Appendix K-1
VMT Memo

Memo

To:	Ian Pari	From:	Daryl Zerfass and Sandhya Perumalla
	City of Santa Clarita		Stantec
File:	2042605700	Date:	February 16, 2024

Reference: Wiley Canyon Mixed-Use Project VMT Impact Analysis

Stantec Consulting Service Inc. (Stantec) has prepared a vehicle miles of travel (VMT) impact analysis for the proposed Wiley Canyon mixed-use development (Project) located in in the City of Santa Clarita, California. The Project is located on the west side of Wiley Canyon Road, north of Calgrove Boulevard. See **Figure 1** for the Project location. The purpose of this memo is to document the findings of the VMT impact analysis for use in the Project's environmental documentation.

The proposed Project consists of approximately 379 multifamily residential units, 8,914 square feet (SF) of commercial retail development and 217-unit Senior living facilities that includes 130 Independent Living units, 61 Assisted Living units, and 26 Memory Care units in the City of Santa Clarita. It also includes a publicly accessible outdoor recreational space. The Project site is bordered by a mobile home park to the north, undeveloped land and single-family dwellings to the east and south, and Interstate 5 to the west. Primary access to the project would be via a project driveway on Wiley Canyon Road south of Wabuska Street, and emergency vehicle access is proposed via Hawkbryn Avenue.

This VMT analysis was prepared in support of the Project's environmental documentation and complies with the updated California Environmental Quality Act (CEQA) guidelines that incorporates the requirements of Senate Bill 743 (SB 743). SB 743 required the Governor's Office of Planning and Research (OPR) to establish guidelines under CEQA for identifying and mitigating VMT transportation impacts. Generally, SB 743 moves away from using delay-based level of service (LOS) as the metric for identifying a project's significant impact to instead use VMT. The analysis has been prepared in accordance with the City of Santa Clarita's VMT analysis guidelines.

Project Screening

The VMT guidelines provide screening criteria that is used to identify if a project is expected to have a less-than-significant impact without conducting a more detailed VMT analysis. The screening criteria is based on project size, low VMT area, transit priority area, or affordable housing as shown in **Table 1**.

Table 1 City of Santa Clarita Project Screening Criteria and Threshold

Category	Criteria/Screening	Threshold	Screened Out (Yes/No)
Trip Generation Screening	Small Projects can be screened out from completing a full VMT analysis.	If the Project generates less than 110 trips per day, the Project is assumed to have a less than significant impact.	No
Locally Serving Retail	Retail projects that are locally serving can be screened out from completing a full VMT analysis.	If the retail component of the Project consists of individual retail components that are locally serving and less than 50,000 square feet, then the retail portion of the Project is assumed to have a less than significant impact.	Yes

Reference: **Wiley Canyon Mixed-Use Project VMT Impact Analysis**

Low VMT Area Screening	Residential and Office Projects that are located in areas with low VMT and that are similar in character to the existing development can be screened out from completing a full VMT analysis.	If the residential or office Project is located in an area that is already 15% below the Baseline VMT and the Project is similar in character to the existing development, the Project is assumed to have a less than significant impact.	No
Transit Priority Area Screening	Projects in close proximity to a major transit stop or a stop located along a high-quality transit corridor generally reduce VMT and therefore can be screened out from completing a full VMT analysis.	If the Project is within ½ mile of a major or high-quality transit stop/corridor, the Project is assumed to have a less than significant impact. The project should generally also meet the following criteria: - FAR > 0.75 - Not provide more parking than required by City - Be consistent with the regional SCS - Not replace existing affordable units with a smaller number of moderate to high-income units	No
Affordable Housing Screening	Affordable housing in infill locations can be screened out from completing a full VMT analysis.	If the Project is comprised 100% of affordable units and is located in an infill location, then the Project is assumed to have a less than significant impact.	No
FAR = Floor Area Ratio SCS = Sustainable Community Strategy Source: Transportation Analysis Updates in Santa Clarita, Fehr & Peers, May 2020			

Trip Generation Screening –The Project would generate more than 110 trips per day. Therefore, the trip generation screening criteria does not apply.

Locally Serving Retail – A project that proposes locally serving retail uses that are 50,000 square feet or less is eligible to be screened out. The Project proposes to include a total of 8,914 SF of locally serving retail within the mixed-use retail/residential zone to support the Project residents and local community.

Since the commercial component of the Project would consist of locally serving retail comprised of less than 50,000 square feet, the commercial component of the Project can be presumed to have a less than significant impact. Similarly, the outdoor recreational space is a locally serving use and is presumed to have a less than significant impact, since people typically go to parks that are near to their homes and generally would not drive long distances if there are parks nearby.

Low VMT Area Screening – The Project is not in a low VMT generating area according to maps depicting low VMT areas as prepared by the City for analyses of this type; therefore, the Project does not meet the criteria for a low VMT Area Screening.

Transit Priority Area Screening – A project can be screened out as having a less than significant impact on VMT if the project is within ½ mile of a rail station or bus stop that provides service at least every 15 minutes during peak commute periods. The Santa Clarita Transit bus stop that is closest to the Project is at the intersection of Lyons Avenue & Wiley Canyon Road, that is just over the ½ mile threshold and the headways are greater than 15 minutes. The Project is proposing to add two bus stops on Wiley Canyon Road—one northbound near Calgrove Boulevard, and the other southbound at Wabuska Street. Although the bus stops

Reference: Wiley Canyon Mixed-Use Project VMT Impact Analysis

would be within the ½ mile threshold, headways would likely be greater than 15 minutes. Therefore, the Project does not meet the criteria for a transit priority area screening.

Affordable Housing Screening – The Project is not comprised 100% of affordable housing in an infill area, so this screening threshold does not apply.

Baseline VMT Data and Performance Criteria

The City's VMT guidelines specify new significance thresholds that determine a significant transportation impact. For a residential project, the significance threshold is when the project exceeds a level of 15% below the Citywide baseline VMT per capita for home-based (HB) trips. Similarly, for an employment generating project, the significance threshold is when the project exceeds a level of 15% below the Citywide baseline VMT per capita for home-based work (HBW) trips. If a significant impact is identified utilizing the significance thresholds, feasible mitigation must be identified to remove or reduce the Project's VMT impact.

The Project is located in traffic analysis zone (TAZ) 20236200 (see attached Figure 1), which includes residential land uses similar in nature to the proposed Project. Since the Project's land uses are comparable to the land use in TAZ 20236200, the Project can be expected to exhibit trip generation and trip length characteristics similar to the other residential land use in the TAZ. As such, the per capita VMT as calculated by the traffic model for TAZ 20236200 can be used to estimate the Project's VMT. The residential component of the Project and the CCRC employment generating component of the Project are evaluated separately consistent with the City guidelines.

As shown in Table 2, the baseline HB VMT for the TAZ is approximately 21.86 VMT per capita, and the HBW VMT for the TAZ is approximately 17.81 VMT per employee. Note that these VMT estimates reflect the TAZ average and do not account for VMT reductions due to specific VMT reducing Project components (discussed later in this memorandum).

Table 2 Zonal VMT Data and Thresholds of Significance

Analysis Metrics	Residential HB VMT per Capita	CCRC HBW VMT per Employee
Project Land Use	379 Multi-Family Residential Units	217-CCRC Units
TAZ 20236200 Population & Employment	1,166 Persons	207 Employees
TAZ Home-Based VMT per Capita (2020)[1]	21.86 VMT per capita	17.81 VMT per employee
Santa Clarita Average Home-Based VMT per Capita (2020)[1]	22.72 VMT per capita	18.45 VMT per employee
Threshold of Significance (15% reduction from baseline)[2]	19.3 VMT per capita	15.7 VMT per employee
Source: [1] SCAG 2016 RTP/SCS Travel Demand Model, Santa Clarita 2020 VMT Look Up Table provided by the City via email dated June 23, 2020, see Attachment B. [2] Transportation Analysis Updates in Santa Clarita, Fehr & Peers, May 2020		

Based on the VMT guidelines for the significance threshold, a 15% reduction is applied to the citywide baseline average HB VMT (22.72 VMT per capita), resulting in a threshold of significance of 19.3 VMT per

Reference: **Wiley Canyon Mixed-Use Project VMT Impact Analysis**

capita for residential development. Similarly, a 15% reduction is applied to the citywide baseline average HBW VMT (18.45 VMT per employee), resulting in a threshold of significance of 15.7 VMT per employee.

