

June 10, 2011

Jeremy Ketchum, Environmental Branch Chief
Attention: Ken Lastufka
Department of Transportation, Environmental Planning
2379 Gateway Oaks Dr, Suite 150
Sacramento, CA 95833

RE: I-5 Elk Grove Blvd to Downtown Sacramento Bus/Carpool Lane Project (SAC200701188)

Dear Mr. Ketchum,

The Sacramento Metropolitan Air Quality Management District (SMAQMD or District) is required to "represent the citizens of the Sacramento district in influencing the decisions of other public and private agencies whose actions may have an adverse impact on air quality."¹ Accordingly, the District reviewed the Draft Environmental Impact Report (DEIR) for the I-5 Elk Grove Blvd to Downtown Sacramento Bus/Carpool Lane Project (SAC200701188) and has the following comments regarding emissions that may result from the construction and operation of the project.

Criteria Pollutants: Construction Mitigation

The DEIR appropriately used the Road Construction Emissions Model, Version 6.3.2, to analyze construction emissions. This model serves as a tool to assist lead agencies in disclosing air quality impacts from linear construction projects like this highway project. Unfortunately, although Caltrans used the correct model, the analysis had several deficiencies: (i) the results reported in the DEIR could not be replicated, (ii) there was a significant modeling assumption error, (iii) one source of emissions was not included in the overall emission estimate, and (iv) additional feasible mitigation measures were not incorporated. Consequently, the DEIR construction emissions analysis is inadequate. In addition, the District also has some concerns regarding Caltrans' significance threshold analysis.

Model replication: The DEIR did not include an appendix with the model input and output parameters. The District requested this information, but did not receive it before the comment deadline. We did locate a January 14, 2009 memorandum from Mohammad U. Sadiq, PE to Jennifer Heichel² listing what appear to be the parameters used, but when we ran the model using those values, the results showed daily NO_x emissions were 78.5 pounds per day, not 65.9 pounds per day as shown in the environmental document.

¹ Health & Saf. Code, 40961.

² See pages 166 & 167 from the DEIR's AIR QUALITY ANALYSIS REPORT prepared by Sharon W. Tang

Model assumption error: According to the January 14 memo, the DEIR emission estimate used the average haul trips per day. Because, as discussed below, Caltrans opted to use the District's significance threshold, it must also follow the District's *CEQA Guide to Air Quality Assessment* requirements for applying the thresholds. The Guidelines require "quantification of the maximum daily mass emissions of ROG, NO_x, PM10, and PM2.5 that would be emitted by project construction." The January memo states the maximum soil hauling trips per day would be 300. To find out the maximum daily mass emissions, SMAQMD used the 300 soil haul trips figure, along with the other parameters provided in the memo, and found the maximum daily emissions from the project would be 245.6 pounds of NO_x per day. The model runs for an average day and the maximum day are included in Attachment 1.

Unevaluated emission source: The project includes the reconstruction of a pedestrian bridge over Interstate 5. The emissions generated from this project were not described in this document, however. Analysis of these emissions is a necessary prerequisite to determining whether they will be significant.

Significance threshold: DEIR section 2.12.6.1 - *SMAQMD Thresholds for ROG and NO_x* discusses the District's thresholds for construction emissions. The DEIR notes that "Caltrans has not adopted this significance threshold and is not required to," but then applies the thresholds to support the finding that the project impacts are not significant.

