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MEMORANDUM

DATE: January 17, 2014

TO: Alex Menor, Riverside County Transportation Commission
Meredith Cann, Jacobs

FROM: Keith Lay, LSA Associates, Inc.

SUBJECT: Updated Mid County Parkway Project Air Quality, Health Risk, and Greenhouse Gas Analyses

INTRODUCTION

This memorandum summarizes the updated air quality, health risk, and greenhouse gas (GHG) analyses prepared by LSA Associates, Inc. (LSA) for the Mid County Parkway (MCP) project in Riverside County. These updates were prepared in response to comments received during public review of the Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (Recirculated Draft EIR/Supplemental Draft EIS) for the MCP project. The project area is in western Riverside County, primarily along or parallel to the existing Ramona Expressway.

AIR QUALITY ANALYSIS

Short-term Construction Emissions

During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by site preparation, excavation, grading, hauling, and other activities related to construction. Emissions from construction equipment also are anticipated and would include carbon monoxide (CO), oxides of nitrogen (NO_x), volatile organic compounds (VOCs), directly-emitted particulate matter (particulate matter less than 2.5 microns in size [$PM_{2.5}$] and less than 10 microns in size [PM_{10}]), and toxic air contaminants such as diesel exhaust PM.

The proposed construction schedule for all improvements is approximately 48 months and is anticipated to be completed by 2020. The construction emissions were estimated for the project using the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Road Construction Emissions Model, Version 7.1.4, a model approved for use within the South Coast Air Basin by the SCAQMD. Construction-related emissions for the MCP project are provided in Table A. As shown in Table A, the NO_X and PM_{10} emissions during construction would exceed the South Coast Air Quality Management District's (SCAQMD) thresholds. These short-term impacts during construction of the MCP Build Alternatives and their design variations would be adverse and potentially significant under the California Environmental Quality Act (CEQA). The total PM_{10} and $PM_{2.5}$ emissions listed in Table A include reductions in fugitive dust based on implementation of the standard SCAQMD construction measures. Implementing Measure AQ-1, provided later, would further reduce construction-related fugitive dust emissions. By restricting operations and requiring that newer construction equipment be used on site, Measure AQ-2 would reduce the stationary and mobile source emissions to below those listed in Table A. Under Measure AQ-2, all off-road construction

equipment with a rated horsepower (hp) exceeding 75 hp would be required to meet or exceed the United States Environmental Protection Agency's (EPA's) Tier 3 off-road diesel engine standards. Because there are no Tier 3 standards, all equipment under 75 hp would be required to meet Tier 2 engine standards. Table B lists the construction emissions after implementation of Measures AQ-1 and AQ-2. At this time it is unknown where electricity from power poles can be used to replace diesel generators or when solar powered message signs can be used. Therefore, the emissions listed in Table 4.III.B do not take credit for these requirements of Mitigation Measure AQ-2. EPA's Tier 2 and Tier 3 off-road diesel engine standards do not affect the results of the SMAQMD's Road Construction Emission Model for CO. Therefore, the CO emissions in Tables A and B are the same. As shown in Table B, the construction emissions would continue to exceed the SCAQMD's NO_X and PM_{10} thresholds. Therefore, the short-term construction emissions would result in a significant unavoidable impact after mitigation under CEQA based on the SCAQMD significance thresholds.

Table A: Maximum Project Construction Emissions before Mitigation (lbs/day)

Project Phases	ROGs	CO	NO_X	Total PM_{10}	Total $PM_{2.5}$
Grubbing/Land Clearing	16.9	87.8	173.0	157.6	38.0
Grading/Excavation	34.9	172.5	396.9	167.8	46.9
Drainage/Utilities/Sub-Grade	16.4	92.5	147.1	157.9	38.3
Paving	8.3	67.9	67.6	3.7	3.3
Maximum	34.9	172.5	396.9	167.8	46.9
SCAQMD Thresholds	**75**	**550**	**100**	**150**	**55**