VMT Analysis

Certain Project components have the effect of reducing VMT. To estimate the effectiveness of these Project components, quantification methodologies from the California Air Pollution Control Officers Association Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (GHG Handbook)[1] is utilized.

Project Component (PC)-1: The Project will increase residential density. To quantify the VMT reduction that results from increasing residential density, the GHG Handbook T-1 Increase Residential Density[2] reduction measure is used. This component is applicable at the Project/Site level and VMT reductions are achieved by a project that is designed with a higher density of dwelling units compared to the average residential density. For this application, the Project's estimated residential density of 40-50 du/acre is compared to the average residential density in the City of Santa Clarita (5-6 du/acre) and nationwide (9.1 du/acre). Based on the methodology outlined in the GHG Handbook, this Project component reduces VMT by **30.0**% based on the GHG reduction formula shown below. See Attachment A for VMT Reduction Calculations.

A = ((B-C)/C) x D = ((40-9.1)/9.1)*-0.22 = -74.7% (but capped at 30%) where
A is percent reduction in GHG emissions from project VMT in study area
B is residential density of project development
C is residential density of typical development
D is elasticity of VMT with respect to residential density

PC-2: The Project will limit parking supply. The Project parking is pursuant to the City's mixed-use requirements. These parking standards assume sharing of parking spaces by the various uses and the number of parking spaces provided are less than the typical City parking requirements. Therefore, the Project proposes to construct 13% less parking than the City standard by providing a shared parking provision. To quantify the VMT reductions related to this site design feature, the GHG Handbook T-15 Limit Residential Parking Supply[3] is utilized. This component results in a Project VMT reduction of approximately **1.23%** based on the GHG reduction formula shown below. See Attachment A for VMT Reduction Calculations.

A = -((B-C)/B) x D x E x F = -((1,110-966)/1,110)*69%*37%*37% = -1.23%; where
A is percent reduction in GHG emissions from resident vehicles accessing the site
B is residential parking demand
C is project residential parking supply
D is percentage of project VMT generated by residents
E is percent of household VMT that is commute based
F is percent reduction in commute mode share by driving among households in area with scarce parking

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[1] Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity Designed for Local Governments, Communities, and Project Developers, California Air Pollution Control Officers Association, December 2021.
[2] Page 70, ibid
[3] Page 122, ibid

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PC-3: The Project will include a mix of uses, including residential, employment uses, park and open space. The Project will have a mix of complimentary land uses, that when near one another, can reduce VMT since non-auto modes of transport can be used to reach destinations. An internal trip capture is an estimate of the number of trips that will remain onsite due to the availability of different land uses. The Project's internal trip capture was calculated and included in the Project's trip generation estimates, therefore, VMT reductions from this Project component are not quantified for this analysis.

PC-4: The Project will provide on-site bicycle parking. The Project will provide additional bicycle parking spaces. T-34 Provide Bike Parking measure in the GHG Handbook is listed as a supporting or non-quantified GHG reduction measure and quantification methods are not provided. Supporting or non-quantified measures are described as enhancing "the ability of quantified measures to attain expanded reductions and co-benefits"[4]. Therefore, potential VMT reductions from this Project component are not quantified for this analysis.

PC-5: The Project will improve pedestrian connectivity by constructing an on-site pedestrian network and will improve the existing off-site pedestrian network by filling in gaps for pedestrian connectivity. This measure is listed in the City's guidelines and aligns with General Plan Policy C 7.2. The Project will construct pedestrian improvements per City standards. The applicant will work with the City to design sidewalks and/or shoulders and trails that will facilitate pedestrian movements throughout the Project and connect to pedestrian improvements off-site. The sidewalks and/or shoulders will link areas within the Project site and encourage residents to walk to the private recreational area and the trails for exercise. The Project will not build walls, landscaping, or slopes that impede pedestrian circulation. The Project will also fill in gaps, where needed, that will aid in pedestrian circulation. VMT reductions from this Project component are quantified using the GHG Handbook's T-18 Provide Pedestrian Network Improvement[5] and results in a 3% VMT reduction. However, the scale of application for this measure is at the Plan/Community level and, per the GHG Handbook, cannot be combined with measures at the Project/Site level. Therefore, VMT reductions from this measure are not incrementally added to the reductions noted above.

PC-7: The Project will provide traffic calming features per City standards and City staff recommendations and will also exceed the minimum requirements by constructing a Class I multi-use trail on Wiley Canyon Road. The City guidelines states that when pedestrian/bicycle safety and traffic calming measures are provided in excess of the City's requirements, VMT can be expected to be reduced. This strategy aligns with the General Plan Policy C 1.1.7. The Project roadways will be designed consistent with City standards and the applicant will work with the City to design the roadways in such a way to reduce motor vehicle speeds and encourage bicycle and pedestrian trips. The Project will provide traffic calming features that includes roundabouts at three intersections and marked crosswalks on Wiley Canyon Road, and the Project will also provide a roundabout on site.

The Project's Class I multi-use trail will connect to Calgrove Boulevard to the south and Calgrove Boulevard will be restriped to provide Class II bicycle lanes. The City identifies Wiley Canyon Road as a Class III bicycle route. The multi-use trail would provide non-motorized connectivity to the greater Santa Clarita Valley area. The Project would not block or impede future bicycle facilities (Existing and Future bicycle facilities are shown in **Figure 2**). T-35 Provide Traffic Calming Measures is categorized in the GHG Handbook as a supporting or non-quantified GHG reduction measure and quantification methods are not provided. Supporting or non-quantified measures are described as enhancing "the ability of quantified measures to attain expanded

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[4] Page 44, ibid
[5] Page 133, ibid

Reference: Wiley Canyon Mixed-Use Project VMT Impact Analysis

reductions and co-benefits". Therefore, VMT reductions from this Project component are not quantified for this analysis.

PC-8: The Project will provide features on-site that encourage remote work and telecommuting. More people are choosing to work remotely or telecommute full-time or for a couple days a week. The Project will provide features that will make remote work accessible, such as free WIFI at common areas (e.g., local retail stores, recreational areas) and business center at the multi-family residential buildings, which will reduce VMT. T-42 Implement Telecommute and/or Alternative Work Schedule Program is categorized in the GHG Handbook as a supporting or non-quantified GHG reduction measure and quantification methods are not provided. Supporting or non-quantified measures are described as enhancing "the ability of quantified measures to attain expanded reductions and co-benefits". Therefore, potential VMT reductions from this Project component are not quantified for this analysis.

Table 3 Project Components and VMT Reduction Summary

Description	Residential VMT Reduction (HB VMT)	Employment VMT Reduction (HBW VMT)	Source
Project Components			
PC-1. The Project will increase residential density	30.0%	30.0%	GHG Handbook Land Use T-1
PC-2. The Project will limit parking supply	1.23%	1.23%	GHG Handbook Parking or Road Pricing/Management T-15
Total VMT Reductions from Project Components	**30.9%[1]**	**30.9%[1]**	--
Other Project Components			
PC-3. The Project will have a mix of uses, residential, employment, and retail	n/a[2]	n/a[2]	Land Use Impacts on Transport How Land Use Factors Affect Travel Behavior May 30, 2022, https://www.vtpi.org/landtravel.pdf
PC-4. The Project will provide on-site bicycle parking	n/a	n/a	GHG Handbook Provide Bike Parking T-34
PC-5. The Project will improve pedestrian connectivity by constructing an on-site pedestrian network and connect to off-site pedestrian facilities	n/a[3]	n/a[3]	GHG Handbook Neighborhood Design T-18
PC-7. The Project will provide traffic calming features per City standards and City staff recommendations. The Project will also construct a Class I multi-use trail on Wiley Canyon Road, which includes a regional connection to Towsley Canyon Open Space	n/a	n/a	GHG Handbook Provide Traffic Calming Measures T-35
PC-8 The Project will provide features on-site that encourage remote work and telecommuting	n/a	n/a	Similar to GHG Handbook Implement Telecommute and/or Alternative Work Schedule Program T-42

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na – not applicable. The GHG Handbook lists this measure as a supporting or non-quantified reduction measure and quantification methods are not provided in the handbook.

