Appendix H
VMT Analysis Memo

ESA

FEHR PEERS

Memorandum

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To: Ruta K. Thomas, ESA

From: Dongyang Lin, Jeremiah LaRose, and John Muggridge, AICP

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

LA21-3275

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

Methodology

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

In addition, Fehr & Peers reviewed two local plans:

- *East San Gabriel Valley Mobility Action Plan (Draft)*, Los Angeles County Department of Regional Planning, February 2022

These plans are focused on mobility enhancements and strategies within East San Gabriel Valley (ESGV). While the plans contain a variety of mobility strategies for the area, there are no improvements that would reduce or expand vehicular capacity to the extent that it would influence VMT, and thus no changes to the highway and transit networks were made. For example, the *ESGV MAP* includes transit strategies such as flexible microtransit and personal mobility on demand. These strategies do not meaningfully affect the primary transit modes, which are modeled as fixed route bus and rail.

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 LA County Guidelines, the ESGVAP 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 LA County's threshold of 16.8 percent below the County Baseline VMT for 2022[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 LA County Baseline VMT Data memorandum, dated January 26, 2022, which provides the new baseline VMT thresholds for LA County[2]. The 2022 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: LA County VMT Metrics and Thresholds

	2022 County Baseline	16.8% Below 2022 County Baseline
Total Daily VMT per Service Population	30.7	25.5

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

Cumulative VMT

Per the LA 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].

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

VMT Modeling Assumptions

This section describes the assumptions and methodologies related to the modeling of VMT for the ESGVAP area for both the Future No Project and Future Plus Project scenarios. These include socio-economic data (SED) inputs, modifications to the transportation (highway and transit) networks, and general model input parameters.

SED 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 data, the following data sources were used to develop the SED forecasts:

- ESGVAP buildout data
- ESGV Future No Project data (existing county general plan 2035 buildout)
- Los Angeles County unincorporated areas dwelling unit vacancy rates

The 2035 Future No Project scenario represents SCAG RTP/SCS cumulative year conditions. Per the county's guidance, the Future No Project scenario integrated LA County's existing general plan land use for unincorporated areas within the ESGVAP boundary. For cities within the plan area and all areas outside the boundary, SCAG Model SED interpolated to year 2035 was used.

The Future Plus Project scenario integrated the ESGVAP buildout data for unincorporated areas. The buildout data provides number of dwelling units and non-residential square footage by TAZ. SED inputs for the ESGVAP area under Future No Project and Future Plus Project are shown in **Table 2**.

Table 2: ESGVAP Area SED Inputs

	2035 No Project Conditions	2035 Plus Project (ESGVAP) Conditions
Households	304,362	310,808
Population	1,055,678	1,079,450
Employment	380,353	376,764

Source: SCAG 2016 RTP/SCS Travel Demand Forecast Model, Los Angeles County General Plan 2035, ESGVAP 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 Model's horizon year. Because the proposed Project's horizon year is 2035 and the Model's

horizon year is 2040, the transportation network projects that are expected to be complete by 2040 but not complete by 2035 were removed to reflect the anticipated conditions in 2035. Although the Plan area is located in east Los Angeles County, transportation network projects were reviewed for the entire County area because some are likely to influence regional travel including travel to and from the Plan area.

The following future transportation network projects were removed from or included in the modeling based on completion year:

- Slauson Light Rail, Crenshaw Corridor to Metro Blue Line Station: Not anticipated to be complete by 2035; removed from Model.
- Metro Green Line Extension, Metro Green Line Norwalk Station to Norwalk Metrolink Station: Not anticipated to be complete by 2035; removed from Model.
- Vermont Short Corridor, Wilshire/Vermont to Exposition/Vermont: Included in Metro's 28 by '28 project list; retained in Model.
- West Santa Ana Branch Transit Corridor: Phase 1 from Pioneer Station to Metro A (Blue) Line Slauson Station included in Metro's 28 by '28 project list; retained in Model. Phase 2 from Slauson Station to Downtown LA not anticipated to be complete by 2035; removed from Model.
- Sepulveda Transit Corridor: Valley-Westside portion of the project is identified for potential acceleration under Metro's 28 by '28 list; retained in the Model. Phase 3 from Westside to LAX not anticipated to be complete by 2035; removed from Model.
- East San Fernando Valley Light Rail Transit Project: Anticipated to be complete by 2035; retained in Model.
- Metro Gold Line Eastside Extension Phase 2 Transit Corridor: Included in Metro's 28 by '28 list; retained in Model.