We appreciate the decision to apply the thresholds in this DEIR. That approach is certainly appropriate, because the District is the sole local agency with the primary responsibility for the development, implementation, monitoring and enforcement of air pollution control strategies designed to meet state and federal health-based clean air standards. Consequently, agencies within the district routinely rely on our thresholds in their CEQA determining determinations.³ In fact, virtually every lead agency approving projects within the District has used the thresholds, including: the County of Sacramento, City of Sacramento, City of Citrus Heights, City of Elk Grove, City of Folsom, City of Galt, City of Rancho Cordova, Capital SouthEast Connector Joint-Powers Authority, Army Corps of Engineers, City of Sacramento Unified School District, Elk Grove Unified School District, Reclamation District 1000, Sacramento Housing and Redevelopment Agency, Sacramento Regional County Sanitation District, Grant Joint Union High School District, Freeport Regional Water Authority, Sacramento Area Flood Control Agency, U.S. Department of the Interior's Bureau of Reclamation, Sacramento Regional Transit District, California State Lands Commission, Pacific Gas and Electric Company and Sacramento Municipal Utility District.

In fact, given the broad-based acceptance of the criteria, and the Governor's Office of Planning and Research directive that lead agencies "Harmonize the thresholds with those of other agencies to the extent possible, particularly the technical thresholds of regulatory agencies such as an air quality management district or water quality control board,"⁴ it would be inappropriate for Caltrans to ignore the thresholds without advancing any technical deficiency in the standard. It would be insufficient to simply note that Caltrans is under no legal mandate to adopt the standard. Certainly, such a rationale would not meet the CEQA Guidelines Section 15064 requirement that lead agencies use "careful judgment" in determining significance.

³ Health & Saf. Code, § 40961.

⁴ "Thresholds of Significance: Criteria for Defining Environmental Significance." State of California Governor's Office of Planning and Research. CEQA Technical Advice Series. September 1994. <http://ceres.ca.gov/ceqa/more/tas/Threshold.html>. Accessed June 2011.

Mitigation measures: With respect to reduction of construction emissions, Caltrans has stated that its Standard Specifications Section 14-9.01 would control emissions and Section 14-9.02 would control dust. The standard specifications for 14-9.01, however, are simply statements that Caltrans will not violate existing laws or burn garbage. Compliance with existing requirements (which include prohibitions on burning garbage) does not constitute adequate mitigation if a project exceeds significance thresholds. Here, the maximum soil truck analysis demonstrates that the project will exceed the District's threshold, and since Caltrans has not proposed or justified an alternative significance threshold, additional mitigation in the form of the District's standard mitigation is warranted. We note that Caltrans has participated in projects that have applied this standard mitigation, so there is no apparent reason not to apply all feasible mitigation to this project. Past projects employing the mitigation include the Central Galt Interchange, the Grant Line Road/SR-99 Interchange, the Sheldon Road/SR-99 Interchange, and the Cosumnes River Blvd/I-5 Interchange. The need for mitigation is particularly acute where, as here, the onsite measures could decrease PM exposure to nearby sensitive receptors.

SMAQMD recommends that Caltrans declare construction emissions significant, apply SMAQMD's Basic Construction Emission Control Practices and Enhanced Exhaust Control Practices (attachment 2), and include a mitigation measure that requires monitoring and additional mitigation in the event NO_x emissions exceed the SMAQMD's threshold despite the implementation of standard measures. In that event, emissions would be offset through mitigation fees paid to the District and used to fund cost-effective projects that reduce NO_x in the project area, to the extent possible, and otherwise within the Sacramento air basin. The fee must be calculated using the SMAQMD's current fee rate per ton of NO_x at the time of construction, in addition to SMAQMD administration fees. The fee, at the time of this writing, is \$16,400 per ton of NO_x in addition to a 5 percent administration fee

Criteria Pollutants: Operational Mitigation

In determining the operational significance of the project, the DEIR focused on Regional Conformity, noting that the project is in the MTP and MTIP, and that the Sacramento Area Council of Governments (SACOG) found that it would not result in a violation of the federal ozone standard. The MTP listed specific mitigation measures to be imposed, and the DEIR must, at a minimum, indicate what those measures are and how the project will comply with them.