[1] The calculated reductions do not sum up to the total since individual strategies are multiplicative and not additive. e.g., overall % VMT Reduction = 1-(1-A)*(1-B)*(1-C) where A, B, C equals reductions for individual strategies.

[2] Internal trip capture was calculated for the Project and is included in the Project's trip generation estimates.

[3] T-18 results in a VMT reduction of approximately 3.0%, however, the VMT reduction is not included because the 'Scale of Application' is at the Plan/Community level and cannot be combined with measures at the Project/Site level.

Table 4 summarizes the resulting VMT per capita when the VMT reduction is applied.

Table 4 Project Level VMT Analysis

Description	Residential Home-Based VMT per Capita	CCRC Home-Based Work VMT per Employee
Regional Threshold of Significance		
Threshold of Significance (15% reduction from baseline)	19.3	15.7
Project		
Baseline TAZ VMT	21.86	17.81
Project VMT with VMT Reductions from Project Components	15.11	12.31
Difference (Project VMT with Project Components minus Regional Threshold)	-4.2	-3.4
Is Project above or below Regional Threshold?	Below	Below
Significant Transportation Impact	No	No

For the residential portion of the Project, the Project VMT rate is 15.11 VMT per capita with VMT reductions from Project components. The threshold of significance for the area is 19.3 HB VMT per capita. Therefore, since the Project falls below the regional threshold, the residential portion of the Project would result in a less than significant impact.

For the employment portion of the Project, the project VMT rate for the Project is 12.31 VMT per employee with VMT reductions from Project components. The regional threshold of significance is 15.7 HBW VMT per employee. Therefore, since the employment portion of the Project falls below the regional threshold, the employment portion of the Project would result in a less than significant impact.

Cumulative Analysis

This cumulative analysis evaluates the long-term project effects on VMT. As noted in the City Guidelines, cumulative effects are determined through consistency with the SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Projects that are consistent with the RTP/SCS in terms of location, density and intensity would have a less than significant cumulative impact on VMT. The Project site is in the City of Santa Clarita. The Santa Clarita General Plan contains focused goals, policies, and maps to guide the regulation of development within the City. The Project land use is consistent with the City's

Reference: **Wiley Canyon Mixed-Use Project VMT Impact Analysis**

General Plan Mixed-Use Neighborhood designation for the Project site and would therefore be consistent with the RTP/SCS. Since the Project is consistent with the RTP/SCS, the Project has a less than significant cumulative impact.

Conclusion

A VMT impact analysis was conducted for the proposed Project. Based on the City's TIA Guidelines, the Project would not meet all of the established screening criteria and therefore a VMT analysis is required.

Residential VMT per capita and employment VMT per employee statistics were obtained from the City's 2020 VMT Lookup Table. Project components that would reduce the Project's VMT were identified and quantified based on the GHG Handbook quantification methodologies. VMT reductions due to specific Project components were applied to the baseline VMT estimates. The Project components would result in an overall VMT reduction of 30.1 percent for both the residential portion of the Project and the employment portion of the Project.

For the residential portion of the Project, the Project VMT rate is 15.11 VMT per capita with VMT reductions from Project components. The threshold of significance for the area is 19.3 HB VMT per capita. Therefore, since the Project falls below the regional threshold, the residential portion of the Project would result in a less than significant impact. For the employment portion of the Project, the Project VMT rate for the Project is 12.31 VMT per employee with VMT reductions from Project components. The regional threshold of significance is 15.7 HBW VMT per employee. Therefore, since the employment portion of the Project falls below the regional threshold, the employment portion of the Project would result in a less than significant impact. The retail portion of the Project consists of local-serving retail (under 50,000 TSF) and would have a less than significant impact. Lastly, the outdoor recreational portion of the Project is local-serving and would have a less than significant impact. Since the Project has a less than significant impact at the project-level, there is a less than significant impact at the cumulative level.

If you have any questions on the above material, please feel free to contact Daryl or Sandhya to discuss.

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Attachment: Figure 1 Project Location Map
                  Figure 1 Existing and Future Bicycle Infrastructure
                  Attachment A VMT Reduction Calculations
                  Attachment B VMT Look Up Table
                  Attachment C GHG Handbook
                  Attachment D General Plan Land Use Map

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Legend

Project site

xxxx SCAG Tier 2 TAZ boundaries

Figure 1

Southern California Association of Governments (SCAG) Tier 2 Traffic Analysis Zones (TAZs)
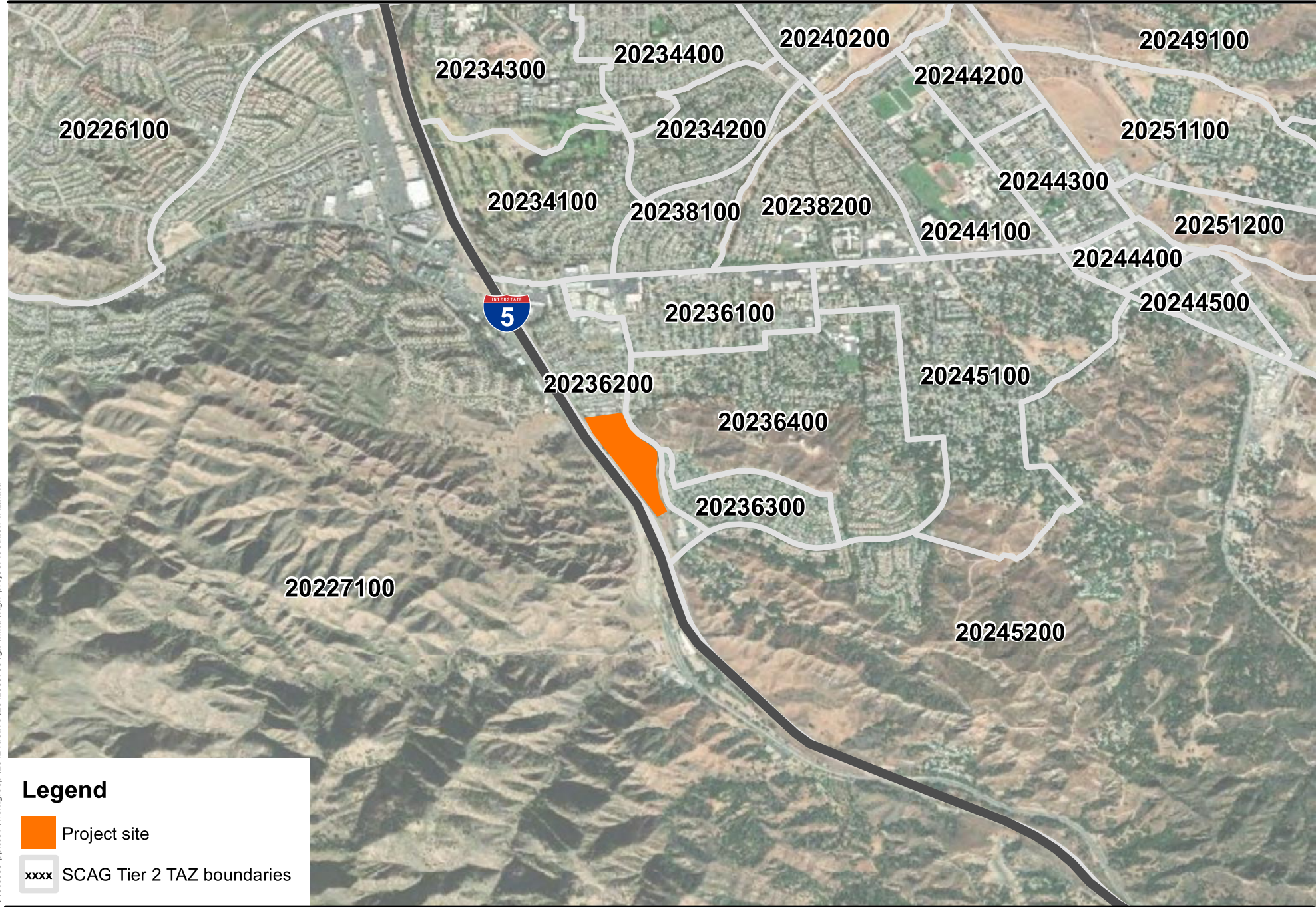
\\Us0300-ppfss01\workgroup\2042\active\204205700\gis\mxd\Figx_project-location-TAZ.mxd

