August 3, 2022

Mr. Doyle Heaton
Falcon Point Associates, LLC
c/o DRG Builders
3496 Buskirk Avenue, Suite 104
Pleasant Hill, CA 94523

Focused Traffic Study for the Creekwood Residential Development

Dear Mr. Heaton;

As requested, W-Trans has prepared a focused traffic study for the proposed Creekwood residential development to be located at 270-280 Casa Grande Road in the City of Petaluma. The purpose of this letter is to address the potential traffic impacts associated with the proposed project.

Project Description

The proposed project would include construction of 62 residential units, replacing the current residence located at 280 Casa Grande Road. Residential building types would include four stand-alone detached units, 34 duets, and 24 attached townhomes. The project site would be accessible via a new loop roadway with two connections to Casa Grande Road, each having full ingress and egress. The project's site plan is enclosed for reference.

Circulation Setting

Vehicular Circulation

The study area consists of Casa Grande Road, which runs along the frontage of the project site. Casa Grande Road, which is generally oriented east-west, is classified as a major arterial. Along the project frontage the road has two 12-foot travel lanes in each direction, with a two-way left-turn lane dividing the two directions, and a posted speed limit of 35 mph.

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a network of sidewalks, crosswalks, and curb ramps provide access for pedestrians in the vicinity of the proposed project site. There are continuous sidewalks along both sides of Casa Grande Road fronting the project.

Bicycle Facilities

There is an existing trail adjacent to the site along the opposite side of Adobe Creek between Ely Boulevard South and Lakeville Highway. Portions of the trail are paved, though a segment between Spyglass Road and Sartori Drive is an unpaved informal path. There are bicycle lanes in both directions along Casa Grande Road between South Ely Boulevard and South McDowell Boulevard. According to the *SCTA Countywide Bicycle and Pedestrian Master Plan*, 2014, existing bicycle lanes on Casa Grande Road are planned to be extended from Ely Boulevard South to Adobe Road. It is noted that the SCTA plan is more current than the City's 2008 plan and includes planned projects within the City of Petaluma; the City of Petaluma is currently in the process of updating the 2008 plan.

Transit Facilities

Petaluma Transit provides fixed route bus service in Petaluma. Route 33 provides service to destinations throughout the east side of the city and stops on Casa Grande Road between Sartori Drive and Crinella Drive. Route 33 provides service to the Eastside Transit Center where riders can connect to other routes, as well as major

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destinations including shopping centers, the Petaluma Senior Center, Casa Grande High School, and Santa Rosa Junior College. Route 33 operates seven days a week with one-hour headways from 7:00 a.m. to 8:00 p.m. on weekdays, 8:00 a.m. to 8:00 p.m. on Saturdays, and 9:00 a.m. to 5:00 p.m. on Sundays.

Two bicycles can be carried on Petaluma Transit buses. Bike rack space is a first come first served basis. Additional bicycles are allowed on Petaluma Transit buses as the discretion of the driver.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. Petaluma Paratransit is designed to serve the needs of individuals with disabilities within Petaluma area and includes area within a three-quarters of a mile from an active Petaluma Transit route.

Safe Routes to School – Casa Grande High School

As part of the Safe Routes to School program (SRTS) for Casa Grande High School, the segment of Casa Grande Road fronting the project site was designated as a recommended walking and bicycling route to campus. In the SRTS Engineering Evaluation for the campus speeding along the school frontage on Casa Grande Road was identified as an issue affecting safe access to the campus. It was recommended that the City conduct speed surveys and implement traffic calming measures along Casa Grande Road between Ely Boulevard South and McDowell Boulevard. A safety measure identified to improve access was installation of a crosswalk on Casa Grande Road near the frontage of the Casa Grande High School to connect students with the bus stop on the south side of the road. As part of the improvements to increase access to existing transit stops on Casa Grande Road near the school site, it was recommended that bus shelters be installed at existing stops that only have benches and no all-weather shelter. It was also recommended that bicycle lanes along both directions of this segment be repainted for higher visibility.