In addition, the MTP and MTIP anticipated that project-specific environmental analyses would be conducted to assess the potential operational environmental impacts and associated mitigation measures for individual projects.⁵ Consequently, reliance on the MTP and MTIP, without additional analysis of project-specific impacts, is inadequate. As noted above, given the widely-accepted nature of the SMAQMD threshold, Caltrans must either apply it in this project-specific analysis or explain the technical barriers to use of that standard and propose a reasonable alternative threshold. Furthermore, the revised analysis should assess impacts using a 2006 baseline, which was not included in the DEIR analysis. When discussing the impact of the lanes on traffic and the associated impact of air quality, the DEIR uses a hypothetical future baseline and analysis, which is acceptable. But the DEIR should also include an analysis that uses the conditions in place at the time the 2006 Notice of Preparation (NOP) was issued, as required by the recent *Sunnyvale West* decision.⁶ The total daily NO_x emissions in tons for the no build scenario in 2006 are listed as 12.0583, but the DEIR did not investigate

⁵ Metropolitan Transportation Plan for 2035, Draft Program Environmental Impact Report, p. 6-14.

⁶ *Sunnyvale West Neighborhood Association v. City of Sunnyvale City Council* (2010) 190 Cal.App.4th 1351

the build scenarios in 2006. Caltrans must disclose the project impacts if constructed in 2006, and should list the differences between project alternatives and no build in pounds per day.

Greenhouse Gas Analysis & Mitigation

SMAQMD has several concerns with Chapter 3.4, "Climate Change." The DEIR does not disclose all emissions (including construction emissions), does not include a significance determination, and fails to apply feasible mitigation measures.

Incomplete CO₂e Impact Analysis: The DEIR discusses the many factors that make an impact analysis for this project difficult, such as anticipated changes in fuel economy, changes in vehicle types, changes in driver behavior, and others, all resulting in a "cascade of uncertainties." Nevertheless, the DEIR estimates the project's Greenhouse Gas CO₂e (GHG) impact to be 1,736.89 tons/year as compared to a 2006 baseline. SMAQMD appreciates this attempt to quantify the impact. However, this analysis does not appear to include the construction emission impacts. SMAQMD's *CEQA Guide to Air Quality Assessment* states that proponents need to analyze GHG construction emissions and suggests that, since GHG's pose a cumulative-long-term impact, those emissions can be amortized over the life of the project and added to the operational impact.

Significance Determination: Regarding a significance determination, the DEIR, both in Appendix G, section 7 and in the document text, states: "in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change." This refusal to come to a significance determination is inconsistent with the evolving CEQA practice regarding climate change. Four years ago, the California Attorney General responded to this same stance in the DEIR for the San Joaquin Regional Transit Plan. That comment letter⁷ stated:

The draft EIR [for the 2007 San Joaquin County Regional Transportation Plan] also asserts that, in the absence of guidelines or state standards setting project level significance thresholds, it would be speculative to determine whether the GHG emissions related to transportation in the county represent a considerable contribution to a significant cumulative impact. **This is erroneous because even if there is no established threshold in law or regulation, lead agencies are obligated by CEQA to determine significance.** Neither CEQA, nor the regulations, authorize reliance on the lack of an agency-adopted standard as the basis for determining that a project's potential cumulative impact is not significant. As discussed above, the requirements of AB 32 create a point of reference for determining significance. Because the state is committed to a 25% decrease in GHG emissions, anything that produces a large increase clearly could be an obstacle to complying with AB 32 and should be considered a potentially significant cumulative impact. By declining to determine that the GHG emissions from the projects could have a cumulatively considerable impact on global warming, the Council **has attempted to avoid CEQA's requirement to adopt all feasible alternatives and mitigation measures to reduce the project's global warming impacts.** This substantially undercuts "[t]he fundamental purpose of CEQA [which] is to ensure that environmental considerations play a significant role in governmental decision making."

⁷ Office of the Attorney General, comment letter on the 2007 San Joaquin Regional Transit Plan, May 2, 2007 http://ag.ca.gov/globalwarming/pdf/comments_San_Joaquin_RT_Plan.pdf (emphasis added).