Legend

Project Site

Existing Bicycle Facilities

Class I off-street bicycle path

Class II on-street bicycle lane

Class III bicycle route

Paseo

Proposed Bicycle Facilities

Class I off-street bicycle path

Class II on-street bicycle lane

Class III bicycle route
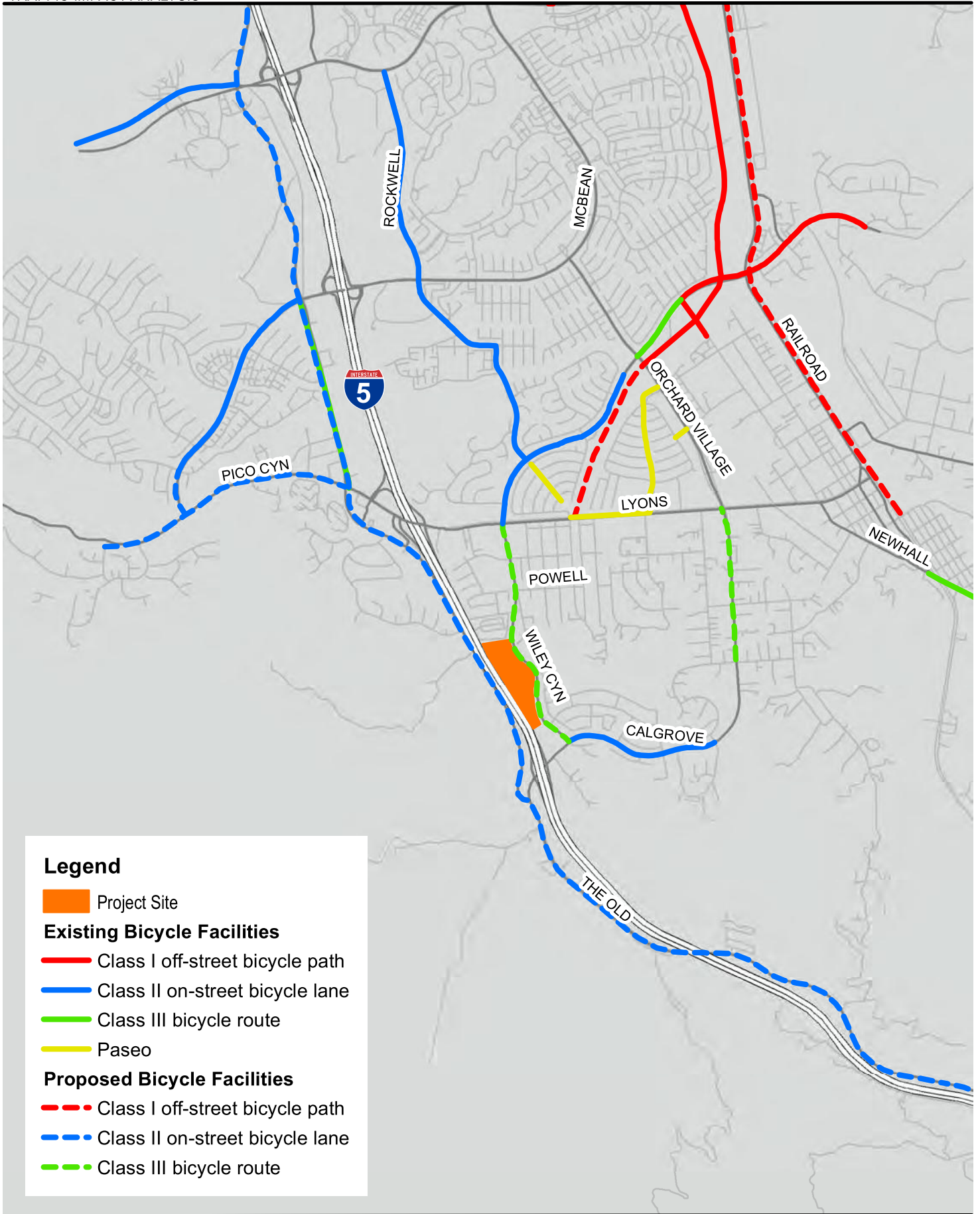
C:\Users\emazzella\Documents\Wiley Canyon TIA\bicycle_facilities-v2.mxd

N

Figure 2
Existing and Future Bicycle Facilities

Reference: **Wiley Canyon Mixed-Use Project VMT Impact Analysis**

Attachment A: VMT Reduction Calculations and Pages from GHG Handbook

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Project Component #1: T-1 Increase Residential Density

GHG Reduction Formula

$$A = \frac{B - C}{C} \times D$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project VMT in study area	0–30.0	%	calculated
User Inputs				
B	Residential density of project development	[ ]	du/acre	user input
Constants, Assumptions, and Available Defaults				
C	Residential density of typical development	9.1	du/acre	Ewing et al. 2007
D	Elasticity of VMT with respect to residential density	-0.22	unitless	Stevens 2016

Source: CAPCOA GHG Handbook

B = 40-50 du/acre

C = 9.1 du/acre or City of Santa Clarita 5-6 du/acre

A = >30% VMT reduction since

Per CAPCOA a 30% reduction is the cap

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Reference: **Wiley Canyon Mixed-Use Project VMT Impact Analysis**

Project Component #2: T-15 Limit Residential Parking Supply

GHG Reduction Formula

$$A = -\frac{B - C}{B} \times D \times E \times F$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from resident vehicles accessing the site	0–13.7	%	calculated
User Inputs				
B	Residential parking demand	[ ]	parking spaces	user input
C	Project residential parking supply	[ ]	parking spaces	user input
D	Percentage of project VMT generated by residents	[ ]	%	user input
Constants, Assumptions, and Available Defaults				
E	Percent of household VMT that is commute based	37	%	Caltrans 2012
F	Percent reduction in commute mode share by driving among households in areas with scarce parking	37	%	Chatman 2013

Source: CAPCOA GHG Handbook

B = 1,110

C = 966

D = 69% (based on ADT, Residential ADT is 69% of total Project ADT)

A = 1.23% VMT Reduction
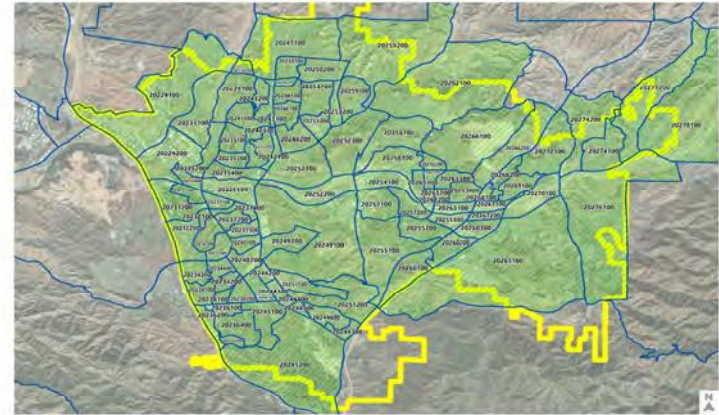
2020 VMT LOOK UP TABLE
SCAG 2016 RTP/SCS Travel Demand Model, Santa Clarita

