

4.11 TRANSPORTATION AND TRAFFIC

4.11.1 INTRODUCTION

This section of the Revised Draft EIR describes the existing transportation and traffic conditions at the UC Santa Cruz campus and analyzes the potential for implementation of the proposed SHW project to result in traffic and transportation impacts. This section also addresses the potential traffic impacts from the anticipated construction and operation of the separate, but related, Porter and Rachel Carson Colleges dining facilities expansion project, which would serve residents of the SHW project and the existing colleges (see **Section 4.11.5** below).

The analysis in this section is tiered from the transportation and traffic impact analysis contained in the 2005 LRDP EIR, supplemented by project-specific analysis. The information in this section is based on trip generation estimates developed by Fehr & Peers in conjunction with UC Santa Cruz Transportation and Parking Services (TAPS) Office; an analysis of historic traffic counts at campus gateways and on campus streets to characterize the change in campus traffic since 2007; a level of service impact and circulation analysis for the Hagar site; and an evaluation of the increase in traffic during the construction of the project. All of these studies are included in **Appendix 4.11** of this document.

This section is revised from Section 4.11 in the SHW Draft EIR to (1) address any potential change in traffic impacts near the Hagar site from the inclusion of two site entrances in the site plan, compared to the one entrance included in the previous plan for that site; and (2) address the small increase of 72 beds included in the SHW project and the minor change in the distribution of beds between the two sites. In addition, comments received on the Draft EIR related to transportation and traffic were reviewed and the key issues raised in the comments are summarized below:

- The methods used by the University to arrive at trip generation rates associated with students on campus versus those living off-campus is not clear. Overall the trip rates used now for students are over 30 percent lower than those used in the LRDP. As a result of these rates and the reduction in estimated and/or future faculty and staff (approximately 600) the analysis calculates a reduction in traffic volumes over those estimated in the LRDP EIR. However, the information provided in this document does not provide the methods or documentation needed to corroborate the reduction in estimated trip generation for the campus.
- No on- and off-campus trip generation rates are included, by mode. The final EIR must clearly represent trip generation by mode, and each mode's environmental impacts, with specific counts and survey data.

- The Draft EIR does not include an analysis of traffic impacts on off-campus intersections including the two intersections at the campus entrances, but such an analysis should be provided.
- The Draft EIR incorrectly asserts that vehicle trips to the campus would decrease due to the project. As the total number of students enrolled would increase by over 1,000 over the coming year and a half, and thereafter the university intends further growth in enrollment. Under these conditions, it is quite possible, even likely, that total trips on area roads would go up while the percentage of students living off campus went down.
- The Draft EIR relies on the 2005 LRDP EIR traffic analysis which may not accurately reflect current conditions in the City of Santa Cruz.
- The plans for parking on both the Heller and Hagar site complexes must be based on realistic car ownership in today's world. Deficits in needed parking spaces for residents in these facilities will cause parking to spill over into adjacent facilities and neighborhoods. Parking on public streets in adjacent neighborhoods could be heavily impacted from spillover from the Hagar site complex.
- The presence of a housing complex in the lower East Meadow will create interest by those living in that complex to have the City open access from Coolidge Drive to Spring Street.
- The Draft EIR does not consider the net increase in parking capacity on campus in its trip generation analysis. Currently, parking is the main constraint on vehicle trip generation, and limited supplies of parking mean that parking permits are not issued to all students who request one. Since the proposed project will increase parking capacity on campus overall, the Final EIR should analyze how this will affect trip generation by both residents of the proposed housing and non-residents who may utilize freed up parking spaces.
- A new entrance on Coolidge Drive is proposed as mitigation. Given that downhill bicycles on Coolidge Drive attain high speeds, this access roadway would present a serious environmental, health, and safety hazard to bicycles, which is not analyzed in the Draft EIR. Thus, the final EIR should eliminate the Coolidge access roadway as an option, or add protected bike lanes (e.g., with a physical barrier between bicycles and motor vehicles) to reduce the clear and present safety risks involved in the proposal.
- The Draft EIR should provide traffic analysis and signal warrants for Heller Drive-Oakes Road intersection similar to the evaluation of Hagar project entrance. Adding a new leg to the intersection on the inside of the curve and with limited sight distance may create a safety issue.

- The impact of 3,000 additional students on the Metro system should be included in the final EIR. The Draft EIR does not adequately discuss Metro and Loop services in response to more students on campus. What will be done about the Metro and Loop services if more students live on campus?
- The Draft EIR does not evaluate pedestrian routes from the Heller site to classrooms and other campus destinations.
- Construction delivery of manufactured components/units for the Hagar site should be evaluated in the Draft EIR. Based on an estimate provided to the City, there are 3,600 oversize loads coming through the city and state highway system that can have a significant impact on traffic circulation, congestion and safety. Coordinate routes and schedules with city and state projects anticipated to be under construction during this period. Provide evaluation and mitigation.
- The parking included in the project to serve the childcare center is in conflict with Campus policies related to alternative transportation. The Final EIR should reduce or eliminate the childcare center parking in order to mitigate the conflict with UC Santa Cruz policies. Employees could park in the lot on Coolidge (Lot 116), which is no further from the childcare facility than the bus stop, or the East Remote lot.
- Commenters question the need for the amount of proposed residential parking at the Heller site and request that the Final EIR should consider reducing parking to the minimum needed for accessibility.
- Improve bike lanes within scope of frontage improvements by adding width, protection, buffers, and/or green lanes.
- With an additional 2,700 students living near Heller and having to cross that street to catch a shuttle, it is careless to assess that impact by concluding that, “circulation on Heller Drive will be monitored and if warranted (emphasis added) the crossing guard program may be extended.” Re-assess and think, pedestrian overpass.
- The Draft EIR states that secure bicycle parking will be provided at both the Hagar and Heller sites. However, insufficient detail is provided as to the location and design of this parking, which are critical in determining whether the bicycle parking will be usable and will satisfy campus bicycle parking policies.

