FEHR PEERS

Memorandum

Date: February 25, 2021

To: Stephanie Blanco, RCTC
Mark Hager, P.E., HDR

From: Jason D. Pack, P.E.
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Subject: DRAFT Vehicle Miles Traveled (VMT) Analysis for the I-15 Express Lanes Southern Extension (ELPSE) Project

OC19-0632

Intent

This memorandum summarizes VMT estimates for the I-15 Express Lanes Southern Extension (ELPSE) project. It is organized into the following key topic areas:

- Introduction to the importance of VMT and guidance provided by Caltrans
- VMT Analysis methodology and analysis results
- VMT Threshold of Significance Discussion
- VMT Minimization Recommendations

Introduction

California Senate Bill (SB) 743 changes the focus of transportation impact analysis under the California Environmental Quality Act (CEQA) from measuring impacts to drivers, to measuring the impact of driving. More specifically, SB 743 changes the way that significance related to traffic impacts is determined under CEQA. The change is being made by replacing level of service (LOS) with vehicle miles of travel (VMT) and providing streamlined review of land use and transportation projects that are expected to help reduce future VMT growth. This shift in transportation impact focus is expected to better align transportation impact analysis and mitigation outcomes with the State's goals to reduce greenhouse gas (GHG) emissions, encourage infill development, and improve public health through more active transportation.

In January 2019, the Natural Resources Agency finalized updates to the CEQA Guidelines including the incorporation of SB 743 modifications. The Guidelines changes were approved by the Office of Administrative Law and are now in effect. Specific to SB 743, Section 15064.3(c)

states, "A lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide."

Caltrans has completed the following three guidance documents for implementing SB 743 for both intergovernmental review and for projects on the state highway system:

- Transportation Impact Study Guide (TISG) for land use reviews – provides guidance for Caltrans' intergovernmental reviews
- Transportation Analysis Framework (TAF) – provides VMT analysis methodology guidance for projects on the state highway system
- Transportation Analysis under CEQA (TAC) – provides guidance for incorporating VMT assessment into CEQA documents for projects on the state highway system.

Furthermore, Caltrans completed a VMT Analysis Screening form to inform level of effort required for the ELPSE project with respect to SB 743 compliance consistent with their process. That screening form indicated the following facts about the project:

- The project was initiated after December 28, 2018 (Project initiated October 11, 2019)
- The project has achieved Caltrans Milestone 020 (Begin Environmental) before September 15, 2020 (Project began environmental July 3, 2019)

Per the Caltrans' screening memo, projects that achieve that milestone prior to September 15, 2020 may not be required to do VMT analysis and provided further direction that the typical method for estimating VMT analysis for use in GHG emissions, air quality emissions, energy impacts, and noise assessment will suffice for VMT assessment for this project.

VMT Analysis

Methodology

The Riverside County Transportation Analysis Model (RIVTAM) was used to calculate VMT for this project. RIVTAM includes detailed roadway and land use information for local conditions of the study area and has been calibrated for use in Riverside County. Additionally, it underwent an extensive sub-area calibration process to ensure that the model was able to accurately project traffic volumes in the study area specifically for the I-15 ELPSE project.

Seven VMT forecasts were developed for the project as listed below. Please note, the project proposes only one Build alternative (dual express lanes in each direction) but our VMT assessment also contemplates VMT metrics if two general purpose lanes are constructed in lieu of the express lanes. This scenario is for comparative purposes only and provides contextual information related to the benefits of managed lanes on the system.

- Existing (2019) Conditions
- Opening Year (2030) No-Build Alternative
- Opening Year (2030) Build Alternative (dual express lanes)

- Opening Year (2030) with Dual General Purpose Lanes
- Design Year (2050) No-Build Alternative
- Design Year (2050) Build Alternative (dual express lanes)
- Design Year (2050) with Dual General Purpose Lanes

VMT estimates for opening year were estimated by factoring the growth by TAZ between the base year and future year to interpolate growth to the opening year condition. Additionally, the model network improvements expected to be completed by year 2030 were the only improvements included in the assessment. Finally, the external-external trip matrices were factored after the first assignment loop to adjust that trip matrix to account for through trips in the study area.