Planned Circulation Improvements

The "Casa Grande I" residential development adjacent to the project site at 240-250 Casa Grande Road was approved by the City in 2020. As part of the project offsite improvements will be constructed, including a new pedestrian crossing on Casa Grande Road near the high school with a raised median providing a pedestrian refuge ~~as well as~~and rapid rectangular flashing beacon (RRFB) warning lights, in addition to radar speed feedback signs. The Casa Grande I project will also include construction of bus shelters at two nearby Petaluma Transit bus stops on Casa Grande Road and Ely Boulevard South.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021. Rates for "Single Family Detached Housing" (ITE LU #210) were applied for the detached and duet units, as well as for the existing single-family home on the site that would be demolished. Rates for "Single Family Dwellings (Attached)" (ITE LU #215) were applied for the townhome units. As indicated in Table 1, the proposed project is expected to generate an average of 522 trips per day, including 38 trips during the a.m. peak hour and 49 during the p.m. peak hour.

Table 1 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Single Family Dwellings (Detached)	38 du	9.43	358	0.70	27	7	20	0.94	36	23	13
Single Family Dwellings (Attached)	24 du	7.20	173	0.48	12	4	8	0.57	14	8	6
Home to be Demolished	-1 du	9.43	-9	0.70	-1	0	-1	0.94	-1	-1	0
Total Vehicle Trips			522		38	11	27		49	30	19

Note: du = dwelling unit

Vehicle Miles Traveled

The Vehicle Miles Traveled (VMT) associated with a project is the basis for determining traffic impacts under CEQA. The City of Petaluma identifies VMT significance criteria in the *Senate Bill 743 Vehicle Miles Traveled Implementation Guidelines*, July 2021, indicating that a significant VMT impact may occur at residential developments if the project's total home-based VMT per resident exceeds 16.8 percent below the citywide average. The current Citywide home-based VMT per capita as reported by the Sonoma County Transportation Authority (SCTA) SCTM19 travel demand model (December 2021 release) is 17.8~~19.3~~ in Petaluma, which translates to a significance threshold of ~~16.1~~14.8 VMT per capita.

~~Based on data from the Sonoma County Transportation Authority (SCTA) travel demand model,~~T ~~t~~he Creekwood project site is located within traffic analysis zone (TAZ) 341 of the SCTM19 model, which has a baseline VMT per capita of ~~20.2~~19.0 miles. For the project to achieve the VMT significance threshold of ~~16.1~~14.8 miles per capita, its VMT would need to be ~~20.3~~22.0 percent lower than the current average for the TAZ in which the site is located.

Density Adjustment

The VMT associated with a residential development is influenced by its density as well as affordability. The project's VMT per capita was first adjusted to account for residential density using a methodology contained in the publication *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, California Air Pollution Control Officers Association (CAPCOA), 2021. This methodology was developed in consideration of research that has shown per capita VMT to reduce as residential density is increased. For the purposes of this methodology, the density of the project site is calculated by dividing the proposed 62 units by the 4.07-acre site size (which excludes streets, open space, and undevelopable land). The resulting 15.2 units per acre density is calculated to correspond to a 14.7 percent reduction in per capita VMT.

Inclusionary Housing Adjustment

The VMT generated per resident at a residential development is also influenced by the quantity of onsite inclusionary housing. A methodology published in the 2021 CAPCOA publication cited above ~~*Income, Location Efficiency, and VMT: Affordable Housing as a Climate Strategy*, The California Housing Partnership, 2015,~~ was used to determine the VMT reductions associated with provision of on-site affordable housing ~~(this method is also currently used by the City of San Jose)~~. The project would include five low-income units. Application of the methodology indicates that by providing these inclusionary units, the project's per-capita VMT would be reduced by approximately ~~0.8~~2.3 percent. Note that the project would also include four moderate-income units, though these units would not receive a VMT reduction credit per the applied methodology.

