Appendix I

WSGVAP Vehicle Miles Traveled (VMT) Analysis Memorandum

FEHR PEERS

Draft Memorandum

Date: April 25, 2024

To: Alison Lenci, Juliana Medan, Marlie Long, and Ruta Thomas, ESA

From: Dongyang Lin and John Muggridge, AICP

Subject: West San Gabriel Valley Area Plan Vehicle Miles Traveled Analysis

LA23-3473

This memorandum documents the vehicle miles traveled (VMT) analysis conducted by Fehr & Peers to evaluate the potential transportation impacts of the proposed West San Gabriel Valley Area Plan (WSGVAP or the Project). The VMT analysis follows the Los Angeles County Public Works Transportation Impact Analysis Guidelines (July 23, 2020) (Los Angeles County guidelines).

Methodology

Per Los Angeles County guidelines, Fehr & Peers conducted a VMT assessment of the entire West San Gabriel Valley (WSGV) Planning Area. Daily vehicle trips, daily VMT, and daily total VMT per service population were estimated using the SCAG 2016 RTP/SCS Travel Demand Forecasting Model (Model). Modeling assumptions are described later in this document including the socio-economic data assumptions for the WSGV Planning Area as well as the details regarding modifications to the transportation networks.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, the project would have a significant impact on transportation if it would conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).

Project Level VMT

Per the metrics and thresholds established in the Los Angeles County Guidelines, the WSGVAP would have a potentially significant VMT impact if daily total VMT per service population estimated for the horizon year (the "Future Plus Project" scenario) exceeds Los Angeles County's

threshold of 16.8 percent below the County Baseline VMT for 2024[1]. The County is in the process of updating their guidelines to reflect updated baseline VMT data and thresholds. The updated baseline VMT data was used based on direction from the County and was taken from the Los Angeles County Baseline VMT Data memorandum, dated January 26, 2022, which provides the new baseline VMT thresholds for Los Angeles County[2]. The 2024 Baseline for Daily VMT per Service Population, as well as the threshold for 16.8 percent below the baseline, is provided in **Table 1**.

Table 1: Los Angeles County VMT Metrics and Thresholds

	2024 County Baseline	16.8% Below 2024 County Baseline
Total Daily VMT per Service Population	30.4	25.3

Source: Los Angeles County Transportation Impact Analysis Guidelines (July 23, 2020) and Los Angeles County Baseline VMT Data Memorandum (January 26, 2022).

Cumulative VMT

Per the Los Angeles County guidelines, a land use project's cumulative effects are determined through consistency with the SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Land use projects that: (1) demonstrate a project impact after applying an efficiency based VMT threshold and (2) are not deemed to be consistent with the SCAG RTP/SCS could have a significant cumulative impact on VMT. Further evaluation would be necessary to determine whether the project's cumulative impact on VMT is significant. The cumulative impact analysis involves comparing the cumulative "no project" scenario, representing RTP/SCS cumulative year conditions, to the cumulative "plus project" scenario, representing reallocation of the population/employment growth associated with the proposed project[1].

VMT Modeling Assumptions

This section describes the assumptions and methodologies related to the modeling of VMT for the WSGV Planning Area for both the Future No Project and Future Plus Project scenarios. These include socio-economic data (SED) inputs and modifications to the transportation (highway and transit) networks.

[1] *Transportation Impact Analysis Guidelines*, Los Angeles County Public Works, July 2020
[2] *Los Angeles County Baseline VMT Data Memorandum*, Fehr & Peers, January 2022

Socio-Economic Data Assumptions

SED is used as the input data for VMT modeling and establishes the buildout for the Future No Project and Future Plus Project conditions. In addition to SCAG Model base year (2012) and horizon year (2040) data, the following data sources were used to develop the SED forecasts:

- WSGVAP buildout data
- Los Angeles County unincorporated areas dwelling unit vacancy rates

The 2045 Future No Project scenario represents SCAG RTP/SCS cumulative year conditions. Per the county's guidance, SCAG Model SED of base year (2012) and horizon year (2040) extrapolated to year 2045 was used for Future No Project scenario. The Future Plus Project scenario integrated the WSGVAP buildout data for unincorporated areas. SED inputs for the WSGV Planning Area under Future No Project and Future Plus Project are shown in **Table 2**.