VMT was processed into speed bins for use in other technical studies. Specifically, we identified speed bins into 5 MPH "buckets" and used the travel demand model to estimate the amount of VMT per "bucket" or speed bin. Typically, when preparing this information, we limit the geography of the information to a boundary around the study corridor such that VMT outside of the study region does not create noise within the modeling that is outside of the area of influence of the project.

Fehr & Peers tested a variety of geographies for potential inclusion in the assessment and identified that a five-mile buffer around the project limited model noise, resulted in estimates that matched our expectations related to magnitude and direction of change, and generally resulted in the most conservative (e.g. highest) VMT estimates when considering the Opening Year and Design Year conditions. The five-mile buffer surrounds the study corridor and includes all transportation facilities that are included in the travel demand model consisting of City, County, and Caltrans facilities. Exhibit A shows the extents of the five-mile buffer utilizes and the facilities it includes.

It should also be noted that VMT for development projects is typically reviewed through the use of an efficiency metric (e.g. VMT per person or per capita). Although this is appropriate for land use projects, it is typically not utilized for transportation projects as a significant number of trips traversing through a transportation project study area originate outside of a specific geographic area (whereas land use destinations occur in a single location). For discussion and comparative purposes, we have included VMT per capita using the five-mile buffer VMT information and using the WRCOG regional population estimates.

Results

Exhibit B summarizes the total VMT for the five-mile buffered area. Exhibit C compares the change in VMT between the No Project and Plus Project Scenarios. Exhibit D summarizes the VMT per Capita for the five-mile buffered area (capita estimates represent the entire WRCOG population). The VMT by speed bin results are attached to this memorandum.

Exhibit A: Five-Mile Buffer Area

Exhibit B: VMT Summary

Boundary Method VMT							
Boundary	Base Year (2018)	Opening Year 2030 No Project (NP)	Opening Year (2030) With ELPSE	Opening Year (2030) with General Purpose (GP) Lanes	Design Year 2050 NP	Design Year (2050) With ELPSE	Design Year (2050) with GP Lanes
5-Mile Buffer	9,566,440	15,047,900	15,497,398	15,865,880	15,649,006	16,011,542	17,284,965

Exhibit C: VMT Scenario Comparisons

Boundary Method VMT				
Compare VMT between Scenarios	Opening Year Change in VMT	% Change	Design Year VMT Increase	% Change
General Purpose Growth Over No Project	817,980	5.44%	1,635,959	10.45%
ELPSE Growth over No Project	449,497	2.99%	362,537	2.32%
General Purpose Growth Compared to ELPSE	368,482	2.38%	1,273,422	7.95%

Exhibit D: VMT (5-mile buffer) per Capita (WRCOG Region)

Boundary Method VMT per Capita within WRCOG Region							
Boundary	Base Year (2018)	Opening Year 2030 No Project (NP)	Opening Year (2030) With ELPSE	Opening Year (2030) with General Purpose (GP) Lanes	Design Year 2050 NP	Design Year (2050) With ELPSE	Design Year (2050) with GP Lanes
5-Mile Buffer	5.47	7.31	7.53	7.71	6.61	6.76	7.30

Several conclusions can be made when reviewing VMT the information presented above:

- The ELPSE will increase VMT in both the Opening Year and Design Year compared to the No Build alternatives.
- There is a higher increase in total boundary VMT by 2030 than anticipated between 2030 and 2050. Several factors are likely contributing to this:
    - In the Opening Year, the ELPSE and the ELP are attracting trips that would otherwise be using other routes (such as I-215).
    - In the Design Year, other regional infrastructure improvements are assumed that attract trips that would otherwise be on I-15. This includes CETAP-West, Cajalco Road Widening, and Ethanac Extension.
- The VMT increase associated with the project occurs in higher speed bins; with VMT reductions in lower speed bins. This reflects the travel time efficiencies and increased speeds in the study area attributable to the ELPSE project.
- Although the benefits of increased speeds and reduced congestion will be evaluated in the GHG assessment of the environmental document, reducing congestion typically results in a benefit to the environment as VMT in lower speed bins typically results in increased GHG emissions.
- The General Purpose Lane comparison results in significantly increased VMT relative to the ELPSE; especially under the Design Year horizon. This is consistent with expectations and the increased capacity associated with the General Purpose Lanes as pricing is an effective measure in mitigating VMT for infrastructure projects.
- The VMT/Capita information is helpful when comparing project alternatives, reflecting increased VMT/Capita for the General Purpose Lane comparison compared to the ELPSE alternative; although both build alternatives show increased VMT compared to the No Build alternative.