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Adobe Creek Pedestrian-Bicycle Bridge Adjustment

The proposed project would include construction of a new pedestrian-bicycle bridge over Adobe Creek, connecting to the Adobe Creek path on the south side of the creek. A pathway connection would also be constructed between the project's public street and the new bridge. Improving pedestrian connectivity within and surrounding a development has been shown to reduce the amount of VMT generated per person. A methodology contained in the 2021 CAPCOA publication was used to determine the reduction to the project's per capita VMT that would be attributable to the new Adobe Creek bridge. The methodology considers several factors including the percentage increase in the pedestrian network within a half-mile of the development. The calculated reduction in the project's anticipated VMT per capita is 0.6 percent.

Project VMT per Capita with Combined Adjustments

Combining the "raw" VMT reduction percentages described above, the project's proposed density, provision of on-site inclusionary housing, and improvements to pedestrian circulation would reduce its per capita VMT by ~~16.2~~17.7 percent. Per methodologies provided in the CAPCOA publication, this number is dampened to ~~16.0~~17.2 percent to reflect the diminishing effects of multiple VMT reduction measures. Upon applying these adjustments, the project is anticipated to generate ~~17.0~~15.7 VMT per capita. A summary of the VMT findings is shown in Table 2.

Table 2 – Vehicle Miles Traveled Analysis Summary

VMT Metric	Baseline VMT Rate (Citywide Avg)	Threshold (16.8% Below Citywide Avg)	Project VMT Rate		
			Base Unadjusted (TAZ 341)	With Adjustments	Significance Finding
Residential VMT per Capita (Citywide Baseline)	~~19.3~~17.8	~~16.1~~14.8	~~20.2~~19.0	~~17.0~~15.7	Significant

Note: VMT Rate is measured in VMT per Capita, or the number of daily miles driven per resident; TAZ=Traffic Analysis Zone

Finding – Based on the City of Petaluma's adopted significance thresholds, the project is anticipated to result in a significant impact in terms of vehicle miles traveled.

Adobe Creek Pedestrian-Bicycle Bridge Areawide Benefits

Upon completion, the Adobe Creek bridge and onsite connections provided by the project would establish a new connection between Casa Grande High School and the neighborhoods to the southeast, substantially shortening the walking and biking distances to the high school for many students. The connection would also make use of a planned enhanced pedestrian crossing on Casa Grande Road to be implemented by the adjacent "Casa Grande I" residential development. In addition to improving non-auto access to the high school, the new bridge and pathways would improve non-auto linkages among neighborhoods.

A customized methodology was used to quantify the anticipated areawide VMT reductions that are projected to result from construction of the new pedestrian linkage. The methodology relies on prior research conducted by the California Air Resources Board (CARB), site-specific estimates of the high school population within walking distance, and the potential for some students to walk in the future instead of driving or being dropped off by car. After adjusting to reflect annualized values (since school is only in session part of the year and some inclement days will limit walking), the estimated school VMT reduction is 11 miles per day. A sheet containing the details and assumptions for this deduction is enclosed.

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The new Adobe Creek bridge and connection would also be expected to reduce areawide VMT by shortening bicycling distances, improving connectivity to off-street bike facilities, and making travel by bike more appealing. Methodologies contained in the 2021 CAPCOA publication were used to quantify these VMT reductions, resulting in an estimated reduction of 15 vehicle miles traveled per day. Details on the methodology and applied variables are enclosed.

In total, the new Adobe Creek bridge is projected to reduce areawide VMT by approximately 26 miles per day. This VMT benefit is related to shifting existing travel patterns in the surrounding neighborhood and would be in addition to the project-specific VMT reductions outlined above.