RTP/SCS Model TDM Factor

The SCAG Model's 2040 horizon year includes a TDM factor of 17.2% applied as a reduction to vehicle trips. This factor is intended to reflect the policies and projects included in the RTP/SCS that would be critical to meeting SCAG's regional GHG reduction goals, but such a large reduction may be difficult to achieve. Another scenario provided by SCAG uses a more conservative TDM factor of 5.7% that is more suitable for less dense and less diverse land use. For the modeling conducted for Future No Project and Future Plus Project, the more conservative 5.7% TDM factor was used.

VMT Impact Analysis

VMT Results

Per the LA County guidelines, the ESGVAP potentially has a significant VMT impact if it results in average daily VMT per service population in the horizon year (2035) that exceeds 16.8 percent below the County Baseline daily VMT per service population for 2022. The ESGVAP 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 analysis for the ESGVAP buildout scenario are shown in **Table 3**.

Table 3: ESGVAP Area Future Plus Project Model Results

	Total Population	Total Employment	Total Service Population	Total Daily VMT	Total Daily VMT per Service Population
	(A)	(B)	(C)=(A)+(B)	(D)	(E)=(D)/(C)
2035 ESGVAP Area	1,079,450	376,764	1,456,214	57,241,032	39.3

Source: SCAG 2016 RTP/SCS Travel Demand Forecast Model.

Project VMT Impacts

Based on the results of the model analysis, the ESGVAP buildout scenario would have an average daily VMT per service population of 39.3, or 28 percent above the 2022 County Baseline. Thus, the ESGVAP's 39.3 total VMT per service population results in a significant project VMT impact. The results of the model analysis are compared to the 2022 County Baseline and the 2022 County Threshold (16.8 percent below the baseline) in **Table 4**.

Table 4: ESGVAP Area VMT Metrics

	2022 County Baseline	2022 County VMT Threshold (16.8% Below 2022 County Baseline)	2035 Plus Project (ESGVAP) Conditions	Percent Difference between Baseline & ESGVAP
Total Daily VMT per Service Population	30.7	25.5	39.3	28%

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

Cumulative Impacts

Per the LA 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 ESGVAP 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 ESGVAP to the area.

The ESGVAP buildout scenario would have a cumulative impact if it results in either:

- Average daily VMT per service population for the 2035 ESGVAP buildout (the "Future Plus Project" scenario) that exceeds the daily VMT per service population for the 2035 "No Project" scenario
- Total VMT for the 2035 ESGVAP buildout (the "Future Plus Project" scenario) that exceeds the total VMT for the 2035 "No Project" scenario

Table 5 shows the daily VMT per service population for the "No Project" conditions and the "Plus Project" conditions for 2035. The results demonstrate that the daily VMT per service population is slightly lower, but total VMT is higher under the 2035 Plus Project conditions than the 2035 No Project conditions. Meanwhile, total VMT per service population remains much higher than the County's Baseline. This indicates a significant impact under cumulative conditions.

Table 5: Cumulative VMT Metrics

	2035 "No Project" Conditions	2035 Plus Project (ESGVAP) Conditions	Net Difference	Percent Difference
Total Daily VMT	56,983,020	57,241,032	258,012	0.5%
Total Service Population	1,436,031	1,456,214	20,183	1.4%
Total Daily VMT per Service Population	39.7	39.3	-0.4	-0.9%

Source: SCAG 2016 RTP/SCS Travel Demand Forecast Model.

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 Transportation Demand Management (TDM) strategies. TDM strategies are reductions available from certain types of project site modifications, programming, and operational changes.

The effectiveness of identified TDM strategies is based primarily on research documented in the 2021 California Air Pollution Control Officers Association (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]. The strategies described in **Table 6** are a sample of the options most effective in areas like East San Gabriel Valley. For a comprehensive list of available TDM strategies, please refer to *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 6** should not be directly applied to a project. In addition, some TDM strategies have complementary benefits reducing VMT, and need to be considered in combination, not individually.

As previously stated, the baseline total daily VMT per service population is 30.7 for Los Angeles County in analysis year 2022. The threshold of 16.8% below the baseline is 25.5 total daily VMT per service population. In order to mitigate the total VMT per service population impacts to less than significant, the Project's 39.3 total daily VMT per service population would need to be reduced by 35% to be lower than 25.5 total daily VMT per service population.