2020 VMT Summary

SCAG Tier 2 TAZ ID	Population	Employment	Home-Based VMT Summary				Home-Based Work VMT Summary			
			Home Based VMT	Home Based VMT per Capita	Santa Clarita Baseline Home Based VMT per Capita	Santa Clarita Baseline Home Based VMT per Capita % Difference	Home Based Work VMT	Home Based Work VMT per Employee	Santa Clarita Baseline Home Based Work VMT per Employee	Santa Clarita Baseline Home Based Work VMT per Employee % Difference
20247100	6,177	335	165,347	26.77	22.72	17.8%	6,514	19.42	18.45	5.3%
20239200	1,387	11	35,351	25.49	22.72	12.2%	189	17.21	18.45	-6.7%
20259200	4,025	218	105,465	26.20	22.72	15.3%	3,950	18.15	18.45	-1.6%
20250200	2,503	106	67,190	26.85	22.72	18.2%	1,919	18.05	18.45	-2.1%
20250100	2,041	146	52,009	25.48	22.72	12.2%	2,467	16.86	18.45	-8.6%
20245200	3,374	2,632	60,986	18.08	22.72	-20.4%	47,274	17.96	18.45	-2.7%
20262100	2,836	445	71,879	25.34	22.72	11.6%	8,172	18.36	18.45	-0.5%
20252300	2,474	86	63,299	25.59	22.72	12.6%	1,509	17.55	18.45	-4.9%
20253200	1,565	1,232	37,095	23.70	22.72	4.3%	23,947	19.44	18.45	5.4%
20259100	2,947	386	75,133	25.49	22.72	12.2%	6,736	17.44	18.45	-5.5%
20265100	7,273	864	169,589	23.32	22.72	2.6%	15,291	17.70	18.45	-4.1%
20276100	2,520	473	77,110	30.60	22.72	34.7%	10,239	21.66	18.45	17.4%
20274200	1,731	99	51,643	29.84	22.72	31.4%	2,211	22.30	18.45	20.9%
20260100	1,395	140	34,493	24.72	22.72	8.8%	2,554	18.19	18.45	-1.4%
20256100	5,535	116	153,409	27.72	22.72	22.0%	1,931	16.66	18.45	-9.7%
20258100	3,130	128	92,505	29.55	22.72	30.1%	2,383	18.59	18.45	0.8%
20252200	2,860	500	38,701	13.53	22.72	-40.4%	9,309	18.61	18.45	0.9%
20255100	3,652	530	74,828	20.49	22.72	-9.8%	9,274	17.51	18.45	-5.1%
20257100	3,843	902	61,943	16.12	22.72	-29.0%	17,605	19.52	18.45	5.8%
20249100	1,268	13,540	18,659	14.71	22.72	-35.2%	268,842	19.86	18.45	7.6%
20257200	2,796	393	55,828	19.97	22.72	-12.1%	5,199	13.24	18.45	-28.2%
20251200	2,379	1,288	42,661	17.93	22.72	-21.1%	20,782	16.13	18.45	-12.5%
20237300	1,689	345	33,547	19.87	22.72	-12.5%	6,060	17.56	18.45	-4.8%
20237400	1,627	2,428	24,339	14.96	22.72	-34.1%	37,645	15.50	18.45	-16.0%
20255200	2,888	255	59,503	20.61	22.72	-9.3%	3,916	15.36	18.45	-16.7%
20254100	2,814	1,367	53,598	19.05	22.72	-16.2%	24,698	18.07	18.45	-2.1%
20235400	1,618	343	29,079	17.98	22.72	-20.9%	5,799	16.93	18.45	-8.2%
20252100	1,627	399	33,676	20.70	22.72	-8.9%	6,902	17.29	18.45	-6.3%
20260200	2,957	717	59,868	20.25	22.72	-10.9%	11,438	15.95	18.45	-13.5%
20229100	3,506	6,454	66,018	18.83	22.72	-17.1%	146,529	22.70	18.45	23.1%
20236200	1,166	207	25,498	21.86	22.72	-3.8%	3,690	17.81	18.45	-3.4%
20232200	1,314	1,352	27,755	21.12	22.72	-7.0%	25,205	18.65	18.45	1.1%
20234300	3,112	729	60,411	19.41	22.72	-14.6%	13,985	19.17	18.45	3.9%
20234100	760	464	16,110	21.20	22.72	-6.7%	8,684	18.72	18.45	1.5%
20233100	3,968	2,131	68,148	17.17	22.72	-24.4%	41,379	19.42	18.45	5.3%
20229200	444	8,384	7,625	17.18	22.72	-24.4%	168,972	20.15	18.45	9.2%
20231200	799	2,477	15,418	19.29	22.72	-15.1%	50,889	20.55	18.45	11.4%
20239100	3,830	317	82,829	21.62	22.72	-4.8%	5,629	17.76	18.45	-3.7%
20236400	2,406	140	52,364	21.77	22.72	-4.2%	2,472	17.71	18.45	-4.0%
20245100	3,449	1,556	68,744	19.93	22.72	-12.2%	26,209	16.84	18.45	-8.7%
20244500	1,702	329	28,373	16.67	22.72	-26.6%	4,500	13.68	18.45	-25.9%
20236300	821	8	19,516	23.78	22.72	4.7%	32	4.01	18.45	-78.3%
20236100	2,183	924	48,474	22.20	22.72	-2.3%	16,888	18.27	18.45	-1.0%
20238100	1,140	195	25,727	22.56	22.72	-0.7%	3,254	16.69	18.45	-9.6%
20234200	1,211	116	26,004	21.47	22.72	-5.5%	1,783	15.39	18.45	-16.6%
20234400	2,048	118	43,097	21.04	22.72	-7.4%	1,994	16.86	18.45	-8.6%
20232400	1,436	1,485	27,093	18.87	22.72	-16.9%	28,149	18.96	18.45	2.8%
20232300	1,318	187	24,386	18.50	22.72	-18.6%	3,260	17.41	18.45	-5.6%
20232100	1,686	177	23,176	13.75	22.72	-39.5%	3,434	19.40	18.45	5.2%
20237100	0	2,415	0	NA	22.72	NA	36,197	14.99	18.45	-18.7%
20235200	3,331	122	63,178	18.97	22.72	-16.5%	2,023	16.60	18.45	-10.0%
20235600	1,556	776	26,911	17.30	22.72	-23.9%	13,090	16.87	18.45	-8.6%
20231100	1,364	391	22,090	16.20	22.72	-28.7%	7,390	18.89	18.45	2.4%
20240100	1,748	190	36,535	20.90	22.72	-8.0%	3,350	17.65	18.45	-4.3%
20240200	2,725	76	59,859	21.97	22.72	-3.3%	1,142	15.02	18.45	-18.6%
20237200	2,542	136	42,925	16.89	22.72	-25.7%	2,171	15.95	18.45	-13.6%
20244700	2,753	76	62,696	22.78	22.72	0.3%	1,400	18.38	18.45	-0.3%
20244600	3,910	162	73,270	18.74	22.72	-17.5%	2,778	17.18	18.45	-6.9%
20242100	1,456	371	28,135	19.32	22.72	-14.9%	5,925	15.96	18.45	-13.5%
20242200	1,879	138	45,598	24.27	22.72	6.8%	2,444	17.71	18.45	-4.0%
20243100	1,792	182	42,220	23.56	22.72	3.7%	3,088	17.00	18.45	-7.9%
20235300	1,516	186	32,164	21.22	22.72	-6.6%	3,319	17.80	18.45	-3.5%
20235100	2,392	135	59,751	24.98	22.72	10.0%	2,239	16.54	18.45	-10.4%
20249200	2,028	161	51,977	25.63	22.72	12.8%	3,117	19.36	18.45	4.9%
20244200	2,229	78	44,013	19.75	22.72	-13.1%	1,311	16.78	18.45	-9.1%
20251100	1,102	1,623	24,396	22.14	22.72	-2.5%	31,001	19.10	18.45	3.5%
20244300	3,423	853	59,823	17.48	22.72	-23.1%	11,252	13.19	18.45	-28.5%
20244100	1,389	512	27,962	20.13	22.72	-11.4%	8,998	17.59	18.45	-4.7%
20244400	452	1,067	4,970	11.01	22.72	-51.5%	16,188	15.18	18.45	-17.7%
20238200	1,933	430	38,405	19.87	22.72	-12.5%	7,235	16.84	18.45	-8.7%
20246200	486	165	12,374	25.45	22.72	12.0%	2,952	17.88	18.45	-3.1%
20241100	5,463	449	130,736	23.93	22.72	5.4%	7,422	16.53	18.45	-10.4%
20243200	1,645	41	40,691	24.73	22.72	8.9%	724	17.65	18.45	-4.3%
20248200	3,311	378	76,120	22.99	22.72	1.2%	6,355	16.83	18.45	-8.8%
20253100	4,073	79	111,303	27.33	22.72	20.3%	1,364	17.26	18.45	-6.4%
20248100	1,539	73	33,568	21.82	22.72	-4.0%	1,026	14.06	18.45	-23.8%
20246100	1,975	33	49,847	25.24	22.72	11.1%	564	17.09	18.45	-7.4%
20242300	1,452	33	32,565	22.42	22.72	-1.3%	645	19.72	18.45	6.9%
20253300	2,135	304	55,138	25.82	22.72	13.7%	5,312	17.50	18.45	-5.1%
20278100	3,380	147	109,790	32.48	22.72	43.0%	3,091	21.03	18.45	14.0%
20277200	3,941	39	140,729	35.71	22.72	57.2%	735	18.85	18.45	2.2%
20274100	4,558	191	145,140	31.84	22.72	40.2%	3,824	19.99	18.45	8.4%
20272100	3,747	212	106,984	28.55	22.72	25.7%	4,037	19.04	18.45	3.2%
20266200	1,375	544	31,158	22.66	22.72	-0.3%	10,161	18.69	18.45	1.3%
20266100	3,018	105	71,491	23.69	22.72	4.3%	1,908	18.20	18.45	-1.4%
20270100	3,338	499	90,151	27.01	22.72	18.9%	9,883	19.79	18.45	7.3%
20260300	3,300	515	70,745	21.44	22.72	-5.6%	8,545	16.61	18.45	-10.0%
20267200	5,769	39	124,525	21.58	22.72	-5.0%	594	15.12	18.45	-18.0%
20255300	1,257	673	22,450	17.87	22.72	-21.3%	8,875	13.19	18.45	-28.5%
20267100	2,420	294	56,754	23.45	22.72	3.3%	4,672	15.88	18.45	-13.9%
20268100	2,971	271	61,876	20.82	22.72	-8.3%	3,661	13.52	18.45	-26.7%
20268200	2,105	423	50,320	23.90	22.72	5.2%	7,344	17.37	18.45	-5.8%
20269100	2,151	64	61,751	28.71	22.72	26.4%	1,129	17.64	18.45	-4.4%
20263400	2,158	633	51,440	23.83	22.72	4.9%	10,000	15.80	18.45	-14.4%
20263300	2,659	501	60,284	22.68	22.72	-0.2%	8,654	17.29	18.45	-6.3%
20261100	1,380	70	32,444	23.52	22.72	3.5%	1,054	15.15	18.45	-17.9%
20258200	979	171	23,007	23.50	22.72	3.5%	3,200	13.68	18.45	1.3%
20263100	2,310	1,264	44,298	19.18	22.72	-15.6%	18,436	14.59	18.45	-20.9%
20261300	1,754	441	43,108	24.58	22.72	8.2%	7,125	16.16	18.45	-12.4%
20261200	509	1,087	10,094	19.82	22.72	-12.7%	16,244	14.95	18.45	-19.0%
20263200	1,242	307	28,007	22.55	22.72	-0.7%	4,648	15.15	18.45	-17.9%

