusted in a post-processing step to reflect the proposed SAFE Vehicle Rule[3]. As a result of freezing new ZEV sales at model year 2020 levels, the projected fleet for 2021 and beyond was modified to reflect a lower number of future ZEVs and a corresponding greater number of future gasoline internal combustion engine vehicles (and thus, a higher portion of vehicle miles traveled (VMT) by gasoline vehicles). The increased number of gasoline vehicles were put into appropriate criteria pollutant certification categories under CARB's Low Emission Vehicle (LEV) III criteria pollutant standards to maintain compliance with the required fleet average.

How is EMFAC impacted by the SAFE Vehicle Rule Part One?

Generally, after the SAFE Vehicle Rule Part One becomes effective on November 26, 2019, EMFAC2014 and EMFAC2017 will not accurately estimate future transportation emissions until they are updated with new assumptions reflecting the SAFE Vehicle Rule Part One in off-model adjustment factors provided by CARB.

What are Off-Model Adjustment Factors and how should they be applied?

CARB has prepared off-model adjustment factors for both the EMFAC2014 and EMFAC2017 models to account for the impact of the SAFE Vehicle Rule Part One. These adjustments provided in the form of multipliers can be applied to emissions outputs from EMFAC model to account for the impact of this rule. The adjustment factors are provided in Table 1 for EMFAC2014 and Table 2 for EMFAC2017 (Note these factors do not include upstream emissions associated with fuel demand, as EMFAC only estimates tailpipe and evaporative emissions).

[3] More details can be found in CARB's letter submitted to US EPA and NHTSA on November 6, 2019 available at: https://www.regulations.gov/document?D=NHTSA-2018-0067-12447

Table 1. Off-Model Adjustment Factors for Gasoline Light Duty Vehicle[4] Emissions in **EMFAC2014**

Adjustment Factors for **EMFAC2014** Gasoline Light Duty Vehicles					
Year	NOx Exhaust	TOG Evaporative	TOG Exhaust	PM Exhaust	CO Exhaust
2021	1.0001	1.0001	1.0001	1.0012	1.0004
2022	1.0002	1.0004	1.0001	1.0034	1.0013
2023	1.0005	1.0008	1.0003	1.0066	1.0026
2024	1.0010	1.0014	1.0005	1.0105	1.0041
2025	1.0016	1.0021	1.0009	1.0149	1.0058
2026	1.0022	1.0030	1.0012	1.0183	1.0076
2027	1.0029	1.0039	1.0016	1.0208	1.0095
2028	1.0036	1.0050	1.0020	1.0224	1.0116
2029	1.0044	1.0063	1.0025	1.0241	1.0139
2030	1.0052	1.0078	1.0030	1.0260	1.0162
2031	1.0061	1.0095	1.0036	1.0279	1.0186
2032	1.0071	1.0114	1.0042	1.0299	1.0210
2033	1.0081	1.0134	1.0050	1.0320	1.0235
2034	1.0091	1.0156	1.0059	1.0341	1.0260
2035	1.0103	1.0179	1.0070	1.0362	1.0285
2036	1.0114	1.0202	1.0082	1.0382	1.0309
2037	1.0125	1.0224	1.0096	1.0400	1.0332
2038	1.0137	1.0247	1.0111	1.0418	1.0353
2039	1.0148	1.0269	1.0126	1.0435	1.0372
2040	1.0158	1.0290	1.0141	1.0449	1.0389
2041	1.0167	1.0309	1.0154	1.0461	1.0404
2042	1.0176	1.0326	1.0168	1.0471	1.0418
2043	1.0183	1.0340	1.0180	1.0480	1.0429
2044	1.0190	1.0352	1.0190	1.0487	1.0439
2045	1.0195	1.0364	1.0199	1.0494	1.0448
2046	1.0200	1.0373	1.0206	1.0499	1.0454
2047	1.0204	1.0384	1.0213	1.0504	1.0461
2048	1.0208	1.0393	1.0218	1.0508	1.0467
2049	1.0209	1.0400	1.0221	1.0510	1.0470
2050	1.0210	1.0406	1.0224	1.0512	1.0472