These comments are addressed in the revised analysis presented in this section. Parking is not an issue under CEQA and therefore comments related to inadequate or excess parking included in the project are not addressed in this section. The project provides 174 parking spaces for 2,932 residents at the Heller site. This does not represent excess parking that the trip generation rate for students would increase. The location and design of bicycle parking would be within the project sites and would not have any environmental impacts separate from those discussed in this EIR. Therefore the location of bicycle parking is not discussed further in this section.

4.11.2 ENVIRONMENTAL SETTING

4.11.2.1 Project Study Area

The 2005 LRDP EIR evaluated the traffic impacts of campus growth and defined the study area for traffic and transportation analyses to include the main campus and the City of Santa Cruz, including all roadways surrounding the campus. As noted in the 2005 LRDP Final EIR, the study area for the traffic analysis includes intersections along the following corridors:

- Campus Loop – Heller Drive, McLaughlin Drive, Hagar Drive, and Glenn Coolidge Drive
- Bay Street/Bay Drive– High Street to West Cliff Drive
- Mission Street – Western Drive to Front Street
- Chestnut Street – Mission Street to Laurel Street
- Lincoln Street / Soquel Avenue – Mission Street to Capitola Road
- Water Street – Mission Street to Morrissey Boulevard
- San Lorenzo Boulevard / East Cliff Drive / Murray Street
- Other city streets, including Delaware Avenue and Western Drive

The 2005 LRDP EIR also analyzed traffic impacts on study area freeways.

The proposed project would add housing to the campus and thereby reduce the percentage of enrolled students who would live off campus, compared to existing conditions as well as the conditions analyzed in the 2005 LRDP Final EIR. Therefore, as shown by the trip generation estimates presented later in this section, the proposed project would reduce the potential increase in daily and peak hour trips to the area roadways by increasing the number of students living on-campus, reducing campus trip generation by all campus related uses, and lowering non-student population projections. The total daily and peak hour trip generation estimates are also lower than the trip generation estimates in the 2005 LRDP FEIR. For these reasons, the study area for the proposed SHW project is defined to include only those roadways that

provide access to the two project sites, namely Heller Drive that provides access to the Heller site and Hagar and Glenn Coolidge Drives which provide access to the Hagar site.

4.11.2.2 Study Area Roadways

The main campus is served by two roadway entrances: the main entrance at Bay and High Street intersection and the west entrance at Empire Grade Road and Heller Drive. The three roadways that serve the project sites are described below.

- Glenn Coolidge Drive is a County-owned arterial road that extends north into the campus from the main entrance, forms a portion of the eastern perimeter of the campus and then curves west to terminate at McLaughlin Drive, a campus roadway. Glenn Coolidge Drive is a two-lane street with bike lanes on each side and no on-street parking. The speed limit near the central campus is 25 miles per hour (mph). Between Hagar Drive and McLaughlin Drive the speed limit is 40 mph.
- Hagar Drive is a north-south roadway from Glenn Coolidge Drive to McLaughlin Drive. Hagar Drive is a two-lane road with bike lanes and a pedestrian path from Glenn Coolidge Drive to the entrance to the East Remote parking lot and no on-street parking.
- Heller Drive is a two-lane street that extends north-northeast from the west campus entrance at the Empire Grade Road intersection. The street experiences high volumes of pedestrian crossings and transit vehicles in the vicinity of Rachel Carson College and Porter College. Sidewalks on Heller Drive are sidewalks but are supplemented by a series of off-street paths that parallel Heller Drive, or connect Heller Drive to other parts of the campus. On-street parking is not permitted on Heller Drive (UCSC 2006).

4.11.2.3 Project Study Intersections

Two existing on-campus intersections are relevant to the proposed project.

Glenn Coolidge and Hagar Drive Intersection

The proposed Hagar site family student housing would be located at the northern corner of the Glenn Coolidge and Hagar Drive intersection. This is a four-way, signalized intersection with left turn pockets on Glenn Coolidge Drive.

Heller and Oakes Road Intersection

The Heller site student housing would be located on Heller Drive west of the intersection of Heller Drive and Oakes Road, which is currently a T-intersection with stop signs on all three approaches. Oakes Road provides access to Rachel Carson College facilities, including the parking lots.

4.11.2.4 Intersection Operations

The operations of roadway facilities are typically described with the term Level of Service (LOS), a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, which reflects free-flow conditions where there is very little interaction between vehicles, to LOS F, where the vehicle demand exceeds the capacity and high levels of vehicle delay result. LOS E represents “at-capacity” operations. When traffic volumes exceed the intersection capacity, stop-and-go conditions result and a vehicle may wait through multiple signal cycles before passing through the intersection; these operations are designated as LOS F. The project site LOS calculations utilize the 2010 Highway Capacity Manual methods (Transportation Research Board 2010, Chapter 18) for signalized intersections. **Table 4.11-1** summarizes the relationship between the level of service rating for signalized intersections and the average control delay per vehicle.