VMT Threshold of Significance Discussion

VMT Growth Allocation Option

Although the I-15 ELPSE project is screened from specific VMT assessment, it is helpful to discuss potential thresholds of significance that could be considered moving forward. The Caltrans TAF/TAC guidelines do not identify thresholds of significance for determining impacts for VMT infrastructure projects. Instead, the guidelines identify that thresholds should be established on a project-by-project basis using substantial evidence to support the recommendation.

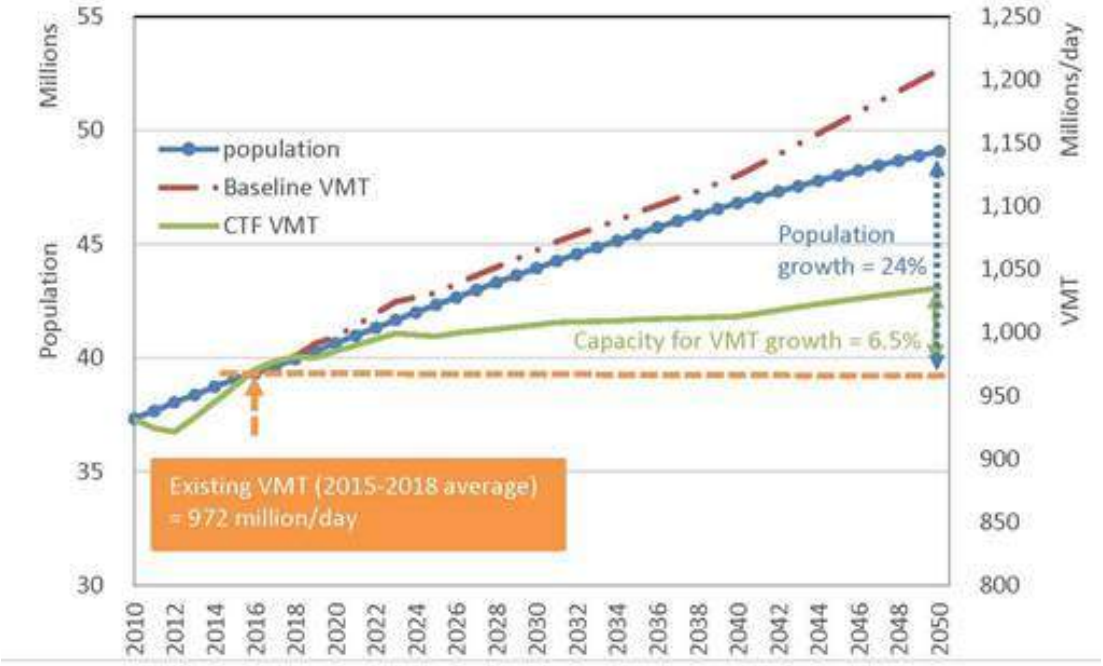
One potential option is to use the state's technical analysis that informed the Office of Planning and Research's (OPR) Technical Advisory. Specifically, the Technical Advisory utilizes CARB's Scoping Plan to identify associated VMT metrics the state needs to achieve to accomplish its greenhouse gas reduction targets consistent with the legislative intent of SB 743. As shown in Exhibit E, CARB used a capacity for VMT growth of 6.5% in their assessment of achieving the

state's goals in GHG reduction. Please note that this growth is not constant and is less than 6.5% in earlier years as compared to the 2050 analysis horizon. This is somewhat due to CARB's inclusion of Clean Technology Fuel (CTF) that is also assumed in the growth estimates in addition to growth in VMT associated with population growth in the state.