The letter also noted in a footnote that:

Even if a project complies with a regulatory plan adopted to address a cumulative environmental problem, this cannot automatically support a finding that the cumulative impact of a project is not significant; an agency must still consider the evidence and circumstances and determine if the possible effects of the project, even with compliance the plan, are still cumulatively considerable. *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 114-116; Cal.Code Regs., tit. 14 § 15064(h)(2)).

Lead agencies all over the state of California have been able to come to well-reasoned determinations of significance regarding the greenhouse gas emissions of their projects, as required by state law. Even in the absence of state or regional thresholds, lead agencies have made these determinations and have been able to apply feasible mitigation for their impacts. Caltrans is required to do the same in its analysis.

Lack of Feasible Mitigation for GHG Impacts: SMAQMD is very concerned that there is a lack of enforceable feasible GHG mitigation identified for this project. The DEIR discusses various Caltrans state-wide strategies to help reduce the project's impact and its contribution to the cumulative climate change effect. Those efforts include the Caltrans' Strategic Growth Plan and a statewide Climate Action Program. SMAQMD staff was not able to find the information about the Climate Action Program, which the DEIR indicated was <http://www.dot.ca.gov/docs/ClimateReport.pdf>. Consequently, the DEIR does not adequately disclose the mitigation for this specific project's impact, rendering the measures unenforceable.

The DEIR goes on to state that *"to the extent that is applicable or feasible for the project, ... the following measures will also be included in the project to reduce the GHG emissions..."* Three measures are discussed, and each appears deficient in some manner. First, the DEIR identifies some traffic operations system elements, including traffic monitoring systems and closed-circuit television cameras within the scope of the project, but there is no calculation of the emission reductions due to these devices. Second, the DEIR identifies some information about limiting idling, but likewise offers no calculation of the GHG savings. Third, the DEIR claims benefits from tree planting, but the trees to be planted are *replacement* plantings for trees lost due to the project. Because these are not additional trees to offset the increased GHG emissions identified from the project, the 7-10 ton CO₂/year claimed reduction does not represent added GHG mitigation. At most, it mitigates the GHG impacts associated with the removal of the trees, which the DEIR failed to analyze.

In addition, all three measures should be included in DEIR Appendix G, "Avoidance and Minimization and/or Mitigation Summary."

In sum, the DEIR fails to fully assess the GHG impact of the project, fails to make a significance determination, and fails to provide enforceable, effective mitigation for this project and its contribution to cumulative GHG impacts.

The Project's Alternatives

While it may or may not be appropriate for this project, the District would like to bring Caltrans attention to the build-a-lane/take-a-lane congestion-priced High Occupancy/Toll (HO/T) alternative. We believe the most successful managed lane facilities have actually been High Occupancy / Toll facilities with two same-direction lanes instead of just one. This model was successfully proven in San Diego County with the Interstate 15 Express Lanes (Caltrans District 11). Travel times for vanpools, carpools, paratransit, buses and emergency vehicles would be more reliable than a single lane, and there would be no capacity loss that normally happens with single carpool lane systems.⁸ Research also suggests there was a positive effect on carpooling in the corridor when congestion tolling occurred⁹

Although carpool lanes like those in the proposed project promote ridesharing in concept, they are ineffective when there is no congestion in the associated mixed-flow lanes,¹⁰ and while California has expanded its carpool lane system to over 1,400 miles, carpooling as a mode share has actually fallen.¹¹ Consequently, the effectiveness of a single carpool lane in reducing air emissions is uncertain.

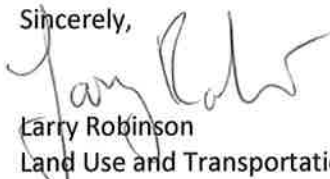
Generally, if Caltrans adopted the build-a-lane and take-a-lane approach for each direction, it would have four congestion management lanes, protecting traffic free flow concerns while minimizing idling emissions. The revenues from the toll could also be dedicated to mitigation measures, such as increased bus service or additional "intelligent transportation system" elements. Given that traditional carpool approaches, like the one included in the proposed project, have been ineffective, the district believes it is critical that Caltrans begin to reassess the ability of dual lane High Occupancy/Toll to improve both congestion and air quality impacts.

