
APPENDIX T
VMT MEMO

TECHNICAL MEMORANDUM

To: Kevin Kearney, City of Bradbury
From: Carla Dietrich, Michael Baker International
CC: Lisa Kranitz, City of Bradbury
 Trayci Nelson, Michael Baker International
Date: September 1, 2020
Subject: Chadwick Ranch Estates Specific Plan VMT Assessment

Introduction

The purpose of this memorandum is to document a VMT assessment for the proposed Chadwick Ranch Estates Specific Plan (project) located in the City of Bradbury, California. The project proposes the development of 111.8 acres of undeveloped hillside. The development would result in fourteen (14) new contour graded parcels intended for the construction of residential estate homes. The City has determined that an Environmental Impact Report (EIR) is required to address the significant and/or potentially significant environmental impacts which may result from the project. This memorandum has been prepared to support the Transportation component of the EIR as part of the California Environmental Quality Act (CEQA) process. **Table 1** summarizes key project information. **Exhibit 1** shows the location of the project on an aerial map and **Exhibit 2** shows the conceptual site plan. Site access would be provided via Flood Control Road near Long Canyon Road / Bliss Canyon Road.

Table 1: Project Information

Item	Description
Project Title	Chadwick Ranch Estates
Project Location	111.8 acres in the northeast quadrant of the City of Bradbury
Accessor's Parcel Numbers	APNs 8527-005-001, 8527-005-004, 8527-001-010
Project Site General Plan Designation(s)	Open Space-Privately Owned Undeveloped
Project Site Zoning Designation(s)	Agriculture/Estate Residential, A-5 (SP)
Surrounding Land Uses	Predominantly vacant land to the immediate east in the City of Duarte, vacant land to the north both within City of Bradbury and beyond the City's northern corporate limits in the City of Monrovia, and a combination of flood control facilities and vacant land within the City of Bradbury to the west.

Exhibit 1: Project Location




Path: Z:\Projects\0091_Lake_Hugler_MN_2_47UX1_Data\Anz_Cover_Tier01\03_Bradbury_3 4-3_Project Site Aerial_2019_08_26.mxd. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, SDA, CNES, and the GIS User Community. Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri, Japan, METI, Esri, Chose Nvang Korea, Esri (Thailand), TomTom, Mapbox, © OpenStreetMap contributors, and the GIS User Community. Esri, HERE, DeLorme, Mapbox, © OpenStreetMap contributors. Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp., Esri, HERE, DeLorme, TomTom, Mapbox, © OpenStreetMap contributors, and the GIS user community. Data Center (S) Souders Group, 2003; CA Dept. of Conservation, March 2013; UltraSystems

Scale: 1:12,000



Legend

 Project Boundary

Chadwick Ranch Estates Project

Aerial View of Project Site and Vicinity

Source: *Initial Study (IS) Chadwick Estates*, UltraSystems, February 2020

Exhibit 2: Conceptual Site Plan



Source: *Initial Study (IS) Chadwick Estates*, UltraSystems, February 2020

Analysis Guidelines

The City VMT guidance was utilized in this analysis, specifically the July 21, 2020 agenda memorandum titled “Adoption of “Vehicle Miles Traveled” (VMT) thresholds of significance for purposes of analyzing transportation impacts under the California Environmental Quality Act (CEQA).” This guidance includes Attachment A (City of Bradbury VMT Baselines and Thresholds of Significance). The packet of information is referred to as the *City VMT Guidance* in this memorandum. The *City VMT Guidance* was developed based on a process led by the San Gabriel Valley Council of Governments (SGVCOG) in which the Governor’s Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018 (*Technical Advisory*) was used as the primary resource.

Screening Criteria

Four (4) screening thresholds for land use projects documented in the *Technical Advisory* and consistent with the *City VMT Guidance* were evaluated to identify if the project should be expected to cause a less-than-significant impact without conducting a detailed study:

- 1) Screening Threshold for Small Projects
- 2) Map-Based Screening for Residential and Office Projects
- 3) Presumption of Less than Significant Impact Near Transit Stations
- 4) Presumption of Less Than Significant Impact for Affordable Residential Development

Screening Criteria #1 – Screening Threshold for Small Projects

Based on the screening criteria documented in the *Technical Advisory*, a project can be determined to have a less than significant impact based on project location, size or lane use type. The screening thresholds for small projects state:

“Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than significant transportation impact.”