Table 2: WSGV Planning Area SED Inputs

SED	2045 No Project Conditions	2045 Plus Project (WSGVAP) Conditions
Households	350,481	357,210
Population	1,039,576	1,055,637
Average Household Size	2.97	2.96
Employment	491,124	505,833
Households by Annual Household Income Groups (in 2011 dollars):		
Low Income (less than 34,999)	109,523	111,025
Med Income (35,000 - 74,999)	103,743	106,162
High Income (75,000 - 149,999)	90,020	92,332
Very High Income (150,000 or more)	47,195	47,691
Employment by Industries:		
Industrial	88,963	90,264
Retail	95,177	102,119
Office	160,381	168,296
Education and Health Services	125,503	124,348
Other	21,100	20,806

Source: SCAG 2016 RTP/SCS Travel Demand Forecast Model, WSGVAP Buildout Data from ESA.

Transportation Network Projects Complete by Horizon Year

The Model includes future transportation network projects that are assumed to be complete by the 2045 horizon year.

Off-Model Adjustments

As part of the WSGVAP, the Mobility Element recommends policies that align with WSGVAP's vision statements and guides the maintenance, enhancement, and development of transportation network within the unincorporated communities of WSGV Planning Area (refer to *WSGVAP Mobility Element*). Regional travel demand forecasting models are less sensitive to certain types of projects, plans and policies, such as active transportation improvements. To capture the VMT reduction potential of mobility policies as part of WSGVAP's design features, off-model calculations were developed based on guidance provided by California Air Pollution Control Officer Association (CAPCOA).

Table 3 presents transportation demand management (TDM) strategies associated with WSGVAP mobility policies. The effectiveness of identified TDM strategies is based primarily on research documented in the 2021 CAPCOA publication, *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (CAPCOA, 2021). CAPCOA offers methodology based on latest science and literature at the time of publication for each strategy[3]. Fehr & Peers followed the CAPCOA guidance and applied off-model adjustments to the Future Plus Project Model results within the WSGV unincorporated communities.

[3] *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (Final Draft),* California Air Pollution Control Officers Association, December 2021

Table 3: TDM Measures Associated with WSGVAP Mobility Policies

TDM Measures	WSGVAP Mobility Policies [a]	Type of VMT Affected [b]
Implement Commute Trip Reduction Program (Voluntary, T-5)	Policy M-4.2: TDM Strategies for Residents and Employees. Work with the community and local businesses to develop TDM strategies for commuting that meet the needs of WSGV residents and employees.	Employee commute trips
Implement Employee Parking Cash-Out (T-13)		Employee commute trips
Provide Community-Based Travel Planning (T-23)		Household trips
Provide Pedestrian Network Improvement (T-18)	Policy M-3.2: Pedestrian Networks. Provide safe pedestrian networks that are mindful of users, roadways, surrounding land uses and community characteristics. Policy M-3.3: Neighborhood Greenways. Support the planning and construction of greenways that prioritize pedestrians and cyclists along community corridors to create neighborhood-friendly spaces lined with commercial establishments to encourage foot traffic, reduce parking demand, and support local businesses. Greenways are linear public corridors for walking and biking that can connect parks, nature reserves, cultural features, historic sites, and retail areas.	Household trips
Construct or Improve Bike Facility (T-19A)	Policy M-3.1: Bicycle Networks. Continue to build out, close gaps, and expand the existing bike network. Policy M-3.3: Neighborhood Greenways. Support the planning and construction of greenways that prioritize pedestrians and cyclists along community corridors to create neighborhood-friendly spaces lined with commercial establishments to encourage foot traffic, reduce parking demand, and support local businesses. Greenways are linear public corridors for walking and biking that can connect parks, nature reserves, cultural features, historic sites, and retail areas.	All types of trips, including household trips and employee commute trips, and non-home-based trips
Expand Bikeway Network (T-20)		Employee commute trips

Note:
[a] Mobility policies that require cross-jurisdiction coordination or are not anticipated to affect VMT are not included in the table. Refer to WSGVAP Mobility Element for a full list of policies.
[b] Off-model adjustments were applied to the corresponding Types of VMT Affected that were estimated from the Future Plus Project Model results within the WSGV unincorporated communities.