Source: LSA Associates, Inc., January 2014.
CO = carbon monoxide
lbs/day = pounds per day
NO_X = oxides of nitrogen
PM_{10} = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
ROGs = reactive organic gases
SCAQMD = South Coast Air Quality Management District

Table B: Maximum Project Construction Emissions after Mitigation (lbs/day)

Project Phases	ROGs	CO	NO_X	Total PM_{10}	Total $PM_{2.5}$
Grubbing/Land Clearing	5.7	87.8	101.8	155.4	36.1
Grading/Excavation	11.9	172.5	259.9	162.3	41.8
Drainage/Utilities/Sub-Grade	6.3	92.5	107.4	156.5	37.0
Paving	4.0	67.9	65.0	4.6	4.1
Maximum	11.9	172.5	259.9	162.3	41.8
SCAQMD Thresholds	**75**	**550**	**100**	**150**	**55**

Source: LSA Associates, Inc., January 2014.
CO = carbon monoxide
lbs/day = pounds per day
NO_X = oxides of nitrogen
PM_{10} = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
ROGs = reactive organic gases
SCAQMD = South Coast Air Quality Management District

The construction emissions listed in Table A include emissions generated by material deliveries, worker trips, soil import and export, water trucks, generators, pumps, signal boards, and off-road equipment such as graders, scrapers, and loaders. The on-road emissions are based on 130 haul truck trips per day with a round trip distance of 30 miles and up to 75 employee trips per day with a round trip distance of 40 miles. All on-site construction equipment is operating for eight hours per day.

Long-Term Operational Emissions

As shown in Table C, when the project trips are added to the Baseline/Existing (2008) conditions, the regional vehicle emissions would decrease for all the criteria pollutants. However, as shown in Tables D and E, when the project trips are added to the 2020 and 2040 No Build conditions, respectively, the regional emissions increase for all the criteria pollutants. The change in CO, reactive organic gases (ROGs), and NO_X emissions would exceed the SCAQMD's significance thresholds. ROG and NO_X are precursors to ozone (O_3), a pollutant for which the SCAB is currently in nonattainment for the federal and State standards. Therefore, although the SCAQMD has not set a significance threshold for O_3, the project could result in a substantial O_3 impact. Because RCTC does not have legal authority to control on-road vehicle emissions, there are no mitigation measures that can be implemented by RCTC to reduce the emissions to below the SCAQMD significance thresholds. In addition, the SCAQMD's Regional Clean Air Incentives Program (RECLAIM) is aimed at offsetting emissions generated by new facilities not on-road emissions. Therefore, the project's impact to long-term regional emissions would be significant and unavoidable under CEQA based on the SCAQMD's significance thresholds.

Table C: 2008 Regional Vehicle Emissions (lbs/day)

Alternative	CO	ROG	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2
No Build	465,705	25,676	143,299	558	6,878	4,641	57,051,890
Alt 4 Mod	442,079	24,468	136,292	530	6,526	4,412	54,185,822
Change from No Build	-23,626	-1,208	-7,007	-27	-351	-229	-2,866,069
Alt 5 Mod	441,100	24,404	136,049	529	6,511	4,401	54,045,450
Change from No Build	-24,605	-1,272	-7,250	-29	-367	-240	-3,006,440
Alt 9 Mod	441,454	24,427	136,165	529	6,516	4,405	54,091,127
Change from No Build	-24,250	-1,249	-7,134	-29	-362	-236	-2,960,763
SCAQMD Significance Thresholds	**550**	**55**	**55**	**150**	**150**	**55**	**N/A**

Source: Iteris and LSA Associates, Inc., May 2012.
Alt = Alternative
CO = carbon monoxide
CO_2 = carbon dioxide
lbs/day = pounds per day
Mod = Modified
N/A = Not Applicable
NO_X = nitrogen oxides
PM_{10} = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
ROG = reactive organic gases
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides

Table D: 2020 Regional Vehicle Emissions (lbs/day)