The Institute of Transportation Engineer’s *Trip Generation Manual* (10th Edition) was utilized to estimate the number of site trips generated. As shown in **Table 2**, the project is estimated to generate more than 110 daily trips, thus this project does not satisfy Screening Criteria #1.

Table 2: Trip Generation Estimate

Land Use	ITE Code	Intensity		Daily Trip Rate	Number of Estimated Daily Trips
Single-Family Detached Housing	210	14	Units	12.00	168

Source: Daily Trip Rate for Estate Housing obtained from City of San Diego Land Development Code, Trip Generation Manual (Revised May 2003).

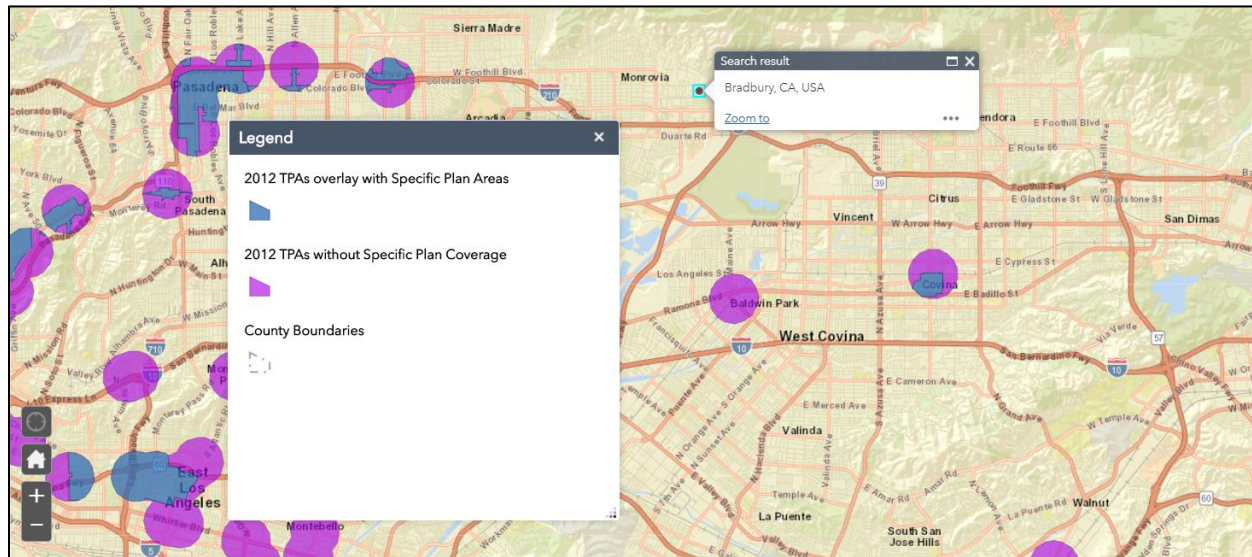
Screening Criteria #2 – Map-Based Screening for Residential and Office Projects

Residential and office projects located in areas with low VMT that exhibit similar features tend to exhibit similarly low VMT. The nature of the development is consistent with the area land use within the City of Bradbury (low-density residential estates). However, this type of land use is not consistent with low VMT generating uses, thus the project does not satisfy Screening Criteria #2.

Screening Criteria #3 – Presumption of Less than Significant Impact Near Transit Stations

The project is not located within a Transit Priority Area as identified by the Southern California Association of Governments (SCAG) as shown in **Exhibit 3**. The project does not satisfy Screening Criteria #3.

Exhibit 3: SCAG 2012 Transit Priority Areas



Source: <http://scag.maps.arcgis.com/apps/webappviewer/index.html?id=bba117488ab04262bc19ffd16ec91b28>

Screening Criteria #4 – Presumption of Less Than Significant Impact for Affordable Residential Development

The proposed project does not include a high percentage of affordable housing and thus does not meet the criteria to determine a less-than-significant impact on VMT identified under this screening criteria.

Screening Criteria Analysis Conclusions

The project does not meet any of the *Technical Advisory* Screening Criteria for land use projects which would allow a determination of a less-than-significant impact on VMT, thus a VMT assessment is presented below.

VMT Threshold

According to the *City VMT Guidance*, the thresholds of significance for a proposed land use project are as follows:

- 1) Project Impact: A significant impact would occur if the VMT rate for the project would exceed the applicable baseline VMT rate.
- 2) Cumulative Project Effect: A significant impact would occur if the project would exceed the total regional VMT compared to the cumulative no project conditions.