Table 4.11-1
Signalized Intersection LOS Criteria

LOS	Description	Delay (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	< 15.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 15.0 to 25.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 25.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55.0 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80.0

Source: Highway Capacity Manual (Transportation Research Board, 2010)

The evaluation of unsignalized intersections for the project site analysis also relies on the operations method of the 2010 Highway Capacity Manual. For two-way stop-controlled intersections, the average control delay for the worst approach is reported. For all-way stop-controlled intersections, the weighted

average delay¹ for the entire intersection is reported. The LOS definitions used for unsignalized intersections are summarized in **Table 4.11-2**.

Table 4.11-2
Unsignalized Intersection LOS Criteria

LOS	Description	Delay (Seconds)
A	Little or no delays	< 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0
<i>Source: Highway Capacity Manual (Transportation Research Board, 2010)</i>		

As noted in the 2005 LRDP Final EIR, the on-campus intersections are subject to the campus LOS standards. These standards reflect the different characters of the lower campus and central campus areas. The lower campus features traffic speeds between 25 and 35 mph or more, and minimal pedestrian activity. The central campus roadways feature numerous stop-controlled intersections, traffic speeds of 25 mph or less, and significant numbers of pedestrians. The lower campus is predominately rural in character, with roadways functioning like arterials connecting to the central campus. In contrast, the central campus is predominately pedestrian in character, with roadways serving to convey vehicles to parking lots and buildings. This difference in character supports the application of a lower minimum acceptable LOS standard in the central campus, compared to the minimum acceptable LOS standard applied in the lower campus. The minimum acceptable LOS standard is LOS D at the following intersections in the lower campus: Glenn Coolidge Drive/Campus Facilities, Glenn Coolidge Drive/Hagar Drive, Glenn Coolidge and Ranch View Road, and Hagar Drive/East Remote parking lot. In contrast, the standard is LOS E at the following intersections in the central campus: Heller Drive/McLaughlin Drive, Heller Drive/Meyer Drive, McLaughlin Drive/Chinquapin Drive, and Hagar Drive/McLaughlin Drive (UCSC 2006).

¹ Weighted average is defined as the average vehicle delay experienced at each intersection approach. The average is weighted by the volume of traffic using each approach.

4.11.2.5 Transit Services

The public transit system that connects the campus to the greater Santa Cruz area is operated by Santa Cruz Metropolitan Transportation District (SCMTD), and intra-campus shuttle service is provided by UC Santa Cruz TAPS.

SCMTD Service

SCMTD operates bus service in Santa Cruz County, and six bus routes (Routes 10, 15, 16, 19, 20, and 22) serve the campus. All except Route 22 begin and end at the Santa Cruz Metro Center, follow various routes through the City of Santa Cruz before circumnavigating the campus via Glenn Coolidge Drive, Hagar Drive, McLaughlin Drive, Heller Drive, Empire Grade, and High Street, with Routes 10, 16 and 20 traveling in a counter-clockwise direction, and Routes 15 and 19 traveling in a clockwise direction on the campus. Route 22 travels between the Coastal Science Campus and the main campus via Delaware, Natural Bridges and Western Drive, and then traveling in a counter-clockwise direction on the campus. Headways range from 15 to 60 minutes during peak, mid-week commuting times with 30 or 60-minute headways on weekends. **Table 4.11-3** describes weekday SCMTD bus route information for routes that serve UC Santa Cruz.

Table 4.11-3
Existing SCMTD Bus Routes on UC Santa Cruz Campus

Route	From/To	Description	Hours of Operation	Peak Headway ¹	Off-Peak Headway	Load Factor ²
10	Santa Cruz Metro Center	UCSC Via High	7:50 AM – 7:30 PM	60	60	0.79
15	Santa Cruz Metro Center	UCSC Via Laurel West	7:15 AM – 7:45 PM	15	30	0.93
16	Santa Cruz Metro Center	UCSC Via Laurel East	6:37 AM – 11:47 PM	15	30	1.14
19	Santa Cruz Metro Center	UCSC Via Lower Bay	7:25 AM – 11:25 PM	30	30	0.86
20	Santa Cruz Metro Center	UCSC Via Westside	7:20 AM – 10:20 PM	60	60	0.86
22	Coastal Science Campus	UCSC Long Marine Lab	7:15 AM - 6:40 PM	60	60	0.64

Source: UCSC TAPS, SCMTD, Fehr & Peers, 2018.

Notes:

1. Headways are defined as the time between transit vehicles on the same route (e.g., time between two Route 10 buses departing Santa Cruz Metro Center).
2. Average weekday load factor for one bus trip.

UC Santa Cruz Shuttle Service

TAPS operates Campus Transit, which is the campus shuttle bus system that serves the main campus and other UC Santa Cruz facilities in the city of Santa Cruz, including the Coastal Science Campus and the 2300 Delaware Avenue property. It also works closely with the Santa Cruz Metropolitan Transit District (SCMTD) or “Metro” to coordinate services. UC Santa Cruz Campus Transit provides two daytime routes on campus, the Loop and the Upper Campus. Both routes operate Monday through Friday from 7:30 AM to 7:45 PM. The Loop route runs buses on 7-minute frequencies in both directions through the main campus. The Upper Campus route provides access between the East Remote and West Remote parking lots while serving residential and academic facilities adjoining Hagar, McLaughlin, and Heller Drives.