Alternative	CO	ROG	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2
2008 Existing	465,705	25,676	143,299	558	6,878	4,641	57,051,890
2020 No Build	266,465	14,067	78,654	844	8,675	5634	87,631,280
Alt 4 Mod	266,858	14,107	78,935	846	895	5647	87,885,919
Change from Existing	-198,847	-11,569	-64,364	288	1,818	1006	30,834,029
Change from No Build	393	40	280	2	20	13	254,639
Alt 5 Mod	266,801	14,100	78,905	846	8,692	5645	87,853,255
Change from Existing	-198,904	-11,576	-64,397	288	1,815	1004	30,801,365
Change from No Build	336	34	248	2	17	11	221,975
Alt 9 Mod	266,952	14,115	78,930	847	8,697	5649	87,906,784
Change from Existing	-198,753	-11,561	-64,368	289	1,819	1008	30,854,894
Change from No Build	487	48	276	3	22	15	275,504
SCAQMD Significance Thresholds	**550**	**55**	**55**	**150**	**150**	**55**	**N/A**

Source: Iteris and LSA Associates, Inc., May 2012.

Alt = Alternative
CO = carbon monoxide
CO_2 = carbon dioxide
lbs/day = pounds per day
Mod = Modified
N/A = Not Applicable
NO_X = nitrogen oxides
PM_{10} = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
ROG = reactive organic gases
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides

Table E: 2040 Regional Vehicle Emissions (lbs/day)

Alternative	CO	ROG	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2
2008 Existing	465,705	25,676	143,299	558	6,878	4,641	57,051,890
2040 No Build	201,123	11,003	52,130	1,196	11,582	7,272	125,539,130
Alt 4 Mod	201,720	11,057	52,327	1,200	11,623	7,301	126,057,775
Change from Existing	-263,985	-14,619	-90,972	642	4,746	2,660	69,005,884
Change from No Build	597	54	197	5	42	29	518,645
Alt 5 Mod	201,720	11,056	52,323	1,200	11,623	7,300	126,043,848
Change from Existing	-263,985	-14,620	-90,975	642	4,745	2,659	68,991,958
Change from No Build	598	53	194	4	41	27	504,719
Alt 9 Mod	201,914	11,066	52,365	1,201	11,633	7,306	126,150,645
Change from Existing	-263,790	-14,610	-90,934	643	4,755	2,665	69,098,755
Change from No Build	792	63	235	6	51	34	611,515
SCAQMD Significance Thresholds	**550**	**55**	**55**	**150**	**150**	**55**	**NA**

Source: Iteris and LSA Associates, Inc., May 2012.

Alt = Alternative
CO = carbon monoxide
CO_2 = carbon dioxide
lbs/day = pounds per day
Mod = Modified
N/A = Not Applicable
NO_X = nitrogen oxides
PM_{10} = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
ROG = reactive organic gases
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides

Mitigation Measures

AQ-1 **Fugitive Dust Source Controls.** During all site preparation, grading, excavation, and construction, the Riverside County Transportation Commission (RCTC) will require the Construction Contractor to:

- Stabilize open storage piles and disturbed areas by covering them and/or applying water or chemical/organic dust palliative to the disturbed surfaces. This applies to inactive and active sites during workdays, weekends, holidays, and windy conditions.
- Install wind fencing, phase grading operations, and operate water trucks for stabilization of surfaces under windy conditions.
- Limit vehicle speeds to 15 miles per hour (mph) within the project limits.
- Cover loads when hauling material to prevent spillage.
- Limit speed of earthmoving equipment to 10 mph within the project limits.

AQ-2 **Mobile and Stationary Source Controls.** During all site preparation, grading, excavation, and construction, the RCTC Resident Engineer will require the Construction Contractor to:

- Reduce unnecessary idling from heavy equipment by requiring that the construction grading plans include a requirement that work crews will shut off equipment when not in use.
- Use solar-powered, instead of diesel-powered, changeable message signs.
- Use electricity from power poles, rather than from generators, when electricity can be acquired from existing power poles in proximity to the construction areas.
- Maintain and tune engines per manufacturers' specifications to perform at United States Environmental Protection Agency (EPA) certification levels and verified standards applicable to retrofit technologies. The RCTC Resident Engineer will conduct periodic, unscheduled inspections to ensure that there is no unnecessary idling and that construction equipment is properly maintained, tuned, and modified consistent with established specifications.
- Prohibit any tampering with engines and require continuing adherence to manufacturers' recommendations.
- Use new, clean (diesel or retrofitted diesel) equipment meeting the most stringent applicable federal or state standards and commit to the best available emissions control technology. Use Tier 3, or higher, engines for construction equipment with a rated horsepower exceeding 75. Use Tier 2, or higher, engines for construction equipment with a rated horsepower of less than 75. If nonroad construction equipment that meets or exceeds Tier 2 or 3 engine standards is not available, the Construction Contractor will be required to use the best available emissions control technologies on all equipment.
- Use EPA-registered particulate traps and other controls to reduce emissions of diesel particulate matter and other pollutants at the construction site.

HEALTH RISK ANALYSIS

The mobile source air toxics (MSAT) analysis described in Section 3.14, Air Quality, in the Recirculated Draft EIR/Supplemental Draft EIS, indicates that the 2020 and 2040 MSAT emissions in the study area under the MCP Build Alternatives would be very similar to the MSAT emissions under the No Build Alternatives and much lower than existing conditions, largely due to improvements resulting from stricter EPA engine and fuel regulations. Therefore, the MCP Build Alternatives and their design variations would result in less than significant impacts related to MSAT emissions under CEQA. No avoidance, minimization, or mitigation measures are required.

For pollutants without defined significance standards or air contaminants not covered by the standard criteria cited above, the definition of substantial pollutant concentrations varies. For toxic air contaminants (TAC), "substantial" indicates that the individual cancer risk exceeds a threshold considered to be a prudent risk-management level. If best-available control technology for toxics (T-BACT) has been applied, the individual cancer risk to the maximally exposed individual (MEI) must not exceed 10 in 1 million in order for an impact to be determined not to be significant.

The following limits for maximum individual cancer risk (MICR), cancer burden, and noncancer acute and chronic hazard indices (HI) from project emissions of TACs have been established for the South Coast Air Basin[1]:

- **MICR and Cancer Burden.** MICR is the estimated probability of a potential MEI contracting cancer as a result of exposure to TACs over a period of 70 years for residential and 46 years for worker receptor locations. The MICR calculations include multipathway considerations when applicable. Cancer burden is the estimated increase in the occurrence of cancer cases in a population subject to an MICR of greater than or equal to one in one million (1.0 x 10-6) resulting from exposure to TACs.

  The cumulative increase in MICR that is the sum of the calculated MICR values for all TACs emitted from the project will not result in either of the following:

  - An increased MICR greater than 10 in 1 million (1.0 x 10-5) at any receptor location (assumes the project will be constructed with T-BACT)
  - A cancer burden greater than 0.5

- **Chronic HI.** This is the ratio of the estimated long-term level of exposure to a TAC for a potential MEI to its chronic reference exposure level. The chronic HI calculations include multipathway considerations when applicable.

  The cumulative increase in total chronic HI for any target organ system due to total emissions from the project will not exceed 1.0 at any receptor location.

- **Acute HI.** This is the ratio of the estimated maximum 1-hour concentration of a TAC for a potential MEI to its acute reference exposure level.

[1] http://www.aqmd.gov/ceqa/handbook/signthres.pdf, accessed January 8, 2014.

The cumulative increase in total acute HI for any target organ system due to total emissions from the project will not exceed 1.0 at any receptor location.

A screening analysis to determine the short-term health risks associated with the on-site construction diesel vehicles was prepared for the MCP Build Alternatives. This analysis was performed using the SCREEN3 dispersion model, a single source Gaussian plume model which provides maximum ground-level concentrations for point, area, flare, and volume sources. The inhalation cancer risk and inhalation chronic risk were calculated using the peak daily exhaust emissions that would be generated during the grading/excavation phase of construction, the phase with the highest PM_{10} exhaust emissions. The results of the modeling, for distances of 25 to 100 meters (85 to 335 feet) from the construction equipment, are shown in Table F. As shown, the cancer risk threshold of 10 in 1 million and the chronic risk threshold of 1.0 would not be exceeded. Therefore, construction of the MCP Build Alternatives would not result in any adverse health risks to persons near the project, and no avoidance, minimization, or mitigation measures are required.