We extracted the VMT estimates by county and air district to identify the VMT growth that CARB included for Riverside County. Reviewing CARB's VMT estimates (identified in their Vision 2.1 VMT Baseline Dataset) identified that they assumed a growth in daily VMT for Riverside County (inclusive of the South Coast, Mojave Desert, and Salton Sea air basins) of 31,434,329.

Following the logic above, it is reasonable to conclude that Riverside County's fair share allocation of VMT growth that is pre-built into the CARB Scoping Plan and associated OPR Technical Advisory information is 31,434,329 Daily VMT. As shown on Exhibit A, the ELPSE project represents an anticipated growth in VMT (compared to the no build scenario) of 450,000, or approximately 1.43% of the Daily VMT growth allocation that could be justified by Riverside County. Compared to the allowable statewide growth allowance, the project would represent 0.71% of the allowable statewide growth.

Exhibit E – CARB Scoping Plan Summary



California Total Projected Population Growth and VMT Growth

It should further be noted that the CARB Scoping Plan relied on previous population projections produced by the state. The most recent population growth projections are approximately five million people less than what was included in the CARB Scoping Plan summary. As such, the 6.5% capacity for VMT growth at the statewide level could be further increased when correcting for population growth. Without running extensive emission models, it is difficult to determine the effect on allowable VMT growth would be based on the change in population. Specifically, that relationship is not perfectly linear and it is difficult to determine how VMT would be effected. since the multi-sector CTF scenario is also tied to population, it can be presumed that the VMT allowance would increase accordingly but the exact magnitude cannot be determined without additional modeling.

If this threshold is considered by RCTC moving forward, it could be assumed that RCTC could deliver projects up-to the VMT growth allocation limit while still being consistent with the CARB Scoping Plan assumptions.

VMT Minimization

As described above, one of the key ways to manage VMT growth is through pricing which is already built into the ELPSE project. There are several other ways to minimize VMT for managed lane facilities like the ELPSE, as described below:

Discuss Other Measures

One option, which could be used in conjunction with the discussion(s) above and below, would be to identify other attributes that could be included as project features. This would include expansion of the IE Commute program to match and implement carpooling along the corridor, reduced tolls for carpools, and coordination with transit agencies for reduced or free transit use of the express lanes. Ultimately, the package of additional improvements considered to reduce VMT along the corridor could be estimated and applied to the VMT estimates for the project.

Regional Approach

SCAG is currently coordinating on the ConOps update, which will specifically address an approach toward minimizing VMT on the express lanes network (including the ELPSE project). *The Regional Express Lanes Network Concept of Operations (ConOps) Updated Issue Paper* (SCAG and WSP, January 2021) provides the following background related to VMT analysis and mitigation:

- The ConOps update will be used as a platform for SCAG to validate the use of MPO and County Commission models to assess VMT effects of express lanes projects as a network.
- The ConOps update will develop an analytical solution for addressing SB 743 while expanding the express lanes network, including:

- Transit service and capacity expansion
- Low to no fare transit service
- Expanding park-and-ride facilities
- Providing on-line transition stations on express lane corridors
- Enhancing van pooling and rideshare platforms
- Expanding telecommuting
- Consideration of a regional VMT bank

They key consideration of the ConOps update is the desire to approach VMT from a regional perspective which will be more comprehensive in its ability to minimize VMT on the regional express lanes network.

RTP Consistency Approach

One approach is to use an RTP consistency finding related to VMT reduction potential. The SACOG RTP/SCS EIR[1] utilizes this approach by evaluating VMT trends and reduction targets. Specifically, Transportation – Page 16-49 provides the following impact determination:

> *Therefore, although the region is making progress in VMT reductions and is making significant strides in the development of new initiatives, projects, and programs in the 2020 MTP/SCS, and is not directly interfering with the statewide VMT reductions required to meet the state's climate goals, the plan does not clearly establish the necessary level of VMT reductions now forecast by the state. And although the state acknowledges that SACOG and other MPOs cannot meet this need without the collaboration and help of the state itself, as well as local partners, at the time of writing this Draft EIR it is unknown how CARB and other state agencies, through statewide programs or in coordination with local and regional governments, would meet the identified higher VMT reductions. And while SACOG stands ready to contribute to this statewide effort, the gap in VMT reductions needed to achieve the state's 2030 and 2050 GHG reduction targets remains.*
>
> *As a result, the potential of the projected land use pattern and planned transportation improvements of the proposed MTP/SCS to substantially interfere with achievement of the VMT reductions set forth in CARB's 2017 Scoping Plan at the regional level is considered potentially significant (PS) for Impact TRN-1. Mitigation is required. Mitigation Measure TRN-1 is discussed below.*

Mitigation Measure TRN-1, beginning on Transportation – Page 16-54, goes on to state:

> *The state recognized that additional state policy actions and funding would be required to close the VMT gap between what the MPOs could achieve through implementation of their SCSs, and reductions needed to meet state goals. Though the state must initiate these*

[1] https://www.sacog.org/sites/main/files/file-attachments/ch._16_transportation_pdeir.pdf?1569040290

additional actions and funding programs, the exact form of the policies and funding programs must be collaboratively developed with input from MPOs, local agencies, and other organizations to ensure they provide the tools and incentives necessary to go beyond the SCSs in reducing VMT. SACOG shall be an active participant in this process. As part of the development of this proposed MTP/SCS, SACOG developed the "Green Means Go" program, which SACOG shall implement and is intended to serve as a pilot for some of the infill incentives and support for transit and innovative mobility that are envisioned in the 2017 Scoping Plan as key elements of filling that VMT gap.

The SACOG approach to mitigation is appropriate as it also discusses the projects consistency with existing programs. Specifically, it implements a consistency finding, noting that the RTP/SCS does not conflict with or reduce the state's ability to reduce VMT. Although the SACOG approach goes on to identify specific modifications to the RTP/SCS that would further reduce VMT, the approach toward providing a consistency finding with the state's objectives and SCAG's RTP could be considered and implemented as part of the VMT discussion for the I-15 ELPSE project. This approach could transfer some of the VMT minimization responsibility to the state.

We hope this information is helpful. Please contact Jason Pack directly at 949-308-6312 with any questions.

Attachment - VMT BY SPEED BIN OUTPUTS

Base Year

5 Mile Buffer		
Speed Bin	Speed Bin ID	VMT
0-5	1	9,774
5-10	2	48,981
10-15	3	60,714
15-20	4	266,806
20-25	5	723,454
25-30	6	1,297,710
30-35	7	1,485,832
35-40	8	967,729
40-45	9	600,892
45-50	10	488,684
50-55	11	856,859
55-60	12	1,064,440
60-65	13	866,237
65-70	14	267,430
>70	15	560,899
BM Total		9,566,440

Opening Year

No Project

5 Mile Buffer		
Speed Bin	Speed Bin ID	VMT
0-5	1	19,171
5-10	2	152,979
10-15	3	135,979
15-20	4	393,821
20-25	5	1,150,652
25-30	6	2,011,432
30-35	7	1,671,898
35-40	8	1,450,545
40-45	9	1,513,366
45-50	10	1,684,042
50-55	11	1,194,177
55-60	12	1,446,406
60-65	13	1,238,373
65-70	14	547,756
>70	15	437,304
BM Total		15,047,900

ELPSE

5 Mile Buffer		
Speed Bin	Speed Bin ID	VMT
0-5	1	25,217
5-10	2	117,250
10-15	3	156,881
15-20	4	361,600
20-25	5	1,097,540
25-30	6	1,935,075
30-35	7	1,535,371
35-40	8	1,581,480
40-45	9	1,806,929
45-50	10	1,139,623
50-55	11	1,403,624
55-60	12	1,838,245
60-65	13	1,578,544
65-70	14	496,892
>70	15	423,126
BM Total		15,497,398

General Purpose Lanes

5 Mile Buffer Update		
Speed Bin	Speed Bin ID	VMT
0-5	1	21,895
5-10	2	129,029
10-15	3	132,355
15-20	4	378,207
20-25	5	1,135,342
25-30	6	2,006,418
30-35	7	1,577,472
35-40	8	1,408,905
40-45	9	1,980,679
45-50	10	1,290,217
50-55	11	1,198,904
55-60	12	2,037,351
60-65	13	1,583,935
65-70	14	535,264
>70	15	449,907
		15,865,880