VMT Performance Including Areawide Benefits

With the areawide VMT benefits associated with the project's construction of the Adobe Creek pedestrian-bicycle connection "credited" to the Creekwood project, the project's effective VMT per capita would reduce slightly to ~~16.8~~15.5. In total, an effective ~~16.9~~18.1 percent reduction in the project's baseline VMT per capita would be achieved by the proposed residential density, provision of onsite inclusionary housing, and construction of pedestrian and bicycle infrastructure that benefits both the project and surrounding neighborhood. Despite these measures, however, the project would fall short of achieving the City's VMT per capita significance thresholds by approximately ~~3.4~~4.8 percent.

Sight Distance

Sight distances along Casa Grande Road from the proposed roadways to be constructed were evaluated based on sight distance criteria contained in the *Highway Design Manual, 6th Edition* published by Caltrans. The recommended sight distances along the Casa Grande Road at the private project roadway are based on stopping sight distance.

Based on a design speed of 35 mph, the minimum stopping sight distance needed is 250 feet. Field measurements indicate that sight distance along Casa Grande Road is adequate in both directions, at more than 300 feet to the north and approximately 500 feet to the south. It is noted that there are trees and shrubs in the center median along Casa Grande Road directly north of the proposed roadway which slightly hinder sight lines. However, this landscaping does not completely block vision of oncoming traffic and drivers can see between each shrub as they travel toward the proposed roadway. It is recommended that any existing or proposed landscaping along Casa Grande Road be kept outside of the driver's vision triangle to maintain adequate sight lines.

Finding – Sight distance based on the posted speed limit is adequate in both directions at the driveway locations on Casa Grande Road.

Recommendation – The project should be designed to keep any landscaping along Casa Grande Road outside of the driver's vision triangle to maintain adequate sight lines.

Non-Auto Modes

Pedestrian Facilities

Given the proximity of Casa Grande High School, parks and recreation uses, places of worship, and bus stops to the project site, it is reasonable to assume that project residents will frequently walk, bicycle, and/or use transit. Sidewalks exist along the project frontage on Casa Grande Road, connecting to the surrounding pedestrian network. There are proposed sidewalks throughout the site connecting the residences to each other and the surrounding street system. A pedestrian crossing on Casa Grande Road with RRFB warning lights system and a raised median, which is one of the SRTS recommended improvements near Casa Grande High School, will be constructed by the neighboring Casa Grande I residential development. As proposed, this crossing would be

placed just west of the high school campus and the proposed Creekwood development site. Finally, the proposed Creekwood development would construct a new pedestrian bridge over Adobe Creek, providing pedestrian access to the Adobe Creek trail and adjacent neighborhoods.

Finding – Planned sidewalks within the project site, along with existing facilities and the proposed Adobe Creek crossing, are adequate for anticipated demand.

Bicycle Facilities

Existing bicycle facilities, including bike lanes Casa Grande Road and the multi-use path along the Adobe Creek, together with shared use of minor streets, provide functional access for bicyclists traveling to and from the project. The SRTS evaluation recommended that the existing bicycle lanes on Casa Grande Road be re-striped for improved visibility with the goal of enhanced safety. Due to the limited width of the project frontage on Casa Grande Road and deteriorated pavement condition, implementation of this recommendation would not be appropriate as part of the project as it would result in inconsistent markings for the segment; however, the applicant should work with City staff to establish a proportional share to these planned improvements.

Finding – Bicycle facilities serving the project are adequate.

Recommendation – The applicant should work with City staff to determine a proportional share of the cost of re-striping bicycle lanes along Casa Grande Road.

Transit

Existing transit service is acceptable to accommodate project-generated transit trips. Existing bus stops are within one-quarter mile walking distance of the site, and accessible via sidewalks. Bus stop improvements including a new transit shelter will be constructed by the Casa Grande I development at the existing bus stop on Casa Grande Road.

Finding – Transit facilities serving the project site, together with planned improvements to existing stops on Casa Grande Road near the project site, are adequate.