A screening analysis to determine the long-term health risks associated with the on-road operational diesel vehicles on the MCP facility was prepared for the MCP Alternatives. This analysis was performed using the SCREEN3 dispersion model, a single source Gaussian plume model which provides maximum ground-level concentrations for point, area, flare, and volume sources. The inhalation cancer risk and inhalation chronic risk were calculated using the peak average daily traffic (ADT) volumes for each MCP Alternative. The results of the modeling are shown in Table G. As shown, for a resident living within 20 meters (65 feet) of the roadway centerline, the cancer risk threshold of 10 in 1 million and the chronic risk threshold of 1.0 would not be exceeded by any of the MCP Build Alternatives. Therefore, the MCP project would not result in any adverse health risks to persons near the project, and no avoidance, minimization, or mitigation measures are required.

Table F: Results of Construction Health Risk Assessment Modeling

Distance from Construction Equipment in meters (feet)	Inhalation Cancer Risk No. in 1 Million	Inhalation Chronic Risk Factor
25 (85)	4.34	0.7605
30 (105)	4.27	0.747396
35 (115)	4.2	0.735228
40 (135)	4.06	0.71136
45 (155)	3.88	0.680004
50 (165)	3.7	0.648648
55 (185)	3.5	0.614016
60 (205)	3.37	0.590148
65 (215)	3.2	0.560196
70 (235)	3	0.5265
75 (255)	2.87	0.502164
80 (265)	2.79	0.488124
85 (285)	2.68	0.47034
90 (305)	2.57	0.451105
95 (315)	2.46	0.430888
100 (335)	2.34	0.410436

Source: *LSA Associates, Inc.,* January 2014.
All health risk levels reported are for individuals living 20 m from the roadway centerline. Any person living further from the roadway centerline would experience lower health risk levels.
m = meter

Table G: Results of Operational Health Risk Assessment Modeling

Alternative	Peak Volume ADT	Maximum PM_{10} Concentrations		Inhalation Cancer Risk for Adults No. in 1 Million[1]	Inhalation Cancer Risk for Children No. in 1 Million[1]	Inhalation Chronic Risk Factor[1]
		1-hour ($\mu g/m^3$)	Annual ($\mu g/m^3$)			
Existing	24,400	0.0041	0.00033	0.07	0.014	0.00007
No Build	79,000	0.0132	0.00106	0.24	0.046	0.00021
Alt 4 Mod	93,600	0.0252	0.00201	0.46	0.088	0.00040
Alt 5 Mod	93,400	0.0251	0.00201	0.46	0.088	0.00040
Alt 9 Mod	93,800	0.0252	0.00202	0.46	0.088	0.00040

Source: *Air Quality Analysis,* March 2012.

[1] All health risk levels reported are for individuals living 20 meters (65 feet) from the roadway centerline. Any person living further from the roadway centerline would experience lower health risk levels than shown in this table for persons living within 20 m (65 feet) from the roadway centerline.

ADT = average daily traffic
Alt = Alternative
$\mu g/m^3$ = micrograms per cubic meter of air
m = meter
Mod = Modified
PM_{10} = particulate matter less than 10 microns in diameter

In summary, the construction and operation of the MCP Build Alternatives and their design variations would result in less than significant impacts related to diesel toxics emissions under CEQA. No avoidance, minimization, or mitigation measures are required.