Source: SCAG 2016 RTP/SCS Travel Demand Model; 2020 results interpolated based on 2012 Baseline and 2040 Future Year model results.

Legend:
- Greater than 15% below Santa Clarita Baseline
- Between 15% below Santa Clarita Baseline and Santa Clarita Baseline
- Above Santa Clarita Baseline

Map legend:
- Santa Clarita Tier 2 TAZ — Santa Clarita
- Included in Analysis
- Excluded from Analysis

Santa Clarita SCAG Tier 2 TAZs

2020 VMT LOOK UP TABLE
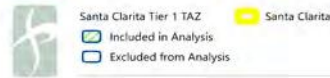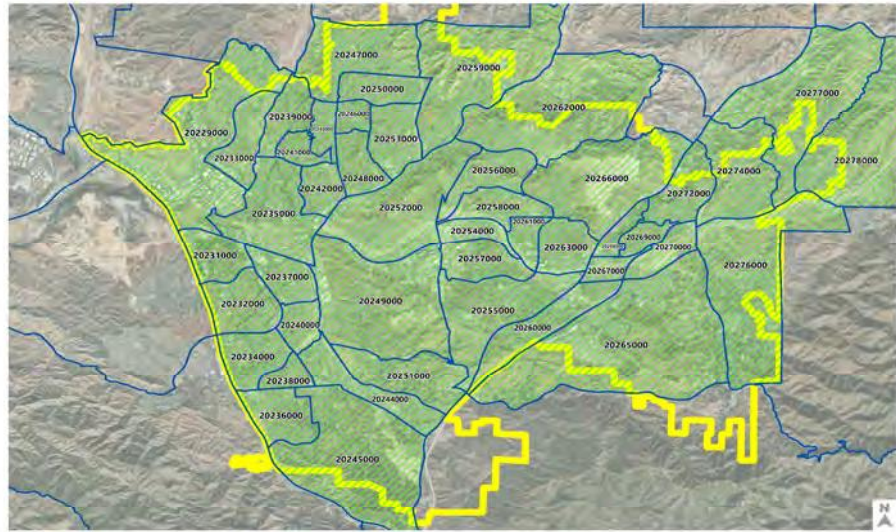## SCAG 2016 RTP/SCS Travel Demand Model, Santa Clarita

2020 VMT Summary

				Total VMT Summary			
SCAG Tier 1 TAZ ID	Population	Employment	Service Population	Total VMT	Total VMT per Service Population	Santa Clarita Baseline Total VMT per Service Population	Santa Clarita Baseline Total VMT per Service Population % Difference
20247000	6,177	335	6,512	232,782	35.74	37.46	-4.6%
20239000	5,217	328	5,545	177,701	32.05	37.46	-14.5%
20229000	3,950	14,838	18,788	708,127	37.69	37.46	0.6%
20259000	6,973	604	7,576	290,621	38.36	37.46	2.4%
20250000	4,544	253	4,796	175,063	36.50	37.46	-2.6%
20246000	2,462	198	2,660	106,059	39.88	37.46	6.4%
20243000	3,437	223	3,660	133,974	36.61	37.46	-2.3%
20241000	5,463	449	5,912	202,387	34.23	37.46	-8.6%
20278000	3,380	147	3,527	145,742	41.32	37.46	10.3%
20245000	6,823	4,189	11,011	380,565	34.56	37.46	-7.7%
20262000	2,836	445	3,282	132,281	40.31	37.46	7.6%
20252000	6,960	985	7,946	291,334	36.67	37.46	-2.1%
20249000	3,296	13,701	16,997	840,697	49.46	37.46	32.0%
20235000	10,909	5,054	15,963	643,203	40.29	37.46	7.6%
20244000	15,858	3,076	18,934	567,990	30.00	37.46	-19.9%
20240000	4,473	266	4,739	153,745	32.44	37.46	-13.4%
20237000	5,857	5,324	11,182	433,794	38.80	37.46	3.6%
20231000	2,163	2,868	5,031	191,898	38.14	37.46	1.8%
20238000	3,073	625	3,698	130,650	35.33	37.46	-5.7%
20234000	7,132	1,427	8,559	290,158	33.90	37.46	-9.5%
20232000	5,754	3,201	8,955	417,326	46.60	37.46	24.4%
20265000	7,273	864	8,137	279,769	34.38	37.46	-8.2%
20276000	2,520	473	2,992	148,296	49.56	37.46	32.3%
20274000	6,289	290	6,579	270,211	41.07	37.46	9.6%
20277000	4,181	262	4,443	202,616	45.60	37.46	21.7%
20260000	7,652	1,372	9,024	311,980	34.57	37.46	-7.7%
20255000	7,796	1,457	9,253	301,363	32.57	37.46	-13.1%
20236000	6,576	1,279	7,855	302,524	38.51	37.46	2.8%
20257000	6,638	1,295	7,933	231,962	29.24	37.46	-21.9%
20254000	2,814	1,367	4,181	148,938	35.62	37.46	-4.9%
20258000	4,109	299	4,409	197,768	44.86	37.46	19.8%
20256000	5,535	116	5,651	197,483	34.95	37.46	-6.7%
20233000	3,968	2,131	6,099	225,824	37.02	37.46	-1.2%
20251000	3,481	2,911	6,392	245,113	38.34	37.46	2.4%
20242000	4,787	542	5,329	203,178	38.13	37.46	1.8%
20248000	4,850	451	5,301	188,569	35.58	37.46	-5.0%
20253000	7,773	1,614	9,387	384,143	40.92	37.46	9.2%
20272000	3,747	212	3,959	154,797	39.10	37.46	4.4%
20266000	4,394	649	5,042	176,127	34.93	37.46	-6.8%
20270000	3,338	499	3,837	156,581	40.80	37.46	8.9%
20267000	8,189	334	8,523	252,845	29.67	37.46	-20.8%
20263000	8,369	2,704	11,073	403,320	36.42	37.46	-2.8%
20261000	3,643	1,597	5,240	227,966	43.51	37.46	16.1%
20268000	5,077	693	5,770	184,873	32.04	37.46	-14.5%
20269000	2,151	64	2,215	91,241	41.19	37.46	10.0%