Table 3 provides the regional VMT baselines developed during the SCVCOG implementation process. The City of Bradbury is within the Northwest region which includes Arcadia, Bradbury, Duarte, La Canada Flintridge, Monrovia, San Marino, and Sierra Madre. Therefore, the residential land use project VMT baseline is 16.29 VMT/capita.

Table 3: VMT Baselines by Region

Region	Total VMT	Residential	Employment	Total VMT <15%	Residential <15%	Employment <15%
	VMT/SP with Truck ADJ	HB VMT/Pop	HBW VMT/Emp	VMT/SP with Truck ADJ	HB VMT/Pop	HBW VMT/Emp
SCAG	34.24	15.02	19.00	29.10	12.77	16.15
LA County	31.96	13.44	18.41	27.16	11.42	15.65
SGVCOG	36.12	16.21	20.84	30.71	13.78	17.72
Central	33.71	15.77	20.07	28.66	13.40	17.06
Northeast	37.76	18.76	22.05	32.09	15.95	18.75
Northwest	37.02	16.29	21.01	31.46	13.85	17.86
Southeast	40.57	17.78	22.11	34.48	15.11	18.80
Southwest	31.84	13.20	18.75	27.07	11.22	15.94

Project Level VMT Assessment

The City of Bradbury is a small, residential/equestrian-oriented community located within an area less than 2 square miles at the base of the San Gabriel Mountains in Los Angeles County. The population of Bradbury is approximately 1,100 individuals. Bradbury is unique in that it is a low-density, rural community on the edge of medium- and high-density areas within Los Angeles County. The proposed project is located on the edge of a similar type of development (low-density residential, further from other developed land uses) in an area with limited transit connections.

Travel data was obtained from the SCAG Year 2020 travel demand model for TAZ #5892 which wholly encompasses the City of Bradbury and does not extend to other adjacent communities. Consistent with the *SGVCOG SB 743 VMT Impact Analysis Methodologies Assessment* memorandum by Fehr & Peers dated May 4, 2020, residential data was evaluated by assessing home-based work and home-based other productions trips divided by the Bradbury population in order to calculate the City VMT. As shown in **Table 4**, the model data results in a 26.73 VMT/capita for the City of Bradbury TAZ.

Table 4: Bradbury TAZ VMT Data

Trip Mode	Sum of Trip Distance (miles)	Number of Trips	Average Trip Length (miles)	TAZ Population	VMT/Capita
Single Occupancy Vehicle (SOV)	21,230	1,675	12.67	--	--
High Occupancy Vehicle 2 (HOV2Dr)	5,031	611	8.23	--	--
High Occupancy Vehicle 3 (HOV3Dr)	2,159	325	6.64	--	--
Taxi	154	33	4.66	--	--
Total Auto	28,574	2,644	10.81	1,069	26.73

Notes: (1) Population obtained from SCAG *Profile of the City of Bradbury* (Year 2018 data).

(2) The number of trips based on the home based work (HBW) and home based other (HBO) trip purposes.

Since the proposed project is located on the edge of a similar type of development and further from other developed land uses and the area transportation network in the area has limited transit connections, the project VMT would be similar to or greater than the Citywide VMT value (26.73 VMT/capita). As shown in **Table 5**, a comparison of the Citywide VMT value (26.73 VMT/capita) to the Northwest region baseline VMT (16.29 VMT/capita) shows that the Project VMT is anticipated to be greater than the baseline threshold and therefore ***the project is anticipated to result in a significant transportation impact.***

Table 5: VMT Assessment Summary

Area	Residential VMT/Capita	Source / Notes
Northwest (Baseline)	16.29	City VMT Guidance
City of Bradbury (SCAG model TAZ #5892)	26.73	SCAG Year 2020 Model Data
Project	≥ 26.73	Project specific assessment
Finding: Comparison of the Project VMT (≥ 26.73 VMT/capita) to the Threshold Baseline (16.29 VMT/capita) indicates that the Project VMT is projected to be greater than 64% above the threshold.		

Attachment 1 contains a previous analysis using the *Technical Advisory* guidance and data from the Caltrans statewide travel demand model.