GREENHOUSE GAS ANALYSIS

Thresholds of Significance

Neither the SCAQMD nor Caltrans have established significance thresholds for greenhouse gas emissions for transportation facilities. Therefore, based on the CEQA Guidelines, RCTC has determined that the MCP Build Alternatives and their design variations would result in significant effects related to greenhouse gas emissions if they:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Long-Term Operational Emissions

The *Traffic Technical Study* (April 2011) calculated the daily vehicle miles traveled (VMT) and daily vehicle hours traveled (VHT) for all of the vehicle trips within the MCP region. This traffic data, in conjunction with the EMFAC2007 emission model, was used to calculate the carbon dioxide (CO_2)

emissions for the Existing, 2020, and 2040 regional conditions. As shown in Table H, the existing plus MCP Build Alternatives would result in a 5 percent reduction in CO_2 emissions in the region compared to existing conditions. In 2020 and 2040, when compared to the 2020 and 2040 without project conditions, the MCP Build Alternatives would result in a small increase (less than 1 percent). This small increase in CO_2 emissions is due to the increased regional VMT associated with existing trips being diverted to the proposed facility.

Table H: Change in Regional CO_2 Emissions

Alternative	Daily CO_2 Emissions (lbs/day)	Increase from Existing (lbs/day)	Increase from No Project (lbs/day)	Percent Increase from No Project
Existing (2008)	57,051,980	-	-	-
Existing + Alt 4 Mod	54,185,822	-2,866,069	-2,866,069	-5%
Existing + Alt 5 Mod	54,045,450	-3,006,440	-3,006,440	-5%
Existing + Alt 9 Mod	54,091,127	-2,960,763	-2,960,763	-5%
2020 No Build	87,631,280	30,579,300	-	-
2020 Alt 4 Mod	87,885,919	30,833,939	254,639	0.29%
2020 Alt 5 Mod	87,853,255	30,801,275	221,975	0.25%
2020 Alt 9 Mod	87,906,784	30,854,804	275,504	0.31%
2040 No Build	125,539,130	68,487,150	-	-
2040 Alt 4 Mod	126,057,775	69,005,795	518,645	0.41%
2040 Alt 5 Mod	126,043,848	68,991,868	504,719	0.40%
2040 Alt 9 Mod	126,150,645	69,098,665	611,515	0.49%

Source: LSA Associates, Inc., 2012.
Alt = Alternative
CO_2 = carbon dioxide
lbs/day = pounds per day
Mod = Modified

Construction Emissions

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays due to construction. The maximum amounts of construction-related emissions during a peak construction day for the MCP Build Alternatives are presented in Table I. Those emissions are based on the best information available at the time of calculations and assume that the schedule for all improvements is anticipated to take approximately 48 months, beginning in 2016 and ending in 2020. The construction emissions were estimated for the project using the Sacramento Metropolitan Air Quality Management District's (SMAQMD's) Road Construction Emissions Model, Version 7.1.4, a model approved for use within the South Coast Air Basin by the SCAQMD. The project schedule and disturbed area would be similar for all the Build Alternatives; therefore, the emissions listed in Table I would apply to Alternatives 4 Modified, 5 Modified, and 9 Modified.

The construction emissions listed in Table I include emissions generated by material deliveries, worker trips, soil import and export, water trucks, generators, pumps, signal boards, and off-road equipment such as graders, scrapers, and loaders. The on-road emissions are based on 130 haul truck trips per day with a round trip distance of 30 miles and up to 75 employee trips per day with a round trip distance of 40 miles. All on-site construction equipment is operating for eight hours per day.

Table I: Maximum Project Construction Greenhouse Gas Emissions

Project Phases	CO_2 (lbs/day)
Grubbing/Land Clearing (lbs/day)	18,741.0
Grading/Excavation (lbs/day)	48,844.7
Drainage/Utilities/Sub-Grade (lbs/day)	19,564.1
Paving (lbs/day)	12,330.7
Maximum (lbs/day)	48,844.7
Total (metric tons/construction project)	**15,344**

Source: LSA Associates, Inc., January 2014.
CO_2 = carbon dioxide
lbs/day = pounds per day

Total Emissions

Table J lists the total increase in GHG emissions that would be generated by each MCP Build Alternative between 2020 and 2040, the years for which traffic data is available and the project is expected to be operational. The annual operational emissions were calculated by multiplying the daily increase in CO_2 emissions by 365 days. As shown in Table J, over a 20-year period (20 years is the minimum pavement design life per Topic 612 in the Caltrans Highway Design Manual, 2012), the Build Alternatives would add 1,263,293 to 1,542,003 metric tons of CO_2 to the project region, depending on the Build Alternative. When added to the 15,344 metric tons of CO_2 that would be generated during construction, it is estimated that the MCP project would generate up to 1,557,347 metric tons of CO_2 in the project area over the 20-year period.