Campus Transit also provides nighttime on-campus transit service with Loop, East Night Core and West Night Core routes. Loop routes operate every 10-20 minutes until 11:30 PM weeknights and from 6:00 PM until 11:30 PM weekends. In 2016-17, the East and West Night Core routes operated every 30 minutes from 7:00 PM until 12:00 AM weeknights, and from 6:30 PM until 12:00 AM weekends. Beginning Fall Quarter 2018, the East and West Night Core routes are being consolidated into one Night Core route. Frequency and service span will remain the same.

Table 4.11-4 describes weekday campus shuttle routes.

All Campus Transit routes are wheelchair accessible. TAPS Disability Van Service provides off-route door-to-door on-campus paratransit services for those with permanent or temporary disabilities. This service is available to staff, faculty, students, and visitors. No fare is required for the service, but service must be arranged in advance.

Table 4.11-4
Existing Campus Transit Shuttle Routes

Route	From/To	Hours of Operation	Peak Headway ¹	Mid-day Headway ¹	Load Factor ²
Day Loop	Barn Theater	7:25 AM – 6:00 PM	10	10	0.27
Night Loop	Barn Theater	6:00 PM – 11:30 PM	20	n/a	0.54
Upper Campus	East/West Remote Parking	7:30 AM – 7:45 PM	15	15	0.61
East Night Core	Quarry Plaza	7:00 PM – 12:06 AM	30	n/a	0.36

Route	From/To	Hours of Operation	Peak Headway ¹	Mid-day Headway ¹	Load Factor ²
West Night Core	Quarry Plaza	7:00 PM – 12:10 AM	30	n/a	0.36

Source: UCSC TAPS and Fehr & Peers, July, 2018.

Notes:

1. Headways are defined as the time between transit vehicles on the same route (e.g., time between two Route 10 buses departing Santa Cruz Metro Center).
2. Average weekday load factor for one bus trip.

4.11.2.6 Campus Transportation Demand Management Program

UC Santa Cruz manages a variety of TDM programs, which are detailed below.

Parking Management

Like all UC campuses, UC Santa Cruz has established a parking management program to control the use of campus parking facilities. The parking management program is composed of the following:

- Transportation Systems and Demand Management (TSM/TDM) – Measures that discourage single occupant vehicles, and encourage transit, walking, and bicycling to reduce parking demand. Measures and programs are described below and under the transit and bicycle sections of this report.
- Parking Neighborhoods – The campus is divided into 13 neighborhoods for purposes of monitoring and managing demand for specific geographic areas of the campus. Demand management is achieved through variations in fees and the use of parking permits.
- Parking Permits – UC Santa Cruz manages parking demand through issuance of a variety of types of parking permits, for commuters, residential parking, faculty/staff, graduate students, undergraduate students, reserved and disabled parking. Residential students with freshman or sophomore academic status are prohibited from purchasing a parking permit.
- Use of Remote Lots – The East and West Remote Lots provide parking supply for commuters and reduce demand for close-in parking in the campus core. The remote lots are served by Campus Transit.

Transit Programs

Since 1972, UC Santa Cruz has maintained a service agreement with SCMTD that provides any registered student access to any regularly-scheduled transit route operating within Santa Cruz County without paying a fare. In 1989, this agreement was extended to include any UC Santa Cruz faculty or staff

member displaying a UC Santa Cruz Bus Pass. Under this agreement, the University pays SCMTD a negotiated monthly amount.

Rideshare Programs

Zimride and Zipcar services are available on the UC Santa Cruz campus. Zimride is a private rideshare service that allows students and employees to find rides on and off-campus with others heading the same direction. Users with vehicles get to split the cost of driving by filling empty seats with those looking for a ride. Zipcar allows members to quickly rent vehicles for any desired amount of time at a reasonable price, which includes insurance, gas, and other vehicle fees. Students, faculty, and staff over 18 years of age can reserve a car, located on or near campus, and drive away, utilizing a special key that comes with membership to the service.

Due to the limitations and cost of parking on the campus, the cost of car ownership, and the availability of services such as Zipcar, Zimride, Uber and Lyft, UC Santa Cruz students are increasingly utilizing these services to travel between the campus and off-campus locations. The Zipcar car-sharing program, completing its 11th year at UC Santa Cruz, had 19 on-campus cars accommodating approximately 2,155 active members and average 24/7 utilization exceeding 31 percent during the 2016-17 academic year. The Spring 2017 Mode Split Study indicates that 61.3 percent of all person-trips to/from the campus are made via alternative transportation modes. Single-occupant autos account for only 35.3 percent of all person-trips. The remaining 3.4 percent of trips were generated by UC Service, construction and delivery vehicles, and motorcycles.

Emergency Ride Home Program

The Campus also offers an Emergency Ride Home program for UC Santa Cruz employees who choose an alternative to driving alone at least once a week. Vouchers, valid for one free cab ride home, can be used for emergency purposes for program participants.

Bike Shuttle Program

The TAPS Bike Shuttle provides campus bicycle commuters a ride up the hill from the vicinity of the Mission/Bay Street intersection through the campus. Besides promoting bicycle use among campus commuters, this program reduces on-campus parking demand and campus-related vehicle traffic (UCSC 2006).

Commuter Vanpool Program

This program provides a commute alternative for faculty, staff, and students. TAPS operates 14 vanpools originating from Aptos, Campbell, Monterey, San Jose, and Watsonville. Approximately a dozen parking spaces in heavily utilized parking areas have been reserved for vanpool drivers.