Mitigation Measures

With the finding of a significant transportation impact, potential mitigation measures are evaluated under this section. To mitigate the impact, the project would need to identify Transportation Demand Management (TDM) elements to help reduce reliance on auto or provide means by which to either reduce the length of vehicle trips or reduce the number of vehicle trips. **Attachment 2** contains a list of potential VMT mitigation measures as identified in Metro's *Analysis of VMT Mitigation Pursuant to SB 743* (February 23, 2018). These mitigation measures focus on the California Air Pollution Control Officers Association (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures* (August 2010). The Western Riverside Council of Governments (WRCOG) *SB 743 Implementation TDM Strategy Assessment* (Fehr & Peers, February 26, 2019) is an assessment of these measures and new, published information available after August 2010. The list of TDM strategies obtained from the WRCOG guidance that are relevant to development projects and evaluated in terms of the Chadwick Estates project are shown in **Table 6** on Page 8. These strategies are not specific to the WRCOG region and are thus transferable to other areas. Each of the TDM strategies were evaluated in terms of its potential applicability to the proposed project in an attempt to mitigate the VMT impact identified. **Table 7** on Page 9 summarizes the project-level TDM evaluation.

An alternative to TDM programs is the establishment of mitigation fee programs and mitigation banks/exchanges for projects that are unable to fully mitigate their VMT impacts. These programs would fund a pool of projects that would improve VMT at a regional level. However, VMT fee programs and mitigation banks have not yet been implemented and are currently not a mitigation option for this project. ***Based on the TDM evaluation, the project is unable to mitigate the VMT impacts and thus the transportation impact is identified as significant and unmitigated.***

Conclusions

The assessment of the fourteen (14) proposed contour graded parcels intended for the construction of residential estate homes (Chadwick Estates) located in the City of Bradbury show that the project does not meet the screening criteria and thus a VMT assessment was required. Evaluation of the project demonstrated that the project VMT is anticipated to be greater than the VMT baseline. A review of available TDM measures revealed that no feasible TDM measures can be applied to the project. ***Therefore, the project's transportation impact has been identified as significant and unmitigated.***

Table 6: List of Potential TDM Strategies

TDM Strategy		Description
1	Increase diversity of land uses	This strategy focuses on inclusion of mixed uses within projects or in consideration of the surrounding area to minimize vehicle travel in terms of both the number of trips and the length of those trips.
2	Provide pedestrian network improvements	This strategy focuses on creating a pedestrian network within the project and connecting to nearby destinations. Projects range in size, so the emphasis of this strategy for smaller projects would likely be the construction of network improvements that connect the project sites directly to nearby destinations. For larger projects, this strategy could focus on the development of a robust pedestrian network within the project itself. Alternatively, implementation could occur through an impact fee program such as the TUMF or benefit/assessment district based on local or regional plans.
3	Provide traffic calming measures and low-stress bicycle network improvements	This strategy combines the CAPCOA research focused on traffic calming with new research on providing a low- stress bicycle network. Traffic calming creates networks with low vehicle speeds and volumes that are more conducive to walking and bicycling. Building a low-stress bicycle network produces a similar outcome. Implementation options are similar to strategy 2 above. One potential change in this strategy over time is that e-bikes (and e-scooters) could extend the effective range of travel on the bicycle network, which could enhance the effectiveness of this strategy.
4	Implement car-sharing program	This strategy reduces the need to own a vehicle or reduces the number of vehicles owned by a household by making it convenient to access a shared vehicle for those trips where vehicle use is essential. Note that implementation of this strategy would require regional or local agency implementation and coordination and would not likely be applicable for individual development projects.
5	Increase transit service frequency and speed	This strategy focuses on improving transit service convenience and travel time competitiveness with driving. While fixed route rail and bus service that could be enhanced, it's also possible that new forms of low-cost demand-responsive transit service could be provided. The demand-responsive service could be provided as subsidized trips by contracting to private TNCs or Taxi companies. Alternatively, a public transit operator could provide the subsidized service but would need to improve on traditional cost effectiveness by relying on TNC ride-hailing technology, using smaller vehicles sized to demand, and flexible driver employment terms where drivers are paid by trip versus by hour. This type of service would reduce wait times for travelers and improve the typical in-vehicle travel time compared to traditional transit. Note that implementation of this strategy would require regional or local agency implementation, substantial changes to current transit practices, and would not likely be applicable for individual development projects.
6	Encourage telecommuting and alternative work schedules	This strategy relies of effective internet access and speeds to individual project sites/buildings to provide the opportunity for telecommuting. The effectiveness of the strategy depends on the ultimate building tenants and this should be a factor in considering the potential VMT reduction.
7	Provide ride-sharing programs	This strategy focuses on encouraging carpooling and vanpooling by project site/building tenants and has similar limitations as strategy 6 above.