VMT Impact Analysis

VMT Results

Per the Los Angeles County guidelines, the WSGVAP potentially has a significant VMT impact if it results in average daily VMT per service population in the horizon year (2045) that exceeds 16.8 percent below the County Baseline daily VMT per service population for 2024. The WSGVAP buildout scenario (Future Plus Project) was analyzed using the SCAG 2016 RTP/SCS Travel Demand Forecast Model and the above methodologies and assumptions. The results of the model and off-model analysis for the WASP buildout scenario are shown in **Table 4**.

Table 4: WSGV Planning Area Future Plus Project VMT Results

	Total Population	Total Employment	Total Service Population	Total Daily VMT [a]	Total Daily VMT per Service Population
	(A)	(B)	(C)=(A)+(B)	(D)	(E)=(D)/(C)
2045 WSGV Planning Area	1,055,637	505,833	1,561,470	46,244,249	29.6
Note: [a] Total Daily VMT represents VMT results after off-model adjustments.					

Source: SCAG 2016 RTP/SCS Travel Demand Forecast Model, 2021 CAPCOA Publication.

Project VMT Impacts

Based on the results of the model and off-model analysis, the WSGVAP buildout scenario would have an average daily VMT per service population of 29.6, or 17.1 percent above the 2024 County Threshold. Thus, the WSGVAP's 29.6 total VMT per service population results in a significant project VMT impact. The results of the model analysis are compared to the 2024 County Baseline and the 2024 County Threshold (16.8 percent below the baseline) in **Table 5**.

Table 5: WSGV Planning Area VMT Metrics

	2024 County Baseline	2024 County VMT Threshold (16.8% Below 2024 County Baseline)	2045 Plus Project (WSGVAP) Conditions	Percent Difference between the Baseline Threshold & WSGVAP
Total Daily VMT per Service Population	30.4	25.3	29.6	17.1%

Source: Los Angeles County Transportation Impact Analysis Guidelines (July 23, 2020), Los Angeles County Baseline VMT Data Memorandum (January 26, 2022), and SCAG 2016 RTP/SCS Travel Demand Forecast Model.

Cumulative Impacts

Per the Los Angeles County guidelines, cumulative effects are determined through consistency with the SCAG RTP/SCS, as that Plan demonstrates compliance with air quality conformity requirements and GHG reduction targets. Land use plans that are not deemed to be consistent with the SCAG RTP/SCS in terms of development location, density, and intensity require further evaluation.

The WSGVAP buildout scenario demonstrates a project impact after applying an efficiency based VMT threshold in the Project VMT Impacts section. Although it is consistent with SCAG RTP/SCS in network and zoning, it reallocates population/employment growth and reflects a greater amount of service population overall than is assumed in the SCAG RTP/SCS in the area, and therefore requires cumulative impact analysis. The cumulative impact analysis entails comparing the cumulative "no project" scenario, representing RTP/SCS cumulative year conditions, to the cumulative "plus project" scenario, representing reallocation of the population/employment growth associated with the WSGVAP to the area.

The WSGVAP buildout scenario will have a cumulative impact if it results in either:

- Average daily VMT per service population for the 2045 WSGVAP buildout (the "Future Plus Project" scenario) that exceeds the daily VMT per service population for the 2045 "No Project" scenario.
- Total VMT for the 2045 WSGVAP buildout (the "Future Plus Project" scenario) exceeds the total VMT for the 2045 "No Project" scenario.

Table 6 shows the daily VMT per service population for the "No Project" conditions and the "Plus Project" conditions for 2045. The results demonstrate that the daily VMT per service population is slightly lower, but total VMT is higher under the 2045 Plus Project conditions than the 2045 No Project conditions. This indicates a significant impact under cumulative conditions.