Source: SCAG 2016 RTP/SCS Travel Demand Model; 2020 results interpolated based on 2012 Baseline and 2040 Future Year model results.
Excludes truck VMT

- Greater than 15% below Santa Clarita Baseline
- Between 15% below Santa Clarita Baseline and Santa Clarita Baseline
- Above Santa Clarita Baseline

Santa Clarita SCAG Tier 1 TAZs

Legend:
- Santa Clarita Tier 1 TAZ
- Santa Clarita
- Included in Analysis
- Excluded from Analysis

There may be multiple Tier 2 TAZs within each Tier 1 TAZ

SCAG Tier 2 TAZ ID	SCAG Tier 1 TAZ ID
20229100	20229000
20229200	20229000
20231200	20231000
20231100	20231000
20232200	20232000
20232400	20232000
20232300	20232000
20232100	20232000
20233100	20233000
20234300	20234000
20234100	20234000
20234200	20234000
20234400	20234000
20235500	20235000
20235400	20235000
20235200	20235000
20235600	20235000
20235300	20235000
20235100	20235000
20236200	20236000
20236400	20236000
20236300	20236000
20236100	20236000
20237300	20237000
20237400	20237000
20237100	20237000
20237200	20237000
20238100	20238000
20238200	20238000
20239200	20239000
20239100	20239000
20240100	20240000
20240200	20240000
20241100	20241000
20242100	20242000
20242200	20242000
20242300	20242000
20243100	20243000
20243200	20243000
20244500	20244000
20244700	20244000
20244600	20244000
20244200	20244000
20244300	20244000
20244100	20244000
20244400	20244000
20245200	20245000
20245100	20245000
20246200	20246000
20246100	20246000
20247100	20247000
20248200	20248000
20248100	20248000
20249100	20249000
20249200	20249000
20250200	20250000
20250100	20250000
20251200	20251000
20251100	20251000
20252300	20252000
20252200	20252000
20252100	20252000
20253200	20253000
20253100	20253000
20253300	20253000
20254100	20254000
20255100	20255000
20255200	20255000
20255300	20255000
20256100	20256000
20257100	20257000
20257200	20257000
20258100	20258000
20258200	20258000
20259200	20259000
20259100	20259000
20260100	20260000
20260200	20260000
20260300	20260000
20261100	20261000
20261300	20261000
20261200	20261000
20262100	20262000
20263400	20263000
20263300	20263000
20263100	20263000
20263200	20263000
20265100	20265000
20266200	20266000
20266100	20266000
20267200	20267000
20267100	20267000
20268100	20268000
20268200	20268000
20269100	20269000
20270100	20270000
20272100	20272000
20274200	20274000
20274100	20274000
20276100	20276000
20277200	20277000
20278100	20278000

Source: SCAG 2016 RTP/SCS Travel Demand Model

T-1. Increase Residential Density

GHG Mitigation Potential

30% Up to 30.0% of GHG emissions from project VMT in the study area

Co-Benefits (icon key on pg. 34)

Climate Resilience

Increased density can put people closer to resources they may need to access during an extreme weather event. Increased density can also shorten commutes, decreasing the amount of time people are on the road and exposed to hazards such as extreme heat or flooding.

Health and Equity Considerations

Neighborhoods should include different types of housing to support a variety of household sizes, age ranges, and incomes.

Measure Description

This measure accounts for the VMT reduction achieved by a project that is designed with a higher density of dwelling units (du) compared to the average residential density in the U.S. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. Increasing residential density results in shorter and fewer trips by single-occupancy vehicles and thus a reduction in GHG emissions. This measure is best quantified when applied to larger developments and developments where the density is somewhat similar to the surrounding area due to the underlying research being founded in data from the neighborhood level.

Subsector

Land Use

Locational Context

Urban, suburban

Scale of Application

Project/Site

Implementation Requirements

This measure is most accurately quantified when applied to larger developments and/or developments where the density is somewhat similar to the surrounding neighborhood.

Cost Considerations

Depending on the location, increasing residential density may increase housing and development costs. However, the costs of providing public services, such as health care, education, policing, and transit, are generally lower in more dense areas where things are closer together. Infrastructure that provides drinking water and electricity also operates more efficiently when the service and transmission area is reduced. Local governments may provide approval streamlining benefits or financial incentives for infill and high-density residential projects.

Expanded Mitigation Options

When paired with Measure T-2, *Increase Job Density*, the cumulative densification from these measures can result in a highly walkable and bikeable area, yielding increased co-benefits in VMT reductions, improved public health, and social equity.

GHG Reduction Formula

$$A = \frac{B - C}{C} \times D$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project VMT in study area	0–30.0	%	calculated
User Inputs				
B	Residential density of project development	[ ]	du/acre	user input
Constants, Assumptions, and Available Defaults				
C	Residential density of typical development	9.1	du/acre	Ewing et al. 2007
D	Elasticity of VMT with respect to residential density	-0.22	unitless	Stevens 2016

Further explanation of key variables:

- (C) – The residential density of typical development is based on the blended average density of residential development in the U.S. forecasted for 2025. This estimate includes apartments, condominiums, and townhouses, as well as detached single-family housing on both small and large lots. An acre in this context is defined as an acre of developed land, not including streets, school sites, parks, and other undevelopable land. If reductions are being calculated from a specific baseline derived from a travel demand forecasting model, the residential density of the relevant transportation analysis zone should be used instead of the value for a typical development.
- (D) – A meta-regression analysis of five studies that controlled for self-selection found that a 0.22 percent decrease in VMT occurs for every 1 percent increase in residential density (Stevens 2016).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) The percent reduction in GHG emissions (A) is capped at 30 percent. The purpose for the 30 percent cap is to limit the influence of any single built environmental factor (such as density). Projects that implement multiple land use strategies (e.g., density, design, diversity) will show more of a reduction than relying on improvements from a single built environment factor.

Subsector Maximum

($\sum A_{max_{T\text{-}1\ through\ T\text{-}4}} \leq 65\%$) This measure is in the Land Use subsector. This subcategory includes Measures T-1 through T-4. The VMT reduction from the combined implementation of all measures within this subsector is capped at 65 percent.

Example GHG Reduction Quantification

The user reduces VMT by increasing the residential density of the project study area. In this example, the project's residential density would be 15 du per acre (B), which would reduce GHG emissions from project VMT by 14.2 percent.

$$A = \frac{15\ \frac{du}{ac} - 9.1\ \frac{du}{ac}}{9.1\ \frac{du}{ac}} \times \text{-}0.22 = \text{-}14.2\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Sources

- Ewing, R., K. Bartholomew, S. Winkelman, J. Walters, and D. Chen. 2007. *Growing Cooler: The Evidence on Urban Development and Climate Change*. October. Available: https://www.nrdc.org/sites/default/files/cit_07092401a.pdf. Accessed: January 2021.
- Stevens, M. 2016. Does Compact Development Make People Drive Less? *Journal of the American Planning Association* 83:1(7–18), DOI: 10.1080/01944363.2016.1240044. November. Available: https://www.researchgate.net/publication/309890412_Does_Compact_Development_Make_People_Drive_Less. Accessed: January 2021.

T-19-A. Construct or Improve Bike Facility

GHG Mitigation Potential
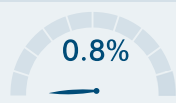
0.8% — Up to 0.8% of GHG emissions from vehicles parallel roadways

Co-Benefits (icon key on pg. 34)

Climate Resilience

Constructing and improving bike facilities can incentivize more bicycle use and decrease vehicle use, which have health benefits and can thus improve community resilience. This can also improve connectivity between residents and resources that may be needed in an extreme weather event.

Health and Equity Considerations

Prioritize low-income and underserved areas and communities with lower rates of vehicle ownership or fewer transit options. Make sure that the bicycle facility connects to a larger existing bikeway network that accesses destinations visited by low-income or underserved communities.

Measure Description

This measure will construct or improve a single bicycle lane facility (only Class I, II, or IV) that connects to a larger existing bikeway network. Providing bicycle infrastructure helps to improve biking conditions within an area. This encourages a mode shift on the roadway parallel to the bicycle facility from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. When constructing or improving a bicycle facility, a best practice is to consider local or state bike lane width standards. A variation of this measure is provided as T-19-B, *Construct or Improve Bike Boulevard*.