[4] LDA, LDT1, LDT2 and MDV vehicle categories in EMFAC

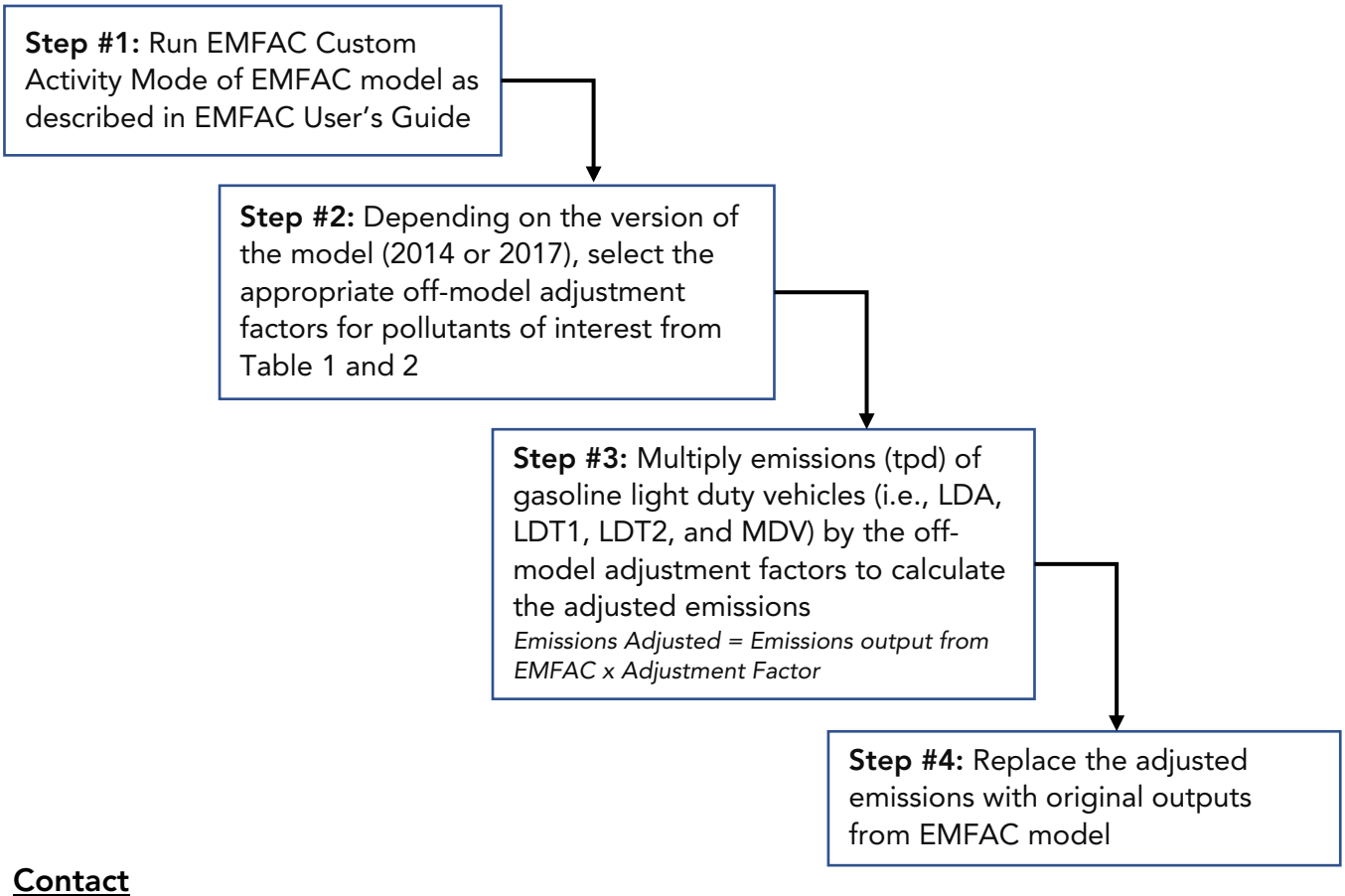
Table 2. Off-Model Adjustment Factors for Gasoline Light Duty Vehicle Emissions in **EMFAC2017**

Adjustment Factors for **EMFAC2017** Gasoline Light Duty Vehicles					
Year	NOx Exhaust	TOG Evaporative	TOG Exhaust	PM Exhaust	CO Exhaust
2021	1.0002	1.0001	1.0002	1.0009	1.0005
2022	1.0004	1.0003	1.0004	1.0018	1.0014
2023	1.0007	1.0006	1.0007	1.0032	1.0027
2024	1.0012	1.0010	1.0011	1.0051	1.0044
2025	1.0018	1.0016	1.0016	1.0074	1.0065
2026	1.0023	1.0022	1.0020	1.0091	1.0083
2027	1.0028	1.0028	1.0024	1.0105	1.0102
2028	1.0034	1.0035	1.0028	1.0117	1.0120
2029	1.0040	1.0042	1.0032	1.0129	1.0138
2030	1.0047	1.0051	1.0037	1.0142	1.0156
2031	1.0054	1.0061	1.0042	1.0155	1.0173
2032	1.0061	1.0072	1.0047	1.0169	1.0189
2033	1.0068	1.0083	1.0052	1.0182	1.0204
2034	1.0075	1.0095	1.0058	1.0196	1.0218
2035	1.0081	1.0108	1.0063	1.0210	1.0232
2036	1.0088	1.0121	1.0069	1.0223	1.0244
2037	1.0094	1.0134	1.0074	1.0236	1.0255
2038	1.0099	1.0148	1.0079	1.0248	1.0265
2039	1.0104	1.0161	1.0085	1.0259	1.0274
2040	1.0109	1.0174	1.0090	1.0270	1.0281
2041	1.0113	1.0186	1.0095	1.0279	1.0288
2042	1.0116	1.0198	1.0099	1.0286	1.0294
2043	1.0119	1.0207	1.0103	1.0293	1.0299
2044	1.0122	1.0216	1.0106	1.0299	1.0303
2045	1.0124	1.0225	1.0109	1.0303	1.0306
2046	1.0125	1.0233	1.0111	1.0308	1.0309
2047	1.0127	1.0240	1.0113	1.0311	1.0311
2048	1.0128	1.0246	1.0115	1.0314	1.0313
2049	1.0128	1.0252	1.0116	1.0316	1.0315
2050	1.0129	1.0257	1.0117	1.0318	1.0316