Table 6: Cumulative VMT Metrics

	2045 "No Project" Conditions	2045 Plus Project (WSGVAP) Conditions	Net Difference	Percent Difference
Total Daily VMT	45,814,886	46,244,249	429,363	0.9%
Total Service Population	1,530,700	1,561,470	30,770	2.0%
Total Daily VMT per Service Population	29.9	29.6	-0.3	-1.1%

Source: SCAG 2016 RTP/SCS Travel Demand Forecast Model, 2021 CAPCOA Publication.

VMT Mitigation Strategies

TDM Strategies

The types of mitigations that affect VMT are those that reduce the number of single-occupant vehicles generated by the project. This can be accomplished by changing the land uses being proposed or by implementing TDM strategies. TDM strategies are reductions available from certain types of project site modifications, programming, and operational changes.

The strategies described in **Table 7** are a sample of the options most effective in areas like WSGV, in addition to TDM strategies as part of the plan feature in **Table 3**. For a comprehensive list of available TDM strategies, please refer to CAPCOA *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*.

The CAPCOA document contains detailed equations to apply these TDM reductions given the land use type and built environment context. The percent reduction shown in **Table 7** should not be directly applied to a project. CAPCOA recommends that measure reductions within a subsector and across subsectors be multiplied to determine a combined effectiveness level. Each subsector has a maximum allowable reduction. In addition, some TDM strategies have complementary benefits reducing VMT, and need to be considered in combination, not individually. Some TDM strategies are mutually exclusive in reducing VMT, indicating that only one of their credits could be considered quantitively.

As previously stated, the baseline total daily VMT per service population is 30.4 for Los Angeles County in analysis year 2024. The threshold of 16.8% below the baseline is 25.3 total daily VMT per service population. The Project's 29.6 total daily VMT per service population is higher than the County's threshold of 25.3 total daily VMT per service population. Trip reduction and parking programs in **Table 7** need to be implemented at a project level. Transit programs require

collaboration with regional transit agencies and/or neighboring jurisdictions. Thus, the effectiveness in VMT reduction of these TDM strategies are not quantifiable before specific projects are identified. Therefore, the impact will remain significant and unavoidable. However, the previously discussed TDM strategies should be considered when processing land use project applications to help achieve VMT reduction goals.

Table 7: Transportation Demand Management Strategies

Measure	Sector, Subsector	Scale of Application	Type of VMT Affected	Measure Description	Low Reduction on VMT or GHG	High Reduction on VMT or GHG
Implement Commute Trip Reduction Marketing (T-7)	Trip Reduction Programs	Project/Site	Employee commute trips	This measure will implement a marketing strategy to promote the project site employer's CTR program. Information sharing and marketing promote and educate employees about their travel choices to the employment location beyond driving such as carpooling, taking transit, walking, and biking, thereby reducing VMT and GHG emissions.	0.00%	4.00%
Provide Ridesharing Program (T-8)	Trip Reduction Programs	Project/Site	Employee commute trips	This measure will implement a ridesharing program and establish a permanent transportation management association with funding requirements for employers. Ridesharing encourages carpooled vehicle trips in place of single-occupied vehicle trips, thereby reducing the number of trips, VMT, and GHG emissions.	0.00%	8.00%
Implement Subsidized or Discounted Transit Program (T-9)	Trip Reduction Programs	Project/Site	Employee commute trips	This measure will provide subsidized or discounted, or free transit passes for employees and/or residents. Reducing the out-of-pocket cost for choosing transit improves the competitiveness of transit against driving, increasing the total number of transit trips and decreasing vehicle trips. This decrease in vehicle trips results in reduced VMT and thus a reduction in GHG emissions.	0.00%	5.50%
Provide End-of-Trip Bicycle Facilities (T-10)	Trip Reduction Programs	Project/Site	Employee commute trips	This measure will install and maintain end-of-trip facilities for employee use. End-of-trip facilities include bike parking, bike lockers, showers, and personal lockers. The provision and maintenance of secure bike parking and related facilities encourages commuting by bicycle, thereby reducing VMT and GHG emissions.	0.10%	4.40%
Provide Employer-Sponsored Vanpool (T-11)	Trip Reduction Programs	Project/Site	Employee commute trips	This measure will implement an employer-sponsored vanpool service. Vanpooling is a flexible form of public transportation that provides groups of 5 to 15 people with a cost-effective and convenient rideshare option for commuting. The mode shift from long-distance, single-occupied vehicles to shared vehicles reduces overall commute VMT, thereby reducing GHG emissions.	3.40%	20.40%