Subsector

Neighborhood Design

Locational Context

Urban, suburban

Scale of Application

Plan/Community. This measure reduces VMT on the roadway segment parallel to the bicycle facility (i.e., the corridor). An adjustment factor is included in the formula to scale the VMT reduction from the corridor level to the plan/community level.

Implementation Requirements

The bicycle lane facility must be either Class I, II, or IV. Class I bike paths are physically separated from motor vehicle traffic. Class IV bikeways are protected on-street bikeways, also called cycle tracks. Class II bike lanes are striped bicycle lanes that provide exclusive use to bicycles on a roadway.

Cost Considerations

Capital and infrastructure costs for new bike facilities may be high. The local municipality may achieve cost savings through a reduction of cars on the road leading to lower infrastructure and roadway maintenance costs.

Expanded Mitigation Options

Implement alongside Measures T-22-A, T-22-B, and/or T-22-C to ensure that micromobility users can ride safely along bicycle lane facilities and not have to ride along pedestrian infrastructure, which is a risk to pedestrian safety.

GHG Reduction Formula

$$A = -B \times \dfrac{\dfrac{F}{I} \times (C + D) \times E \times G}{H}$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from displaced vehicles on roadway parallel to bicycle facility	0–0.8	%	calculated
User Inputs				
B	Percent of plan/community VMT on parallel roadway	0–100	%	user input
C	Active transportation adjustment factor	Table T-19.1	unitless	CARB 2020
D	Credits for key destinations near project	Table T-19.2	unitless	CARB 2020
E	Growth factor adjustment for facility type	Table T-19.3	unitless	CARB 2020
Constants, Assumptions, and Available Defaults				
F	Annual days of use of new facility	Table T-19.4	days per year	NOAA 2017
G	Existing regional average one-way bicycle trip length	Table T-10.1	miles per trip	FHWA 2017
H	Existing regional average one-way vehicle trip length	Table T-10.1	miles per trip	FHWA 2017
I	Days per year	365	days per year	standard

Further explanation of key variables:

- (B) – The percent of total plan/community VMT within the roadway parallel to the bike facility should represent the expected total VMT generated by all land use in that area, including office, residences, retail, schools, and other uses. The most appropriate source for this data is from a local travel demand forecasting model. An alternate method uses VMT per worker or VMT per resident as calculated for SB 743 compliance and screening purposes multiplied by the population in the area.

- (C, D, and E) – The active transportation adjustment factor, key destination credit, and growth factor adjustment should be looked up by the user in Tables T-19.1 through T-19.3 in Appendix C. The active transport adjustment factor is based on the existing annual average daily traffic (AADT) of the facility, length of the proposed bike facility, and the city population. The key destination credit is based on the number of key destinations within 0.5-mile of the facility. The growth factor is based on the type of proposed bicycle facility.

- (F) – The annual days of use for the new facility should be looked up by users in Table T-19.4 based on the county in which the project is located. The days of use is based on the number of days per year where there is no rainfall (i.e., <=0.1 inches) (NOAA 2017).

- (G and H) – Ideally, the user will calculate bicycle and vehicle trip lengths for the corridor at a scale no larger than the surrounding census tract. Potential data sources include the U.S. Census, California Household Travel Survey (preferred), or local survey efforts. If the user is not able to provide a project-specific value using one of these data sources, they have the option to input regional average one-way bicycle and vehicle trip lengths for one of the six most populated CBSAs in California provided in Table T-10.1 in Appendix C (FHWA 2017).

GHG Calculation Caps or Maximums

Measure Maximum

(A_{max}) For projects that use CBSA data from Table T-10.1 in Appendix C, the maximum percent reduction in GHG emissions (A) is 0.8 percent. This is based on a neighborhood project the size of a large corridor (B = 100%) within the CBSA of Sacramento-Roseville-Arden-Arcade that uses the highest values for (C, D, and E) in Tables T-19.1 through T-19.3 and annual use days for Sacramento County (F) in Table T-19.4. This maximum scenario is presented in the below example quantification.

(C_{max}) The active transportation adjustment factor (C) was determined for roadways with AADT ranging from 1 to 30,000 (CARB 2020). Roadways with AADT greater than 30,000 are generally not appropriate for bicycle facilities. Care should be taken by the user in interpreting the results from this equation for a project roadway with AADT greater than 30,000.

Subsector Maximum

($\sum A_{max_{T-18 \text{ through } T-22-C}} \leq 10\%$) This measure is in the Neighborhood Design subsector. This subcategory includes Measures T-18 through T-22-C. The VMT reduction from the combined implementation of all measures within this subsector is capped at 10 percent.

Example GHG Reduction Quantification

The user reduces VMT by constructing a bicycle facility that displaces vehicle trips with bicycle trips. In this example, the following assumptions are made to obtain inputs from Tables T-19.1 through T-19.3 in Appendix C:

- Percent of plan/community VMT on parallel roadway (B) = 100%. The project would establish a bike corridor the whole length of a central commercial thoroughfare. It is assumed this main street makes up the entire neighborhood.
- Active transportation adjustment factor (C) = 0.0207. Existing AADT on the roadway parallel to the proposed bicycle facility is 10,000, the facility length is 2.5 miles, and the project site is in a university town with a population of 200,000.
- Key destination credit (D) = 0.003. There are 10 key destinations within 0.25 mile of the project site.
- Growth factor adjustment (E) = 1.54. The bike facility would be a new Class IV bikeway.

The project is within the Sacramento-Roseville-Arden-Arcade CBSA and the user does not have project-specific values for average bicycle and vehicle trip lengths. Accordingly, the inputs of 2.9 miles and 10.9 miles, respectively (G and H), from Table T-10.1 in Appendix C are assumed. The user would displace GHG emissions from project study area VMT by 0.8 percent.

$$A = -100\% \times \left(\frac{\frac{307 \text{ days}}{365 \text{ days}} \times (0.0207 + 0.003) \times 1.54 \times 2.9 \text{ miles}}{10.9 \text{ miles}} \right) = -0.8\%$$

Quantified Co-Benefits

Improved Local Air Quality

The percent reduction in GHG emissions (A) would be the same as the percent reduction in NO_X, CO, NO_2, SO_2, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

Energy and Fuel Savings

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

VMT Reductions

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

Improved Public Health

Users are directed to the ITHIM (CARB et al. 2020). The ITHIM can quantify the annual change in health outcomes associated with active transportation, including deaths, years of life lost, years of living with disability, and incidence of community and individual disease.

Sources

- California Air Resources Board (CARB). 2020. *Quantification Methodology for the Strategic Growth Council's Affordable Housing and Sustainable Communities Program*. September. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/draft_sgc_ahsc_qm_091620.pdf. Accessed: January 2021.
- California Air Resources Board (CARB), California Department of Public Health (CDPH), and Nicholas Linesch Legacy Fund. 2020. Integrated Transport and Health Impact Model. Available: https://skylab.cdph.ca.gov/HealthyMobilityOptionTool-ITHIM/#Home. Accessed: September 17, 2021.
- Federal Highway Administration (FHWA). 2017. *National Household Travel Survey–2017 Table Designer*. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

- National Oceanic and Atmospheric Administration (NOAA). 2021. *Global Historical Climatology Network–Daily (GHCN-Daily), Version 3*. 2015-2019 Average of Days Per Year with Precipitation >0.1 Inches. Available: https://www.ncei.noaa.gov/access/search/data-search/daily-summaries?bbox=38.922,-120.071,38.338,-119.547&place=County:1276&dataTypes=PRCP&startDate=2015-01-01T00:00:00&endDate=2019-01-01T23:59:59. Accessed: May 2021.

City of SANTA CLARITA

General Plan

Last Update: December 2018

Urban Residential
- UR1 = 2.0 du/a
- UR2 = 5.0 du/a
- UR3 = 11.0 du/a
- UR4 = 18.0 du/a
- UR5 = min. 18 du/a - max. 30.0 du/a

Non-Urban Residential
- NU1 = 0.05 du/a
- NU2 = 0.1 du/a
- NU3 = 0.2 du/a
- NU4 = 0.5 du/a
- NU5 = 1.0 du/a

Mixed Use
- CP - Corridor Plan
- MX-C - Mixed Use - Corridor
- MX-N - Mixed Use - Neighborhood

PROJECT LOCATION