Source: WRCOG *SB 743 Implementation TDM Strategy Assessment* (Fehr & Peers, February 26, 2019)

Table 7: Evaluation of Potential TDM Strategies

TDM Strategy		Evaluation	Applicability to the Proposed Project
1	Increase diversity of land uses	Increasing the mix of uses within a project could result in a 9% - 30% reduction in VMT. The nature of the proposed development is consistent with the surrounding land use. Adding a retail or office component to the project would alter the fabric of the community such that it would be inconsistent with current residents and zoning. Additionally, there would be potential issues with development of larger retail or office buildings on this site including access for an increased number of vehicles and grading for larger buildings and parking.	Not Feasible
2	Provide pedestrian network improvements	Orienting the project towards transit, bicycle, and pedestrian facilities could result in a 0.25% - 0.50% reduction in VMT. Sidewalks are not proposed within the project and there are no sidewalks leading to the project site. The proposed project (rural, low-density housing) results in homes spread far apart along a steep winding road, not conducive to walking and bicycling. The area immediately surrounding the proposed project is primarily steep, undeveloped land. In the immediate vicinity of the proposed project is one estate property (a 35,000 square-foot residence). Thus, the project, surrounding land uses and nearby destinations would not support the need for a pedestrian network.	Not Feasible
3	Provide traffic calming measures and low-stress bicycle network improvements	Implementing traffic calming is anticipated to result in a 0.25% - 1.00% reduction in VMT. The project site will include the development of circular roadway to provide access to the proposed 14 residential estate home parcels. The circular roadway will operate as a low-speed facility and will not have cut-through access to other developed land uses. The vertical and horizontal curvature of the roadway will naturally calm traffic along the roadway. Additional traffic calming measures are not appropriate given the nature of the proposed development.	Not Feasible
4	Implement car-sharing program	Implementing a car-sharing program is projected to result in a 0.4% - 0.7% reduction in VMT. The nature of the project (low-density residential) does not make it an ideal candidate for a car-sharing program. This type of measure requires private market support as well as regional or local agency implementation and coordination. Thus, it is not applicable for individual development projects unless an established program is in place.	Not Feasible
5	Increase transit service frequency and speed	Increasing transit service frequency/speed is projected to result in a 0.02% - 2.5% reduction in VMT. On-demand service for medical appointments is provided to City of Bradbury residents through Monrovia Dial-A-Ride. Otherwise, the project is not served by transit. The nature of the proposed development is not conducive to providing transit on-site beyond the currently available dial-a-ride service given its location within the foothills and low density. This type of measure requires regional or local agency implementation and coordination and thus it is not applicable for individual development projects.	Not Feasible
6	Encourage telecommuting and alternative work schedules	Telecommuting programs are employment-based strategies and are outside the control of the project.	Not Applicable
7	Provide ride-sharing programs	Ridesharing programs are employment-based strategies and are outside the control of the project.	Not Applicable

Attachment 1 – Previous Analysis (OPR Guidelines)

The City of Bradbury (City) nor Los Angeles County (County) had published VMT guidelines and thresholds at the time that this memorandum preparation was initialized. At that time, it was agreed upon that the Governor’s Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018 (*Technical Advisory*) would be utilized to conduct the evaluation. Since that time, this analysis has been updated with guidance approved by City Council on August 18, 2020. While more area-specific information is now available and this analysis is now out-of-date, it is provided in Attachment 1 as an archive of the previous analysis.

VMT Threshold - According to the Technical Advisory, a proposed project exceeding a level of 15 percent below average existing VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as a regional VMT per capita or as city VMT per capita.

Project Level VMT Assessment - The City of Bradbury is a small, residential/equestrian-oriented community located within an area less than 2 square miles at the base of the San Gabriel Mountains in Los Angeles County. The population of Bradbury is approximately 1,000 individuals. Bradbury is unique in that it is a low-density, rural community on the edge of medium- and high-density areas within Los Angeles County. The proposed project is located on the edge of a similar type of development (low-density residential, further from other developed land uses) in an area with limited transit connections.