General Comments

All projects are subject to SMAQMD rules and regulations in effect at the time of construction. A complete listing of current rules is available at www.airquality.org or by calling 916-874-4800. Specific rules that may relate to construction activities are listed in Attachment 3.

The SMAQMD thanks Caltrans District 3 for the opportunity to comment on this project. Questions regarding these comments may be directed me or to Paul Philley, who can be reached at pphilley@airquality.org or 916-874-4882.

Sincerely,



Larry Robinson
Land Use and Transportation Program Coordinator
Sacramento Metropolitan Air Quality Management District

⁸ Effectiveness of High Occupancy Vehicle (HOV) Lanes in the San Francisco Bay Area. Jaimyoung Kwon and Pravin Varaiya. Transportation Research Part C: Emerging Technologies, vol. 16, no. 1, pp. 98-115, Feb. 2008.

⁹ Studying Road Pricing Policy with Panel Data Analysis: The San Diego I-15 HOT Lanes. Jacqueline M. Golob and Thomas F. Golob. University of California Transportation Center, University of California. 2000

¹⁰ Federal-Aid Highway Program Guidance on High Occupancy Vehicle (HOV) Lanes. Chapter II Concept, Background, and History. August 2008 <http://ops.fhwa.dot.gov/freewaymgmt/hovguidance/chapter2.htm> Accessed June 2011.

¹¹ US Census journey to work data for California. See Attachment 4

c: Larry Greene, Air Pollution Control Officer/CEO, SMAQMD
Kathy Pittard, District Counsel, SMAQMD

Attachments

1 – Roadway Construction Model Runs

2 – SMAQMD's Construction Emissions Control Practices

3 – SMAQMD Rules and Regulations Statement


4 – Carpooling as a Percent of Mode Share

1 – Roadway Construction Model Runs

Road Construction Emissions Model Version 6.3.2

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 asterisk is required to enter information in cells C19 through C25.



Input Type

Project Name: caltrans I-5 carpool lanes

Construction Start Year: 2012 (Enter a Year between 2005 and 2025 (inclusive))

Project Type: 2 (1 New Road Construction, 2 Road Widening, 3 Bridge/Overpass Construction)

Project Construction Time: 36.0 months

Predominant Soil Site Type: Enter 1, 2, or 3: 1 (1. Sand Gravel, 2. Weathered Rock-Earth, 3. Blasted Rock)

Project Length: 12.8 miles

Total Project Area: 93.0 acres

Maximum Area Disturbed/Day: 2.0 acres

Water Trucks Used?: 1 (1. Yes, 2. No)

Soil Imported: 0.0 yd³/day

Soil Exported: 500.0 yd³/day

Average Truck Capacity: 20.0 yd³ (assume 20 if unknown)

Clear Data Input & User Overrides

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 the spreadsheet.

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 C24 through C27.

Construction Periods	User Override of Construction Months	Program Calculated Months	2005	%	2006	%	2007	%	2
Grubbing/Land Clearing		3.60	0.00	0.00	0.00	0.00	0.00	0.00	0
Grading/Excavation		14.40	0.00	0.00	0.00	0.00	0.00	0.00	0
Drainage/Utilities/Sub-Grade		12.60	0.00	0.00	0.00	0.00	0.00	0.00	0
Paving		5.40	0.00	0.00	0.00	0.00	0.00	0.00	0
Totals	0.00	36.00							

Soil hauling emission default values can be overridden in cells C45 through C48.