Conclusions and Recommendations

- The project is expected to generate 522 added daily vehicle trips, including 38 added trips during the a.m. peak hour and 49 added trips during the p.m. peak hour.

- The project's density, provision of onsite inclusionary housing, and construction of a new pedestrian-bicycle bridge over Adobe Creek are anticipated to substantially reduce the development's per-capita VMT by ~~15.2~~17.2 percent.

- The new pedestrian-bicycle bridge over Adobe Creek would benefit residents of the Creekwood project as well as residents in surrounding neighborhoods and is estimated to reduce areawide VMT by approximately 26 miles per day.

- Despite the projected VMT reductions, the proposed development would not achieve the VMT per capita significance thresholds established by the City and would thereby be considered to have a significant impact on VMT.

- Sight distances at the proposed street connections on Casa Grande Road are adequate in both directions. It is recommended that any existing or planned landscaping near the proposed intersections be designed to be outside of the driver's vision triangle.

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- Existing pedestrian, bicycle, and transit facilities serving the project site, together with new facilities to be constructed by the proposed Creekwood development as well as the adjacent approved development, would provide effective access to and from the project site by non-auto modes.

- The applicant should work with City staff to determine a proportional share of the cost of re-striping bicycle lanes along Casa Grande Road.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,

Dalene J. Whitlock, PE, PTOE
Senior Principal

Zachary Matley, AICP
Principal

DJW/jzm/PET227.L2

Enclosure: VMT Summary Sheet

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Creekwood VMT Assessment

W-Trans August 2022

Significance Threshold - Based on December 2021 SCTA Model and Petaluma Thresholds

17.8 VMT/Capita Citywide Average - City of Petaluma
14.8 Applied Significance Threshold = 16.8% below Citywide Average

Base Unadjusted Project VMT

19.0 Base home-based VMT/Capita from SCTA Model - Project in TAZ 341
62 Project Units 2.64 Occupancy/Unit 164 Residents ("capita")
3107 Base Unadjusted Project home-based VMT (mi)

Project Specific VMT Adjustments

19.0 Base home-based VMT/Capita from SCTA Model - Project in TAZ 341
14.8 Applied Significance Threshold = 16.8% below Citywide Average
-22.0% Project VMT Reduction Required to meet Significance Threshold

A. Density Adjustment
62 Project Units
-14.7% VMT Reduction
-2.18 Adjustment to Base Project VMT/Capita

Source: CAPCOA 2021 *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*
4.07 Project Acres 15.2 Project Density

B. Integrate Affordable Housing
5 Low Income Units
8.1% Percent of Total Units
-2.3% VMT Reduction
-0.44 Adjustment to Base Project VMT/Capita

Source: CAPCOA 2021 *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*
(project also includes 4 moderate Income units not included in VMT reductions per methodology)

C. Pedestrian Network Improvements
Improvements including Bridge to Adobe Creek path
-0.6% VMT Reduction
-0.12 Adjustment to Base Project VMT/Capita

Source: CAPCOA 2021 *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*

Combined VMT Adjustments (A through C)

-17.7% Combined Measures VMT Reduction (unadjusted)
-17.2% Adjusted for Dampening of Combined Measures (per CAPCOA)
-3.27 Adjustment to Base Project VMT/Capita
15.7 Project Specific home-based VMT/Capita
164 Project Residents
2576 Project home-based VMT (Adjusted)

VMT Significance

14.8 Applied Significance Threshold = 16.8% below Citywide Average
19.0 Base VMT/Capita for Project Traffic Analysis Zone (SCTA Model)
15.7 Adjusted Project VMT/Capita including density, affordability, pedestrian improvements
NO Threshold met
SIGNIFICANT

Adobe Creek Pedestrian-Bicycle Bridge Areawide VMT Reduction

-11 VMT associated with improved student connectivity to Casa Grande High School
-15 VMT associated with improved neighborhood bike connectivity
-26 Areawide VMT Reduction

2576 Project home-based VMT (see above)
-26 Areawide VMT Reduction
2550 Total Added Project VMT including credits for surrounding neighborhood VMT reductions
15.5 Revised Effective Project VMT/Capita -18.1% total VMT reduction achieved
-4.8% further reduction needed

T-18-A. Construct or Improve Bike Facility

Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, California Air Pollution Control Officers Association (CAPCOA), 2021.