Opening Year Change in VMT (Project minus No Project)

ELPSE minus No Project

5 Mile Buffer		
Speed Bin	Speed Bin ID	VMT
0-5	1	6,046
5-10	2	(35,729)
10-15	3	20,903
15-20	4	(32,221)
20-25	5	(53,112)
25-30	6	(76,357)
30-35	7	(136,527)
35-40	8	130,935
40-45	9	293,563
45-50	10	(544,419)
50-55	11	209,447
55-60	12	391,838
60-65	13	340,171
65-70	14	(50,864)
>70	15	(14,177)
BM Total		449,497

General Purpose Lanes minus No Project

5 Mile Buffer Update		
Speed Bin	Speed Bin ID	VMT
0-5	1	(3,322)
5-10	2	11,780
10-15	3	(24,526)
15-20	4	16,608
20-25	5	37,802
25-30	6	71,343
30-35	7	42,101
35-40	8	(172,575)
40-45	9	173,750
45-50	10	150,593
50-55	11	(204,720)
55-60	12	199,106
60-65	13	5,391
65-70	14	38,372
>70	15	26,781
		368,482

Design Year

No Project

5 Mile Buffer		
Speed Bin	Speed Bin ID	VMT
0-5	1	29,159
5-10	2	134,485
10-15	3	234,384
15-20	4	428,781
20-25	5	1,336,054
25-30	6	2,239,742
30-35	7	1,753,737
35-40	8	1,546,985
40-45	9	1,580,984
45-50	10	1,154,886
50-55	11	1,657,817
55-60	12	1,413,131
60-65	13	1,286,471
65-70	14	408,731
>70	15	443,658
BM Total		15,649,006

ELPSE

5 Mile Buffer		
Speed Bin	Speed Bin ID	VMT
0-5	1	29,714
5-10	2	104,806
10-15	3	170,433
15-20	4	455,722
20-25	5	1,340,134
25-30	6	2,145,490
30-35	7	1,505,802
35-40	8	1,645,415
40-45	9	1,910,576
45-50	10	1,216,978
50-55	11	1,059,507
55-60	12	2,077,089
60-65	13	1,475,747
65-70	14	429,184
>70	15	444,944
BM Total		16,011,542

General Purpose Lanes

5 Mile Buffer Update		
Speed Bin	Speed Bin ID	VMT
0-5	1	29,305
5-10	2	190,495
10-15	3	89,316
15-20	4	468,794
20-25	5	1,286,189
25-30	6	2,199,798
30-35	7	1,518,696
35-40	8	1,662,775
40-45	9	2,216,358
45-50	10	1,413,249
50-55	11	1,193,052
55-60	12	2,355,039
60-65	13	1,772,908
65-70	14	454,575
>70	15	434,415
		17,284,965

Design Year Change in VMT (Project minus No Project)

ELPSE minus No Project

5 Mile Buffer		
Speed Bin	Speed Bin ID	VMT
0-5	1	555
5-10	2	(29,679)
10-15	3	(63,951)
15-20	4	26,942
20-25	5	4,080
25-30	6	(94,252)
30-35	7	(247,934)
35-40	8	98,430
40-45	9	329,592
45-50	10	62,092
50-55	11	(598,309)
55-60	12	663,958
60-65	13	189,276
65-70	14	20,453
>70	15	1,286
BM Total		362,537

General Purpose Lanes minus No Project

5 Mile Buffer Update		
Speed Bin	Speed Bin ID	VMT
0-5	1	146
5-10	2	56,010
10-15	3	(145,068)
15-20	4	40,013
20-25	5	(49,865)
25-30	6	(39,944)
30-35	7	(235,040)
35-40	8	115,790
40-45	9	635,373
45-50	10	258,363
50-55	11	(464,764)
55-60	12	941,908
60-65	13	486,437
65-70	14	45,844
>70	15	(9,243)
		1,635,959