4.11.2.7 Bicycle/Pedestrian Facilities

Bicycle Lanes and Routes

The Campus provides bike lanes on three of the primary access roads serving the campus. Bicycle lanes, continuous from Bay Drive, are provided on Glenn Coolidge Drive from High Street to McLaughlin Drive, and on Hagar Drive from Glenn Coolidge Drive to the entrance of the East Field House Office of Physical Education, Recreation and Sports (OPERS). A bicycle lane was added on Heller Drive in the uphill direction from Empire Grade to McLaughlin Drive. A Class I bike path connects Glenn Coolidge Drive to Meyer Drive through the Great Meadow. Additional off-street paths are located throughout the campus, including unpaved fire roads and the U-Con trail in the northern part of the campus which are used recreationally. Once bicyclists reach the ends of the bike lanes on Heller, Glenn Coolidge, and Hagar Drives, they are required to share the road with vehicles. At many locations, campus roadways have narrow or no shoulders, and there are substantial uphill grades from both campus entrances. Bicyclists generally require more width riding uphill. The narrower roadway sections are difficult for bicyclists to negotiate (UCSC 2006).

Bicycle Parking

Bike racks are located at transit stops on campus, at residential colleges and housing, and near most other major buildings.

Bike-Sharing

In May 2018 the City of Santa Cruz introduced 250 JUMP bikes as the start of a city-wide bike-share program. These electric-assisted “dockless” bikes may be rented for use anywhere within a service area that includes UCSC’s main campus, the Coastal Science Campus, and 2300 Delaware site.

Bike Shuttle

Because there are steep uphill grades up to and through the campus, TAPS operates a bike shuttle service from Olive Street/Mission Street to the campus on weekday mornings to encourage bicycle use as an alternative to motorized vehicles. The shuttle van has a trailer on which 16 bicycles can be loaded, as well

as a rack on the front of the shuttle that can carry three bicycles. The shuttle has two drop-off points on campus: the Physical Plant transit stop near the main entrance and the Engineering 2 Circle on the central campus. During the Fall, Winter, and Spring quarters, the bike shuttle operates on 15-minute frequencies between 7:00 AM and 11:30 AM. During the Summer quarter and breaks, the shuttle makes eight trips between 7:10 AM and 9:40 AM.

Bicycles on Buses

Campus Transit allows bikes to be loaded onto Loop shuttles’ front-loading bike racks that carry three bicycles at a time; bikes are not allowed inside buses. Bikes can be loaded and unloaded at stops throughout the Loop route.

Santa Cruz METRO buses have also front-loading bicycle racks that carry three bicycles at a time.

4.11.2.8 Traffic Data Collection

Intersection traffic counts were collected at the Glenn Coolidge/Hagar Drive intersection on December 7, 2017 from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. The existing lane configurations at the time the traffic data was collected and the traffic volumes are shown on **Figure 4.11-1, Glenn Coolidge/Hagar Drive Intersection Configurations and Volumes.**

4.11.2.9 2008 Comprehensive Settlement Agreement

As noted in **Chapter 1.0, Introduction**, the certification of the 2005 LRDP Final EIR was challenged in 2007 by several entities, including the City of Santa Cruz. A ruling by the Santa Cruz County Superior Court concluded that additional analyses relating to water supply, housing, and traffic mitigation were required. Specifically regarding traffic, the Court ruled that “Mitigation Measure TRA-2 does not constitute a feasible enforceable measure for ensuring the University’s payment of fair share contributions to transportation improvements under the control of the City of Santa Cruz.” In August 2008, a Comprehensive Settlement Agreement was executed by all parties to resolve the lawsuits. The provisions in the 2008 Settlement Agreement related to traffic are listed in **Table 4.11-5, Traffic related Terms in the 2008 Settlement Agreement**, below.

**Table 4.11-5
Traffic-related Terms in the 2008 Settlement Agreement**

Settlement Provision	
4.1	UCSC agrees to not exceed 28,700 ADT to the main campus (24,800 ADT 2005 LRDP baseline + 3,900 new ADT) for as long as the 2005 LRDP is in effect. Compliance will be monitored by arriving at an ADT through weekday (Monday – Friday) traffic volume counts at the two campus entrances for at least two weeks beginning on the fourth week of Fall and Spring quarter (when school is in session for the entire week) of each corresponding calendar year. a. The parties agree that the traffic commitment in Section 4.1 will be increased by 1,300 ADT to a total of 30,000 ADT and