Table J: Total Increase in Regional CO_2 Emissions (Metric Tons) between 2020 and 2040

Alternative	Operational Emissions (On-road Vehicles)	Construction Emissions	Total Emissions	Percent of GHG Emissions Generated by On-Road Vehicles
Alt 4 Mod	1,344,285	15,344	1,359,629	98.9%
Alt 5 Mod	1,263,293	15,344	1,278,637	98.8%
Alt 9 Mod	1,542,003	15,344	1,557,347	99.0%

Source: LSA Associates, Inc., January 2014.
Alt = Alternative
CO_2 = carbon dioxide
GHG = greenhouse gas
Mod = Modified

Measures AQ-2 and AQ-3, listed in Section 3.14.4 of the Recirculated Draft EIR/Supplemental Draft EIS, would reduce the GHG emissions generated by on-site construction equipment. However, as shown in Table J, 98 to 99 percent of the emissions of the Build Alternatives would be generated by operational emissions from on-road vehicles. Therefore, these mitigation measures would not measurably reduce the emissions listed in Table J.

CEQA Conclusion

As stated above, neither the SCAQMD nor Caltrans have established significance thresholds for greenhouse gas emissions for transportation facilities. Therefore, RCTC has used the CEQA Guidelines to determine the significant effects of the MCP Build Alternatives and their design variations related to greenhouse gas emissions.

The existing conditions in 2008 plus MCP project alternatives would result in a 5 percent reduction in CO_2 emissions within the region when compared to the existing conditions. However, as discussed above, the MCP project would result in a small increase (less than 1 percent) in CO_2 emissions within the region in 2020 and 2040 when compared to the 2020 and 2040 without project conditions. As shown in Table J, it is estimated that the MCP project would contribute up to 1,557,347 metric tons of CO_2 to the project area between 2020 and 2040. CEQA says that there is no "iron clad definition of significant effect" (State CEQA Guidelines Section 15064(b)), and so leaves it to a lead agency's discretion to determine when GHG emission are significant under CEQA (State CEQA Guidelines, Section 15064.4.) Therefore, in the absence of a state-established numerical threshold and in an abundance of caution, RCTC has concluded that RCTC has concluded that the proposed project would generate GHG emissions that may have a significant impact on the environment.

Within its 2011 update to the 2008 AB 32 Scoping plan, ARB determined that under Business-as-usual (BAU) conditions that the State's 2020 GHG emissions would be 507 million metric tons. According to Executive Order S-3-05, California is required to reduce its annual emissions to 1990 levels by 2020. ARB has established that the level of annual GHG emissions in 1990 for California was 427 million metric tons of "CO_2 equivalence" (CO_2e). To meet the 427 million metric ton goal the State would need to reduce the 2020 emissions by 80 million metric tons or approximately 15.8 percent from BAU. Based on the results shown in Table H, in 2020 the proposed project would add up to 45,600 metric tons of CO_2 to the project area. By adding emissions to the project area that would not be generated under the no-build conditions, the proposed build alternatives could delay the State's goal of reducing the GHG emissions to 1990 levels by 2020. Therefore, the proposed project would conflict with the emission reduction goals in AB 32.

The majority (up to 99 percent as shown in Table J) of these emissions is generated by on-road vehicles. Because RCTC does not have the legal authority to control on-road vehicle emissions, there are no measures that can be implemented by RCTC to reduce that impact to less than significant under CEQA. In addition, RCTC lacks the land use authority to construct off-site GHG reducing facilities, such as solar or wind farms, capable of offsetting some or all of the project's GHG emissions. Therefore, the MCP Build Alternatives would result in a significant unavoidable adverse impact due to generation of GHG emissions.

Attachments: Construction Emission Calculations
Regional Emission Calculations
Health Risk Assessment Modeling