Soil Hauling Emissions	User Override of Soil Hauling Defaults	Default Values
User Input		
Miles/round trip	25.00	30
Round trips/day	25.00	25
Vehicle miles traveled/day (calculated)		625

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> caltrans I-5 carpool lanes		Total			Exhaust			Fugitive Dust		
Project Phases (English Units)	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)	CO2 (lbs/day)
Grubbing/Land Clearing	15.7	56.5	63.8	24.4	4.4	20.0	8.1	4.0	4.2	7,536.5
Grading/Excavation	17.4	85.2	78.5	25.0	5.0	20.0	8.6	4.4	4.2	10,600.6
Drainage/Utilities/Sub-Grade	13.1	50.8	54.3	23.8	3.8	20.0	7.6	3.5	4.2	7,307.8
Paving	11.3	44.0	39.9	3.4	3.4	-	3.1	3.1	-	5,527.1
Maximum (pounds/day)	17.4	85.2	78.5	25.0	5.0	20.0	8.6	4.4	4.2	10,600.6
Total (tons/construction project)	5.9	25.5	25.0	8.4	1.7	6.7	2.9	1.5	1.4	3,338.3
Notes:	Project Start Year ->	2012								
	Project Length (months) ->	36								
	Total Project Area (acres) ->	93								
	Maximum Area Disturbed/Day (acres) ->	2								
	Total Soil Imported/Exported (yd ³ /day)->	500								

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

Emission Estimates for -> caltrans I-5 carpool lanes		Total			Exhaust			Fugitive Dust		
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	7.1	25.7	29.0	11.1	2.0	9.1	3.7	1.8	1.9	3,425.7
Grading/Excavation	7.9	38.7	35.7	11.4	2.3	9.1	3.9	2.0	1.9	4,818.5
Drainage/Utilities/Sub-Grade	6.0	23.1	24.7	10.8	1.7	9.1	3.5	1.6	1.9	3,321.7
Paving	5.1	20.0	18.1	1.5	1.5	-	1.4	1.4	-	2,512.3
Maximum (kilograms/day)	7.9	38.7	35.7	11.4	2.3	9.1	3.9	2.0	1.9	4,818.5
Total (megagrams/construction project)	5.3	23.1	22.7	7.6	1.5	6.1	2.7	1.4	1.3	3,027.9
Notes:	Project Start Year ->	2012								
	Project Length (months) ->	36								
	Total Project Area (hectares) ->	38								
	Maximum Area Disturbed/Day (hectares) ->	1								
	Total Soil Imported/Exported (meters ³ /day)->	382								


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

Road Construction Emissions Model Version 6.3.2

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 C10 through C25.



Input Type

Project Name: caltrans I-5 carpool lanes

Construction Start Year: 2012 (Enter a Year between 2005 and 2025 (inclusive))

Project Type: 2 (1 New Road Construction, 2 Road Widening, 3 Bridge/Overpass Construction)

Project Construction Time: 36.0 months

Predominant Soil/Site Type: Enter 1, 2, or 3: 1 (1 Sand Gravel, 2 Weathered Rock-Earth, 3 Blasted Rock)

Project Length: 12.8 miles

Total Project Area: 93.0 acres

Maximum Area Disturbed/Day: 2.0 acres

Water Trucks Used?: 1 (1 Yes, 2 No)

Soil Imported: 0.0 yd³/day

Soil Exported: 500.0 yd³/day

Average Truck Capacity: 20.0 yd³ (assume 20 if unknown)

Clear Data Input & User Overrides

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

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 C34 through C37.

Construction Periods	User Override of Construction Months	Program Calculated Months	2005	%	2006	%	2007	%
Grubbing/Land Clearing		3.60	0.00	0.00	0.00	0.00	0.00	
Grading/Excavation		14.40	0.00	0.00	0.00	0.00	0.00	
Drainage/Utilities/Sub-Grade		12.60	0.00	0.00	0.00	0.00	0.00	
Paving		5.40	0.00	0.00	0.00	0.00	0.00	
Totals	0.00	36.00						

Soil hauling emission default values can be overridden in cells C45 through C48.