The Caltrans Statewide travel demand model was utilized to compare the average VMT/capita for the City of Bradbury’s traffic analysis zone (TAZ) to the average VMT/capita for all TAZs within the San Gabriel Valley region. The Year 2010 home-based data set was chosen given that the proposed project is residential. In **Exhibit A**, the project TAZ (#4902) is identified in light blue and the City boundary is outlined in red. As shown, the City of Bradbury falls within this TAZ which extends beyond the City to the south past I-210. TAZ #4902 is the smallest area within the Statewide travel demand model in which the Project can be measured.

Exhibit A: TAZ Map

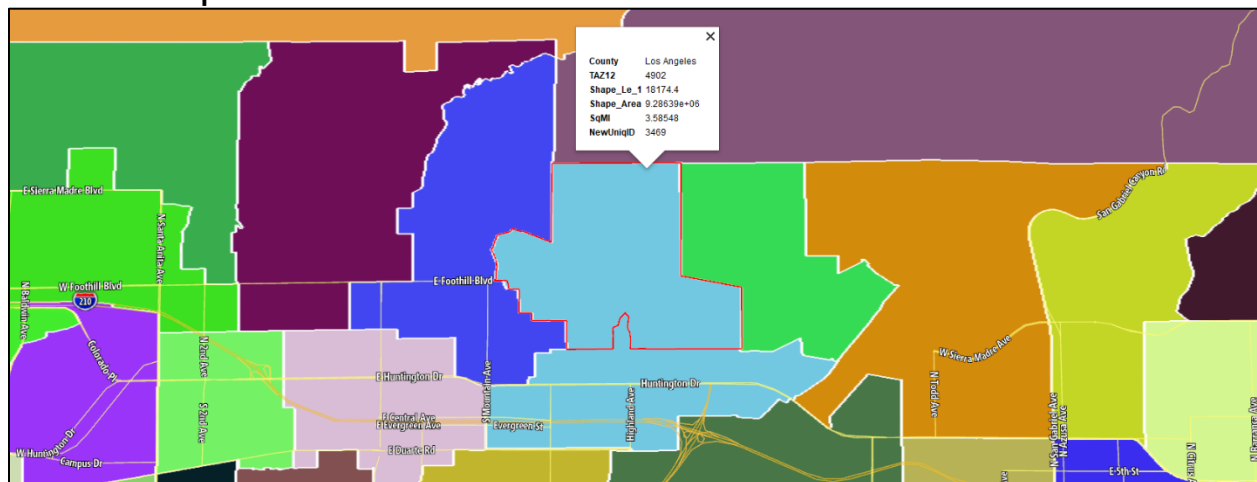


Table A shows the Caltrans statewide travel demand model VMT results where the Project TAZ average VMT/capita is 19.21, which is slightly greater than the average 19.20 VMT/capita for the San Gabriel Valley region. Therefore, the Project VMT/capita does not fall below a level 15 percent below the average regional VMT/capita and would therefore result in

a significant transportation impact as illustrated in **Exhibit B**. Mitigation is necessary to reduce the impact to less than significant. Without mitigation, the impact would remain significant and unavoidable.

Table A: VMT Comparison

Location	VMT	Population	VMT per Capita
TAZ #4902 (Bradbury)	253,737	13,211	19.21
San Gabriel Valley Region Average	148,145	7,782	19.20
Difference	105,592	5,429	0.01