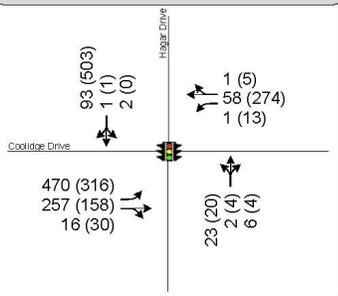
	<p>that the penalty provisions of Section 1.4 will not apply in the event UCSC is prohibited from developing the North Campus area as identified in the attached map (e.g., a final judicial determination prohibits North Campus development) or the City fails to amend its Sphere of Influence. UCSC agrees to make additional ADT payments associated with an ADT increase of 1,300 under this section based on the citywide TIF fee schedule then in effect (currently \$377/trip). The parties acknowledge and agree that 30,000 main campus ADT is 100 ADT lower than estimated by the City for UCSC in its current TIF program.</p> <p>b. The parties further agree that UCSC will not be in violation of the applicable traffic commitment or subject to the penalty provisions in Section 1.4 in the event of, and for the time period of, one of more of the following:</p> <p>i. a legal action, or inaction by an agency with approval or permit authority necessary to construct the housing project delays a proposal by UCSC to timely fulfill its housing commitment pursuant to Section 2.1. UCSC commits to make reasonable efforts to expeditiously resolve the litigation;</p> <p>ii. Implementation of an ADT reducing project not identified in this Agreement is delayed as a result of a legal action or inaction by an agency with approval or permit authority necessary to construct the ADT reducing project, upon the concurrence of the City.</p> <p>c. The parties agree that UCSC's ability to meet the applicable traffic commitment in this Section 4.1 requires the City, County and SCMTD to continue existing services and provide transportation enhancements.</p> <p>d. Should temporary conditions arise that result in anomalous or erroneous weekday ADT measurements (i.e., bus strike, hose counter failure, etc.), as described in 4.1, then efforts will be made to recollect reliable and appropriate data within one month of the initial traffic counts.</p> <p>e. Should SCMTD transit service to the main campus (excluding Supplemental services provided under the "guaranteed cost" clause of the UCSC/SCMTD contract) be reduced from 2007-08 service hours or capacity, then the commitment in 4.1 will be suspended until regular transit service levels to the main campus are restored.</p> <p>f. In the event UCSC's traffic commitment is suspended as provided for in Sections 4.1(b) and 4.1(e), UCSC will provide written notification within 30 days to the City and County that (1) identifies the date on which the suspension commenced, and (2) the reason(s) for the suspension. On an annual basis following the initial notice of suspension and for as long as the suspension is in effect, UCSC will provide a report identifying the status of the suspension and any efforts by UCSC to end the suspension. Further, UCSC will provide notification within 30 days of termination of the suspension period.</p> <p>g. Should SCMTD transit service to the main campus (excluding Supplemental services provided under the "guaranteed cost" clause of the UCSC/SCMTD contract) not increase in proportion to campus population growth such that it accommodates at least 25% of all trips to and from UCSC (reflective of 2007-2008 conditions) and UCSC continues to pay the cost of its SCMTD ridership, the applicable ADT commitment will be increased by applying an ADT credit. The ADT credit will be equivalent to 50% of the difference between a calculated 25% UCSC SCMTD mode split (measured in person trips) and the actual UCSC SCMTD mode split (measured in person trips).</p> <p>h. The parties acknowledge and agree that alternative transportation modes and/or transit services may change over time as a result of technological, financial or other conditions, and to the extent such changes result in a significant shift in current modes, and as such the parties agree that elements of this proposal, by written notice by any party to this agreement, will be revisited and revised, as necessary, and subject to the mutual agreement of the City and UCSC. The parties will attempt to resolve disputes arising pursuant to this section by mediation.</p> <p>i. The parties agree that the commitments in Section 4.1 are made for the sole and exclusive purpose of settlement and in recognition of access constraints unique to the UCSC main campus. These constraints include: campus access dependence upon two arterial roadways (Bay Street and Empire Grade) and two collector roads (High Street and Western Drive) traversing residential neighborhoods; an incomplete roadway network as envisioned in the original campus planning; the absence of any direct campus access route from State Route 9 or Highway 1; reliance on only two entrance gates to the campus; State and City parklands and open space adjacency that surrounds the main campus on three sides; and the geographic and topographic distance of the main campus from commercial service areas within the City.</p>
4.2	<p>Within three months from the approval of this Agreement, UCSC agrees to contribute funds in an amount equal to the City's TIF in three consecutive annual payments for off-site traffic improvements for the 3,900 new ADT in 4.1, above. UCSC acknowledges that the TIF is revised annually on July 1, based on the Engineering News Record Cost of Construction index, and that as a result, each annual payment will be calculated by the current TIF rate at the time of payment. At its discretion, UCSC may make a one-time payment of \$1,427,400 within 15 days of entry of the Agreement as a final judgment as provided for in Section 7.1. Funds contributed to the City under this section will constitute UCSC's share of the cost of improvements to the Bay Corridor between Mission and High, including improvements to the Bay/Mission and Bay/Escalona intersections and any other intersections identified in the City's TIF program to which UCSC contributes traffic. UCSC's payment is based on the City's 2007-2008 TIF and traffic model. $3,900 \text{ ADT} \times \\$366/\text{trip} = \\$1,427,400$</p> <p>Within three months of executing this Agreement, the City and UCSC will meet to identify TIF projects for immediate implementation. Identified and agreed upon improvements will be initiated by the City within one year.</p>
4.3	<p>The parties agree that UCSC's payment as set forth in sections 4.2 fulfills UCSC's "fair share" commitment in 2005 LRDP mitigation measure TRA-2A and the portion of TRA-5A that relies on TRA-2A for off-campus traffic impacts associated with campus ADT of 28,700.</p>
4.4	<p>UCSC agrees to make additional ADT payments associated with UCSC's 2300 Delaware property based on the City's methodology (20 trips per 1000 building gross square feet based on office use) and citywide TIF fee schedule (currently \$366</p>