Soil Hauling Emissions	User Override of	Default Values
User Input	Soil Hauling Defaults	
Miles/round trip	25.00	30
Round trips/day	200.00	25
Vehicle miles traveled/day (calculated)		7500

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> caltrans I-5 carpool lanes											
Project Phases (English Units)	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)	CO2 (lbs/day)	
Grubbing/Land Clearing	15.7	56.5	63.8	24.4	4.4	20.0	8.1	4.0	4.2	7,536.5	
Grading/Excavation	30.9	174.3	245.6	31.5	11.5	20.0	14.0	9.9	4.2	38,936.0	
Drainage/Utilities/Sub-Grade	13.1	50.8	54.3	23.8	3.8	20.0	7.6	3.5	4.2	7,307.8	
Paving	11.3	44.0	39.9	3.4	3.4	-	3.1	3.1	-	5,527.1	
Maximum (pounds/day)	30.9	174.3	245.6	31.5	11.5	20.0	14.0	9.9	4.2	38,936.0	
Total (tons/construction project)	8.0	39.6	51.4	9.5	2.7	6.7	3.8	2.4	1.4	7,826.6	

Notes:

- Project Start Year -> 2012
- Project Length (months) -> 36
- Total Project Area (acres) -> 93
- Maximum Area Disturbed/Day (acres) -> 2
- Total Soil Imported/Exported (yd³/day) -> 500

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

Emission Estimates for -> caltrans I-5 carpool lanes											
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)	
Grubbing/Land Clearing	7.1	25.7	29.0	11.1	2.0	9.1	3.7	1.8	1.9	3,425.7	
Grading/Excavation	14.1	79.2	111.6	14.3	5.2	9.1	6.4	4.5	1.9	17,698.2	
Drainage/Utilities/Sub-Grade	6.0	23.1	24.7	10.8	1.7	9.1	3.5	1.6	1.9	3,321.7	
Paving	5.1	20.0	18.1	1.5	1.5	-	1.4	1.4	-	2,512.3	
Maximum (kilograms/day)	14.1	79.2	111.6	14.3	5.2	9.1	6.4	4.5	1.9	17,698.2	
Total (megagrams/construction project)	7.3	35.9	46.7	8.6	2.5	6.1	3.4	2.2	1.3	7,059.0	

Notes:

- Project Start Year -> 2012
- Project Length (months) -> 36
- Total Project Area (hectares) -> 38
- Maximum Area Disturbed/Day (hectares) -> 1
- Total Soil Imported/Exported (meters³/day) -> 382

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

BASIC CONSTRUCTION EMISSION CONTROL PRACTICES

The following practices are considered feasible for controlling fugitive dust from a construction site. Control of fugitive dust is required by District Rule 403 and enforced by District staff.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

The following practices describe exhaust emission control from diesel powered fleets working at a construction site. California regulations limit idling from both on-road and off-road diesel powered equipment. The California Air Resources Board enforces the Idling limitations.

- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.

Although not required by local or state regulation, many construction companies have equipment inspection and maintenance programs to ensure work and fuel efficiencies.

- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

Lead agencies may add these emission control practices as Conditions of Approval (COA) or include in a Mitigation Monitoring and Reporting Program (MMRP).

ENHANCED EXHAUST CONTROL PRACTICES

- The project shall provide a plan for approval by the District demonstrating that the heavy-duty (50 horsepower [hp] or more) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20% NO_x reduction and 45% particulate reduction compared to the most recent California Air Resources Board (ARB) fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. The District's [Construction Mitigation Calculator](#) can be used to identify an equipment fleet that achieves this reduction.
- The project shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40% opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Non-compliant equipment will be documented and a summary provided to the lead agency and District monthly. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The District and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section shall supercede other District or state rules or regulations.
- If at the time of construction, the District has adopted a regulation applicable to construction emissions, compliance with the regulation may completely or partially replace this mitigation. Consultation with the District prior to construction will be necessary to make this determination.