The off-model adjustment factors need to be applied only to emissions from gasoline light duty vehicles (LDA, LDT1, LDT2 and MDV). Please note that the adjustment factors are by calendar year and includes all model years.

For example, the Custom Activity Mode of EMFAC2014 and 2017 is designed to perform emissions assessments for determining conformity with the state implementation plan. These types of assessments are most often done by various transportation planning agencies and air districts throughout California which require the user to create custom activity data files containing vehicle miles travelled (VMT) and/or speed profile data. This customized activity data will then be used for scaling the default vehicle emissions produced by EMFAC model. The off-model adjustment factors provided in this document can be applied to gasoline light duty vehicle emissions outputs of the EMFAC Custom Activity Mode, as illustrated in Figure 1.

Figure 1. Process to apply EMFAC Off-Model Adjustment Factors



Contact

For questions regarding the EMFAC off-model adjustment factors, please contact us at: EMFAC@arb.ca.gov

Appendix F – CO EPA Letter

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 2 1 2018

Muhaned Aljabiry, Chief
Office of Federal Transportation Management Program
California Department of Transportation
1120 N Street, Rm 4400, MS-82
Sacramento, CA 95814

Dear Mr. Aljabiry:

The U.S. Environmental Protection Agency (EPA) is providing this letter to document that the transportation conformity requirements under Clean Air Action (CAA) section 176(c) for the Carbon Monoxide (CO) maintenance areas included in the table below will end on June 1, 2018. This date marks 20 years from the redesignation of the areas to attainment for the CO National Ambient Air Quality Standard (NAAQS)[1].

California Carbon Monoxide Maintenance Areas

Bakersfield	Chico
Fresno	Modesto
Lake Tahoe North Shore	Lake Tahoe South Shore
Sacramento	San Diego
San Francisco-Oakland-San Jose	Stockton

Under 40 CFR 93.102(b)(4) of the EPA's regulations, transportation conformity applies to maintenance areas through the 20-year maintenance planning period, unless the maintenance plan specifies that the transportation conformity requirements apply for a longer time period. Pursuant to CAA's section 176(c)(5) and as explained in the preamble of the 1993 final rule, conformity applies to areas that are designated nonattainment or are subject to a maintenance plan approved under CAA section 175A. The section 175A maintenance planning period is 20 years, unless the applicable implementation plan specifies a longer maintenance period[2]. The EPA further clarified this conformity provision in its January 24, 2008 final rule[3].

The approved maintenance plan for these areas did not extend the maintenance plan period beyond 20 years from redesignation. Consequently, transportation conformity requirements for CO will cease to apply after June 1, 2018 (i.e., 20 years after the effective date of the EPA's approval of the first 10-year maintenance plan and redesignation of the areas to attainment for the CO NAAQS). As a result, these areas' Metropolitan Planning Organizations may reference this letter to indicate that as of June 1, 2018,

1 *See* 63 FR 15305 (March 31, 1998) (approval of redesignation request and first 10-year maintenance plan) and 70 FR 71776 (November 30, 2005) (approval of second 10-year maintenance plan)
2 *See* 58 FR 62188, 62206 (November 24, 1993)
3 *See* 73 FR 4420, at 4434-5 (January 24, 2008)

transportation conformity requirements no longer apply for the CO NAAQS for Federal Highway Administration / Federal Transit Association projects as defined in 40 CFR 93.101. Even though the conformity obligation for CO has ended, the terms of the maintenance plans remain in effect and all measures and requirements contained in the plans apply until the state submits, and the EPA approves, a revision to the state plan[4]. Such a State Implementation Plan revision would have to comply with the anti-backsliding requirements of CAA section 110(l), and if applicable, CAA section 193, if the intent of the revision is to remove a control measure or to reduce its stringency.

If you have any questions about the transportation conformity requirements, please contact me at (415) 972-3183 or Karina O'Connor of my staff at (775) 434-8176.

Sincerely,

Elizabeth J. Adams

Elizabeth L. Adams
Acting Director, Air Division

cc: Rodeny Langstaff, Caltrans
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Joanne Marchetta, Tahoe Regional Planning Association

4 See *General Motors Corp. v. United States*, 496 U.S. 530 (1990)