A	-0.015%	
B	25%	
C	0.0019	
D	0.0010	1/2 mile: Del Oro Park, Casa Grande HS, church, business park
E	1.54	
F	296	(uses Marin County factor; factor not provided for Sonoma)
G	2.1	
H	12.4	
I	365	

96556	Total VMT in study area (4 TAZs approx 1/2 mi radius)
-14.8	VMT Reduction

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

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-18.1	unitless	CARB 2020
D	Credits for key destinations near project	Table T-18.2	unitless	CARB 2020
E	Growth factor adjustment for facility type	Table T-18.3	unitless	CARB 2020
Constants, Assumptions, and Available Defaults				
F	Annual days of use of new facility	Table T-18.4	days per year	NOAA 2017
G	Existing regional average one-way bicycle trip length	Table T-9.1	miles per trip	FHWA 2017
H	Existing regional average one-way vehicle trip length	Table T-9.1	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-18.1 through T-18.3 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-18.4 based on the county their project is located in. 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).

Table T-9.1. Average One-Way Bicycle and Vehicle Trip Length by California Core-Based Statistical Area

Core-Based Statistical Area	Trip Length (miles)	
	Bicycle	Vehicle
Los Angeles-Long Beach-Anaheim	1.7	9.7
Riverside-San Bernardino-Ontario	2.2	11.7
Sacramento-Roseville-Arden-Arcade	2.9	10.9
San Diego-Carlsbad	2.0	19.1
San Francisco-Oakland-Hayward	2.1	12.4
San Jose-Sunnyvale-Santa Clara	2.8	11.5

Source: Federal Highway Administration. 2017. National Household Travel Survey – 2017 Table Designer. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

Table T-18.1. Active Transportation Adjustment Factors

Average Daily Traffic (vehicle trips per day)	One-way Facility Length[1]	Adjustment Factor for a Population > 250,000 or a Non-university Town with Population < 250,000	Adjustment Factor for a University Town with Population <250,000
1 to 12,000	≤1	0.0019	0.0104
	1.02 to 2	0.0029	0.0155
	>2	0.0038	0.0207
12,001 to 24,000	≤1	0.0014	0.0073
	1.02 to 2	0.0020	0.0109
	>2	0.0027	0.0145
24,001 to 30,000	≤1	0.0010	0.0052
	1.02 to 2	0.0014	0.0078
	>2	0.0019	0.0104

Source: California Air Resources Board. 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.

< = less than; > = greater than; ≤ = less than or equal to

[1]Measurements of bike facilities should not include the length of crosswalks.

Table T-18.2. Key Destination Credits[1,2]

Number of Key Destinations[3]	Credit within ½ Mile of Facility	Credit Within ¼ Mile of Facility
0 to 2	0.0000	0.000
3	0.0005	0.001
4 to 6	0.0010	0.002
≥ 7	0.0015	0.003

Source: California Air Resources Board. 2020. *Quantification Methodology for the California Natural Resource Agency's Urban Greening Grant Program*. March. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/cnra_ug_finalqm.pdf. Accessed: January 2021.

≥ = greater than or equal to

[1] The largest value from either credit column that matches the project activities should be used. For example, if there are 3 activity centers within ¼ mile of the facility and 7 activity centers within ½ mile of the facility, the correct value to use is 0.0015.

[2] These metrics should be evaluated for the project location site and surrounding area which can extend a distance not to exceed a ½ mile. If a shopping center has multiple activity centers, each of those activity centers would count individually. For example, if a bank, grocery store, and post office are all located in a shopping center, they would be input as three activity centers for the purposes of this quantification methodology.