Even enacting every practical TDM strategy would not achieve a cumulative 35% reduction in VMT for the Plan Area. The predominantly suburban and rural land use context of East San Gabriel Valley may limit the effectiveness of many TDM strategies because there are relatively few effective alternatives to driving for most trips, and most destinations (work, education, shopping, services) are relatively far from any given home. TDM strategies are less effective with housing alone than in combination with other land uses nearby, such as employment. Since the ESGVAP buildout adds more housing to an area with relatively little employment, it results in more driving

[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

and therefore a VMT impact. Strategies encouraging walking, biking, and transit, for example, would only have a marginal effect because the destinations are still too far to effectively reach in a reasonable time by means other than driving. Therefore, the impact will remain significant and unavoidable. However, the previously discussed TDM strategies should be considered to help achieve VMT reduction goals.

Table 6: 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
Increase Job Density	Land Use	Project/Site	Both household trips and employee commute trips	This measure accounts for the VMT reduction achieved by a project that is designed with a higher density of jobs compared to the average job density in the U.S. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. Increasing job density results in shorter and fewer trips by single-occupancy vehicles and thus a reduction in GHG emissions.	0.0%	30.0%
Provide Transit-Oriented Development	Land Use	Project/Site	Both household trips and employee commute trips	This measure would reduce project VMT in the study area relative to the same project sited in a non-transit-oriented development (TOD) location. TOD refers to projects built in compact, walkable areas that have easy access to public transit, ideally in a location with a mix of uses, including housing, retail offices, and community facilities. Project site residents, employees, and visitors would have easy access to high-quality public transit, thereby encouraging transit ridership and reducing the number of single-occupancy vehicle trips and associated GHG emissions.	6.9%	31.0%
Implement Commute Trip Reduction Marketing	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.	0.0%	4.0%
Provide Ridesharing Program	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%	8.0%

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 Subsidized or Discounted Transit Program	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%	5.5%
Provide End-of-Trip Bicycle Facilities	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.	0.1%	4.4%
Provide Employer-Sponsored Vanpool	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.	3.4%	20.4%
Implement Employee Parking Cash-Out	Trip Reduction Programs	Project/Site	Employee commute trips	This measure will require project employers to offer employee parking cash-out. Cash-out is when employers provide employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to or greater than the cost of the parking space. This encourages employees to use other modes of travel instead of single occupancy vehicles. This mode shift results in people driving less and thereby reduces VMT and GHG emissions.	0.0%	12.0%
Limit Residential Parking Supply	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.	0.0%	13.7%

Measure	Sector, Subsector	Scale of Application	Type of VMT Affected	Measure Description	Low Reduction on VMT or GHG	High Reduction on VMT or GHG
Unbundle Residential Parking Costs from Property Cost	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.	0.0%	15.7%
Provide Pedestrian Network Improvements	Neighborhood Design	Plan/Community	Household trips	This measure will increase the sidewalk coverage to improve pedestrian access. Providing sidewalks and an enhanced pedestrian network encourages people to walk instead of drive. This mode shift results in a reduction in VMT and GHG emissions.	0.0%	6.4%
Expand Bikeway Network	Neighborhood Design	Plan/Community	Both household trips and employee commute trips	This measure will increase the length of a city or community bikeway network. A bicycle network is an interconnected system of bike lanes, bike paths, bike routes, and cycle tracks. Providing bicycle infrastructure with markings and signage on appropriately sized roads with vehicle traffic traveling at safe speeds helps to improve biking conditions (e.g., safety and convenience). In addition, expanded bikeway networks can increase access to and from transit hubs, thereby expanding the "catchment area" of the transit stop or station and increasing ridership. This encourages a mode shift from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. When expanding a bicycle network, a best practice is to consider bike lane width standards from local agencies, state agencies, or the National Association of City Transportation Officials' Urban Bikeway Design Guide.	0.0%	0.5%
Community-Based Travel Planning	Trip Reduction Programs	Plan/Community	Household trips	This measure will target residences in the plan/community with community-based travel planning (CBTP). CBTP is a residential-based approach to outreach that provides households with customized information, incentives, and support to encourage the use of transportation alternatives in place of single occupancy vehicles, thereby reducing VMT and associated GHG emissions.	0.0%	2.3%

Measure	Sector, Subsector	Scale of Application	Type of VMT Affected	Measure Description	Low Reduction on VMT or GHG	High Reduction on VMT or GHG
Extend Transit Network Coverage or Hours	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.	0.0%	4.6%
Increase Transit Service Frequency	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.	0.0%	11.3%
Implement Transit-Supportive Roadway Treatments	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.	0.0%	0.6%
Provide Bus Rapid Transit	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.	0.0%	13.8%