	<p>per trip). UCSC's payment for existing occupied gross square footage (gsf) at 2300 Delaware (Buildings A and B) is based on the City's 2007-2008 TIF and traffic model as represented by the following calculation: $57,223 \text{ gsf} @ 20 \text{ ADT}/1,000 \text{ sf} = 1,144.45 \text{ ADT} \times \\$366/\text{ADT} = \\$418,868.70$</p> <p>If UCSC converts Buildings A and B to non-office uses resulting in a higher trips per square foot rate, a further ADT payment will be made by UCSC provided that UCSC receives a credit for the above-payment towards any additional calculated TIF associated with the change in use. Payment for buildings A & B will be in addition to, and paid at the same time as, the amount to be paid in 4.2, above. Payment for ADT associated with building C or any other development on the 2300 Delaware site will be paid based on the City's methodology and citywide TIF fee schedule in effect at the time of occupancy. The City's TIF accounts for 2,068 total ADT from 2300 Delaware and UCSC's CEQA documentation for the project projected 1,780 total ADT at full build-out and occupancy of buildings A, B, and C.</p>
4.5	<p>UCSC agrees to make additional ADT payments associated with UCSC development at the Marine Science Campus, based on the City's methodology and citywide TIF fee schedule in effect at the time new development receives all required approvals. The City's TIF accounts for 3,120 total ADT from the Marine Science Campus and the University's CEQA documentation projected 2,600 total ADT at full implementation of the CLRDP. UCSC does not anticipate the first major trip generating project to be occupied until 2012.</p>
4.6	<p>The parties agree to the following to reduce peak hour traffic impacts and to reduce overall traffic volumes:</p> <ul style="list-style-type: none"> a. The City and UCSC will continue to work cooperatively with other Bus Rapid Transit Task Force members to develop BRT improvements and other alternative transit systems that have the greatest feasibility of reducing peak hour impacts and greatest potential to be funded and implemented. UCSC further agrees to: <ul style="list-style-type: none"> i. Continue to fund the current study of BRT opportunities between the campus and downtown Pacific Station, existing study to be completed in Fall 2008. This study will provide the information to prepare the operational analysis portion of an FTA application by SCMTD for "Very Small Starts" funding corridor improvements. ii. Commit to include its share of development and construction costs of an on-campus transit hub and related on-campus BRT improvements when calculating the total share/match for the FTA "Very Small Starts" application. b. UCSC and the City will begin work immediately to mitigate existing and future peak hour traffic demand from UCSC facilities including signal synchronization studies and implementation, to be funded pursuant to 4.14, below. c. UCSC will continue to work with the City and SCMTD to expand and enhance existing public transit service to UCSC facilities in advance of the BRT process (described in (a), above). Enhancements may include pilot projects, evaluated regularly for their effectiveness, such as: <ul style="list-style-type: none"> i. "Limited Express" SCMTD service to the campus from downtown and outlying areas of Santa Cruz County funded under UCSC's "guaranteed cost" agreement with SCMTD; ii. Implementation of electronic boarding passes for UCSC affiliates using SCMTD transit; iii. On-going GIS analysis of UCSC residential patterns to identify opportunities for new or expanded SCMTD transit routes to and from the campus; iv. Working with Caltrans to coordinate signal synchronization improvements to the Bay and Mission corridors. d. UCSC will continue to implement and expand its existing Transportation Demand Management programs with the objective of increasing sustainable transportation modes (use of modes other than single-occupant vehicles) above 55% and to reduce peak hour traffic volumes and address increases in traffic overall.
4.7	<p>UCSC will work cooperatively with the City to review, revise and maintain the City's traffic model following completion of the City's General Plan update. Based on the traffic model adopted as part of the City's General Plan update, UCSC's trip generation rates and distribution will be updated every three years. UCSC agrees to, at intervals of no more than three years or increments of no more than 1,000 students in enrollment growth (whichever occurs first), conduct traffic counts at a mutually agreed number of intersections for the purpose of updating the City's traffic model and Traffic Impact Fee, because the model and additional TIF specified projects are required to accommodate the projected traffic demand.</p>
4.8	<p>UCSC agrees to contribute to the cost of implementing an Off-Campus Parking Permit Program (Upper Westside or potential programs on the lower Westside) in an amount up to \$50,000 per year for a period of three years for a pilot period of 3 years, to be continued, revised, or reallocated by mutual consent.</p>
4.9	<p>UCSC has contributed \$216,500 to the Mission Street widening project and agrees to contribute an additional \$107,500 to the City, which has been in dispute. Payment will be made within 90 days of execution of this Agreement and the parties agree that the University's obligation under University Assistance Measure 7 is satisfied with this payment.</p>
4.10	<p>UCSC will pay 100% of the cost of Heller/Empire Grade Intersection Improvements at the UCSC west entrance. If UCSC develops an additional entrance/exit to/from the campus along Empire Grade, related intersection improvements will be funded 100% by UCSC. The scope of those improvements will be informed by the project and a CEQA analysis of the associated traffic impacts.</p>
4.11	<p>UCSC will pay 40% of the bid costs of Bay Street Repair project. If, during the term of the 2005 LRDP, Bay Street requires re-surfacing (asphalt over-lay) in addition to the repair described above according to industry standards, UCSC agrees to pay 40% of the re-surfacing costs only. Either party may initiate a study and propose an alternate percentage.</p>