[3] Key destination examples: banks, post offices, grocery stores, medical centers, pharmacies, office parks, places of worship, public libraries, schools, universities, colleges, and light rail stations (park & ride).

Table T-18.3. Growth Factor Adjustment

Facility Type	Growth Factor Adjustment
New Class I bike path[1] or Class IV bikeway[2]	1.54
New Class II bike lane[3]	1.0
Conversion from Class II to IV	0.54

Source: California Air Resources Board. 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/sgc_ahsc_qm_022521.pdf. Accessed: March 2021.

[1] Class I bike paths are physically separated from motor vehicle traffic.

[2] Class IV bikeways are protected on-street bikeways, also called cycle tracks.

[3] Class II bike lanes are striped bicycle lanes that provide exclusive use to bicycles on a roadway.

Table T-18.4. Bike Facility Default Days of Use per Year by County

County	Days	County	Days	County	Days	County	Days
Alameda	302	Kern	333	Placer	291	San Joaquin	314
Alpine	291	Kings	328	Plumas	292	San Luis Obispo	321
Amador	302	Lake	298	Riverside	337	San Mateo	295
Butte	294	Los Angeles	332	Sacramento	307	Solano	309
Calaveras	304	Lassen	309	San Benito	315	Stanislaus	319
Contra Costa	307	Madera	314	San Bernardino	333	Sutter	304
Colusa	309	Marin	296	Santa Barbara	328	Tehama	297
Del Norte	252	Mariposa	307	Santa Clara	307	Trinity	277
El Dorado	295	Mendocino	279	Santa Cruz	304	Tulare	314
Fresno	320	Merced	316	San Diego	323	Tuolumne	299
Glenn	304	Modoc	287	San Francisco	301	Ventura	334

T-17. Provide Pedestrian Network Improvement

Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, California Air Pollution Control Officers Association (CAPCOA), 2021.

A	-0.6%
B	4.8
C	5.4
D	-0.05

$$A = \left(\frac{C}{B} - 1\right) \times D$$

GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from vehicle travel in plan/community	0–6.4	%	calculated
User Inputs				
B	Existing sidewalk length in study area	[ ]	miles	user input
C	Sidewalk length in study area with measure	[ ]	miles	user input
Constants, Assumptions, and Available Defaults				
D	Elasticity of VMT with respect to the ratio of sidewalks-to-streets	-0.05	unitless	Frank et al. 2011

Further explanation of key variables:

- (B and C) – Sidewalk length should be measured on both sides of the street. For example, if one 0.5-mile-long street has full sidewalk coverage, the sidewalk length would be 1.0 mile. If there is only sidewalk on one side of the street, the sidewalk length would be 0.5 mile.
- (D) – A study found that a 0.05 percent decrease in vehicle travel occurs for every 1 percent increase in the sidewalk-to-street ratio (Frank et al. 2011; Handy et al. 2014).

Method and assumptions for determining areawide Casa Grande High School VMT reduction for pedestrian bridge

1846	population benefitted by new creek crossing (TAZ 305)				
4.7%	percent high school students	21%	census under 18	1.2%	per grade
3.7%	population assumed to attend Casa Grande (80% of HS aged students)				
69	estimated high school students in TAZ 305				
1.0	mile driving distance				
2.0	round trip school VMT				
66%	of students assumed to currently be driving (adjusts for multiple students per car and carpools)				
91.08	approximate driving VMT made by nearby students				
30%	diversion to walking and biking with new bridge (based on CARB cited study for new high school path)				
27	VMT reduction with new bridge (per day of use)				
180	school days per year				
-30	inclement weather days adjustment				
150	school days that path/bridge is used by CGHS students				
4098.6	annual VMT reduction				
11.2	daily VMT reduction (annualized)				