Exhibit B: VMT Threshold Finding

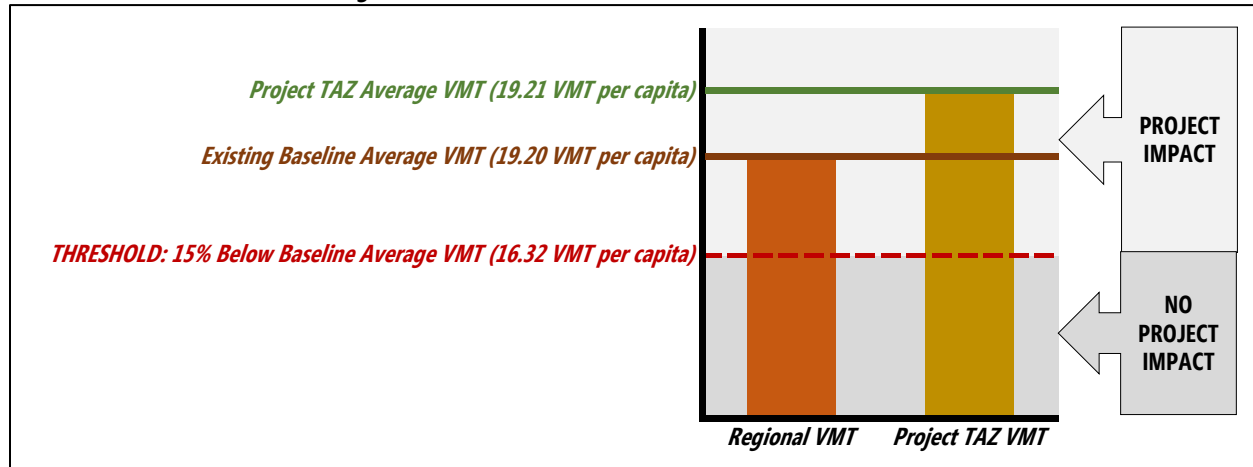


Table B: VMT Comparison – Additional Data

TAZ Comparison									
Location	VMT	HBVMT	HBWTripLen	HBSHTripLen	HBOTripLen	Population	VMTperPerson	HBVMTperPerson	PctHBVMT
TAZ #4902 (Bradbury)	253,737	197,109	14.50	7.53	6.95	13,211	19.21	14.92	78%
San Gabriel Valley Average	148,145	113,434	13.06	7.20	6.51	7,782	19.20	14.72	77%
Difference	105,592	83,675	1.44	0.33	0.44	5,429	0.01	0.20	1%

Note: per person = per capita

Attachment 2 – Potential VMT Mitigation Measures

Reduction Measure	Implementation Lead	Effectiveness	Source	Scale/Magnitude
Orient the project toward transit, bicycle, and pedestrian facilities.	Applicant	0.25 – 0.5% reduction in VMT	CAPCOA page 179, LUT-7	Within Project
Locate the project in an area of the region that already exhibits low VMT	Applicant	10-65% VMT reduction	CAPCOA page 159, LUT-2	Site specific
Shifting single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching services	Employer	0.3 – 13.4% commute VMT reduction	CAPCOA page 227, TRT-3	Based on size of development
Limit or eliminate parking supply	Applicant	5 – 12.5% vehicle miles travelled (VMT) reduction	CAPCOA page 207, PDT-1	Within Project
Unbundle parking costs	Applicant	2.6 – 13% VMT reduction	CAPCOA page 210, PDT-2	Within Project
Provide parking or roadway pricing or cash-out programs	Applicant/ landlord / company	0.1 – 19.7% commute VMT reduction, cash- out: 0.6 – 7.7% commute VMT reduction	CAPCOA page 261, TRT-14 and 15	Varies, potentially high
Provide Bike Parking in Non-Residential Projects	Applicant	0.625% reduction in VMT	CAPCOA page 202, SDT-6	Within Project
Provide Bike Parking with Multi-Unit Residential Projects	Applicant	Not Quantified	CAPCOA page 204, SDT-7	Within Project
Incorporate affordable housing into the project	Applicant	Not Quantified		Within Project
Locate the project near transit.	Applicant	0.5 – 24.6% VMT reduction	CAPCOA page 171, LUT-5	Site specific
Increase project density	Applicant	0.8 – 30.0% VMT reduction	CAPCOA page 155, LUT-1	Within Project
Increase the mix of uses within the project or within the project's surroundings	Applicant	9-30% VMT reduction	CAPCOA page 162, LUT-3	Within Project
Increase connectivity and/or intersection density on the project site and	Applicant	Not Quantified		Within Project
Integrate Affordable and Below Market Rate Housing	Applicant	0.04 – 1.20% VMT reduction	CAPCOA page 176, LUT-6	Within Project
Locate Project near Bike Path/Bike Lane	Applicant	0.625% reduction in VMT	CAPCOA page 181, LUT-8	Site specific
Incorporate Bike Lane Street Design (on-site)	Applicant	1% increase in share of workers commuting by bicycle (for each additional mile of bike lanes per square mile)	CAPCOA page 200, SDT-5	Within Project
Increase access to common goods and services, such as groceries, schools, and daycare	Local Agency	2% Trip Reduction		Based on location
Implement or provide access to a commute reduction program	Applicant/ landlord / company	1.0 – 6.2% commute VMT Reduction	CAPCOA page 210, TRT-1	
Providing on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms	Applicant/ landlord / company	Not quantified	CAPCOA page 244, TRT-8	
Implement Commute Trip Reduction Marketing	Applicant/ landlord / company	4-5% commute vehicle trips reduced with full- scale employer support	CAPCOA page 240, TRT-7	Within Project
Tolling new lanes to encourage carpools and fund transit improvements	Caltrans	Strong effect on travel patterns		Very large scale undertaking
Converting existing general purpose lanes to HOV or HOT lanes	Caltrans	Tolling effect		Very large scale undertaking