3 - SMAQMD Rules & Regulations Statement

The following statement is recommended as standard condition of approval or construction document language for all development projects within the Sacramento Metropolitan Air Quality Management District (SMAQMD):

All projects are subject to SMAQMD rules and regulations in effect at the time of construction. A complete listing of current rules is available at www.airquality.org or by calling 916.874.4800. Specific rules that may relate to construction activities or building design may include, but are not limited to:

Rule 201: General Permit Requirements. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may require permit(s) from SMAQMD prior to equipment operation. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or heater should contact the District early to determine if a permit is required, and to begin the permit application process. Portable construction equipment (e.g. generators, compressors, pile drivers, lighting equipment, etc) with an internal combustion engine over 50 horsepower are required to have a SMAQMD permit or a California Air Resources Board portable equipment registration.

Other general types of uses that require a permit include dry cleaners, gasoline stations, spray booths, and operations that generate airborne particulate emissions.

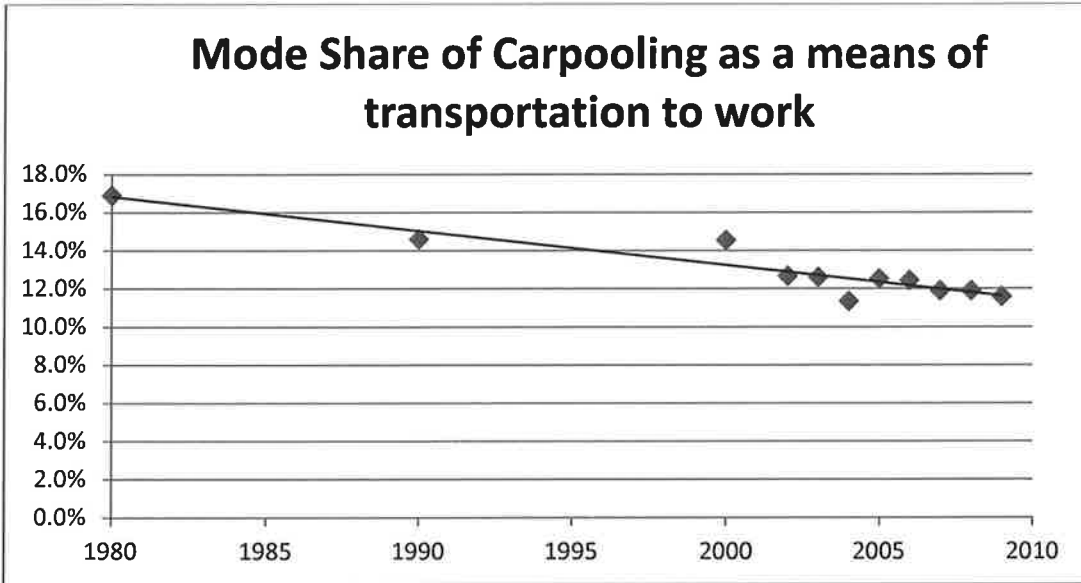
Rule 403: Fugitive Dust. The developer or contractor is required to control dust emissions from earth moving activities or any other construction activity to prevent airborne dust from leaving the project site.

Rule 417: Wood Burning Appliances. Effective October 26, 2007, this rule prohibits the installation of any new, permanently installed, indoor or outdoor, uncontrolled fireplaces in new or existing developments.

Rule 442: Architectural Coatings. The developer or contractor is required to use coatings that comply with the volatile organic compound content limits specified in the rule.

Rule 902: Asbestos. The developer or contractor is required to notify SMAQMD of any regulated renovation or demolition activity. Rule 902 contains specific requirements for surveying, notification, removal, and disposal of asbestos containing material.

4 – Carpooling as a Percent of Mode Share



State of California Dataset

1980, 1990 and 200 from Decennial Census

All other Data from American Community Survey - 1 year dataset