Measure	Sector, Subsector	Scale of Application	Type of VMT Affected	Measure Description	Low Reduction on VMT or GHG	High Reduction on VMT or GHG
Limit Residential Parking Supply (T-15)	Parking or Road Pricing/ Management	Project/Site	Household trips	This measure will reduce the total parking supply available at a residential project or site. Limiting the amount of parking available creates scarcity and adds additional time and inconvenience to trips made by private auto, thus disincentivizing driving as a mode of travel. Reducing the convenience of driving results in a shift to other modes and decreased VMT and thus a reduction in GHG emissions. Evidence of the effects of reduced parking supply is strongest for residential developments.	0.00%	13.70%
Unbundle Residential Parking Costs from Property Cost (T-16)	Parking or Road Pricing/ Management	Project/Site	Household trips	This measure will unbundle, or separate, a residential project's parking costs from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost. On the assumption that parking costs are passed through to the vehicle owners/drivers utilizing the parking spaces, this measure results in decreased vehicle ownership and, therefore, a reduction in VMT and GHG emissions. Unbundling may not be available to all residential developments, depending on funding sources.	0.00%	15.70%
Extend Transit Network Coverage or Hours (T-25)	Transit	Plan/Community	All types of trips, including household trips and employee commute trips, and non-home-based trips	This measure will expand the local transit network by either adding or modifying existing transit service or extending the operation hours to enhance the service near the project site. Starting services earlier in the morning and/or extending services to late-night hours can accommodate the commuting times of alternative-shift workers. This will encourage the use of transit and therefore reduce VMT and associated GHG emissions.	0.00%	4.60%
Increase Transit Service Frequency (T-26)	Transit	Plan/Community	All types of trips, including household trips and employee commute trips, and non-home-based trips	This measure will increase transit frequency on one or more transit lines serving the plan/community. Increased transit frequency reduces waiting and overall travel times, which improves the user experience and increases the attractiveness of transit service. This results in a mode shift from single occupancy vehicles to transit, which reduces VMT and associated GHG emissions.	0.00%	11.30%

Measure	Sector, Subsector	Scale of Application	Type of VMT Affected	Measure Description	Low Reduction on VMT or GHG	High Reduction on VMT or GHG
Implement Transit-Supportive Roadway Treatments (T-27)	Transit	Plan/Community	All types of trips, including household trips and employee commute trips, and non-home-based trips	This measure will implement transit-supportive treatments on the transit routes serving the plan/community. Transit-supportive treatments incorporate a mix of roadway infrastructure improvements and/or traffic signal modifications to improve transit travel times and reliability. This results in a mode shift from single occupancy vehicles to transit, which reduces VMT and the associated GHG emissions.	0.00%	0.60%
Provide Bus Rapid Transit (T-28)	Transit	Plan/Community	All types of trips, including household trips and employee commute trips, and non-home-based trips	This measure will convert an existing bus route to a bus rapid transit (BRT) system. BRT includes the following additional components, compared to traditional bus service: exclusive right-of-way (e.g., busways, queue jumping lanes) at congested intersections, increased limited-stop service (e.g., express service), intelligent transportation technology (e.g., transit signal priority, automatic vehicle location systems), advanced technology vehicles (e.g., articulated buses, low-floor buses), enhanced station design, efficient fare-payment smart cards or smartphone apps, branding of the system, and use of vehicle guidance systems. BRT can increase the transit mode share in a community due to improved travel times, service frequencies, and the unique components of the BRT system. This mode shift reduces VMT and the associated GHG emissions.	0.00%	13.80%