Reduction Measure	Implementation Lead	Effectiveness	Source	Scale/Magnitude
Implementing Intelligent Transportation Systems (ITS) strategies to improve passenger throughput on existing lanes.	Caltrans, Local Agency, LA County DPW	0 - 45% reduction in GHG emissions	CAPCOA page 291, RPT-2	High dependent on affected roadways
Implement Commute Trip Reduction Program – Required Implementation/Monitoring	Employer	4.2 – 21.0% commute VMT reduction	CAPCOA page 223, TRT-2	Within Project
Provide transit passes. [to Metro services]	Employer	Not quantified		
Providing telework options	Employer	0.07 – 5.50% commute VMT	CAPCOA page 236, TRT-6	Low scale
Providing employee transportation coordinators at employment sites and	Employer	Not Quantified		Within Project
Providing a guaranteed ride home service to users of non-auto modes.	Employer	Not Quantified		Within Project
Provide car-sharing, bike sharing, and ride-sharing programs	Employer or franchise through local agency	1 – 15% commute VMT reduction	CAPCOA page 253, TRT-11 and TRT-12	
Implement Car-Sharing Program	Employer or franchise through local agency	0.4 – 0.7% VMT reduction and therefore 0.4 – 0.7% reduction in GHG emissions	CAPCOA page 245, TRT-9	Likely beyond the site area to be effective
Increase access to common goods and services, such as groceries, schools, and daycare	Local Agency	2% Trip Reduction		Based on location
Incorporate neighborhood electric vehicle network	Local Agency	0.5-12.7% VMT reduction	CAPCOA page 194, SDT-3	Potentially very large scale to be effective
Provide Pedestrian Network Improvements	Local Agency	0 - 2% VMT reduction	CAPCOA page 186, SDT-1	Dependent on affected area
Provide traffic calming	Local Agency	0.25 – 1.00% VMT reduction and therefore 0.25 – 1.00% reduction in GHG emissions	CAPCOA page 190, SDT-2	Generally low, and localized
Implement Market Price Public Parking (On-Street)	Local Agency	2.8 – 5.5% VMT reduction	CAPCOA page 213, PDT-3	Likely on adjacent roadways
Reduction Measures on a Programmatic Level				
Expand Transit Network	Metro and other Transit Agencies	0.1 – 8.2% vehicle miles travelled (VMT) reduction	CAPCOA page 276, TST-3	Very High
Increase Transit Service Frequency/Speed	Metro and other Transit Agencies	0.02 – 2.5% VMT reduction	CAPCOA page 280, TST-4	Purchase of new vehicles or more vehicles run
Provide a Bus Rapid Transit System	Metro and other Transit Agencies	0.02 – 3.2% VMT reduction	CAPCOA page 270, TST-1	High, if new system
Providing incentives or subsidies that increase the use of modes other than single-occupancy vehicle.	Metro and other Agencies	0.3 – 20.0% commute VMT reduction	CAPCOA page 230, TRT-4	
Improve or increase access to transit.	Local Agency in coordination with Metro	Not quantified	CAPCOA page 275, TST-2	Small investments in pedestrian and bicycle connections, may include park and ride improvements
Implementing or funding off-site travel demand management	Various including Metro	Not Quantified		Variable
Increase Destination Accessibility	Metro and other Transport. Agencies	6.7 – 20% VMT reduction	CAPCOA page 167, LUT-4	Site specific
Deploy management strategies (e.g., pricing, vehicle occupancy requirements) on roadways or roadway lanes.	Local Agency	Not Quantified		Likely on adjacent roadways
Create Urban Non-Motorized Zones	Local Agency	0.01 – 0.2% annual VMT reduction		Likely on adjacent roadways

Source: *Analysis of VMT Mitigation Measures Pursuant to SB 743* (February 23, 2018, Prepared Iteris, Inc. for Metro)