4.12	UCSC will pay 100% of the cost of improvements to the Marine Science Campus entrance at the intersection of Shaffer Road and Delaware Avenue, as well as improvements to Shaffer Road on UCSC property up to the new driveway to Upper Terrace development zone when development occurs in that zone. As identified in implementation measure 5.1.7 of the Marine Science Campus Coastal Long Range Development Plan, UCSC “will collaborate with the City of Santa Cruz on the construction of an emergency grade crossing” over the tracks.
4.13	<p>Within ninety days of execution of this Agreement, the City and UCSC will meet to identify for immediate implementation transportation improvements that are not included in the City’s current TIF program, or an integrated sequence of transportation studies to explore alternative transportation solutions. Identified and agreed upon improvements will be initiated, and studies will be commissioned, by the City within one year. For purposes of this Section, UCSC and the City will each commits up to \$500,000 (over a 3 year period) for a total of \$1,000,000. Specific milestones and deliverables with which the phasing of funding will be tied will be agreed to by the City and UCSC. Study funds are to be used for appropriate consultant(s) to assist in defining realistic transportation solutions and trip reduction improvements. The City and UCSC have identified the following projects for implementation/study as a starting point for discussion:</p> <ul style="list-style-type: none"> a. A signal timing analysis and plan for Bay/Mission corridors; b. Integration of signal pre-emption for SCMTD to allow SCMTD buses to move more quickly through intersections; c. Expand SCMTD service to the campus including Express Bus service; d. On-going GIS analysis of UCSC residential patterns to identify opportunities for new or expanded SCMTD transit routes to and from the campus; e. Locate “Park and Ride” opportunities around/within City of Santa Cruz for UCSC Commuters; f. Locate Long-term “storage” parking areas for UCSC students; and g. Expand existing ZipCar carshare programs.
4.14	UCSC and the City and CLUE shall make their best effort to jointly plan and implement a public transportation system capable of reducing the use of City streets and traffic congestion on City streets. Specific tasks of this planning effort (as far as financially feasible with available funds under this Section) will include, but not be limited to, identification of preferred technologies, routes and rights of way, and identification of probable ridership and financing. UCSC and the City will each commit \$50,000 towards this effort.
1.4	<p>If the traffic commitment in Section 4.1 is exceeded, the commitment will be enforced by requiring UCSC to reduce ADT by one or more of the following measures: adjusting enrollment, adjusting on-campus workforce, or through implementation of ADT reducing measure(s). The choice will be determined from this list by The Regents or its delegate. When UCSC main campus trips are within 1,500 of the applicable traffic commitment in Section 4.1, UCSC will hold a meeting to solicit public input regarding the choices listed above for the reduction of ADT. Within 90 days of the meeting, UCSC will initiate the process necessary to gain approval from The Regents or its delegate of its selected choice(s) for reduction of ADT. In addition, to further effectuate compliance and enforce the traffic commitment in Section 4.1, UCSC agrees to a penalty payment in an amount equal to three times the City’s citywide Traffic Impact Fee (TIF) then in effect for every average daily trip (ADT) in excess of the commitment (i.e., if the City’s current citywide TIF were applied the penalty amount would be \$1,098 per trip (3x \$366)). Penalty payments will be made annually until such time as the ADT is equal to or below the traffic commitment in this Agreement. For purposes of calculating the penalty, ADT will be measured per 4.1 below. Penalty funds will be deposited into a dedicated account for use by the City and UCSC to reduce ADT to UCSC. UCSC and the City will work cooperatively to identify appropriate and effective trip reduction programs, including, but not limited to, increased SCMTD transit service to the UCSC campus, with the expenditure of funds being subject to the approval by the City</p>
<p>Source: UCSC Comprehensive Settlement Agreement 2008</p>	

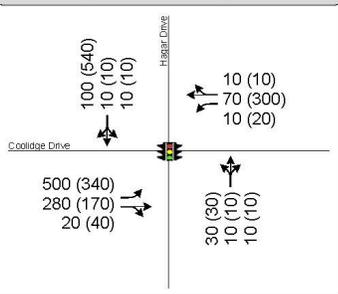
Existing Conditions

1. Hagar Drive/Coolidge Drive



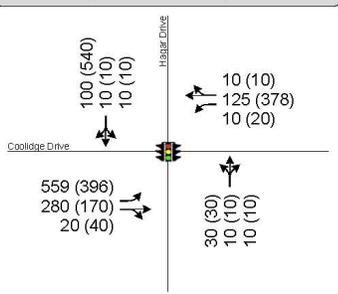
2020 without Project Conditions

1. Hagar Drive/Coolidge Drive

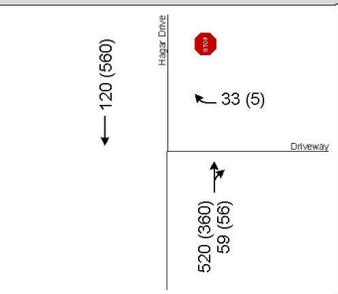


2020 with Project Conditions

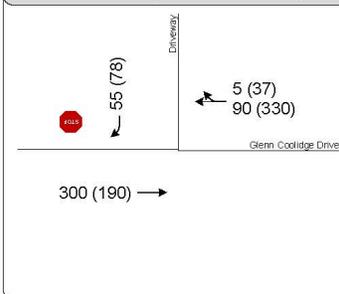
1. Hagar Drive/Coolidge Drive



2. Hagar Drive/Driveway #1



3. Glenn Coolidge Drive/Driveway #2



LEGEND

- # Study Intersection
- AM (PM) Peak Hour Traffic Volume
- Lane Configuration
- Signalized

SOURCE: Fehr and Peers 2018

FIGURE 4.11-1

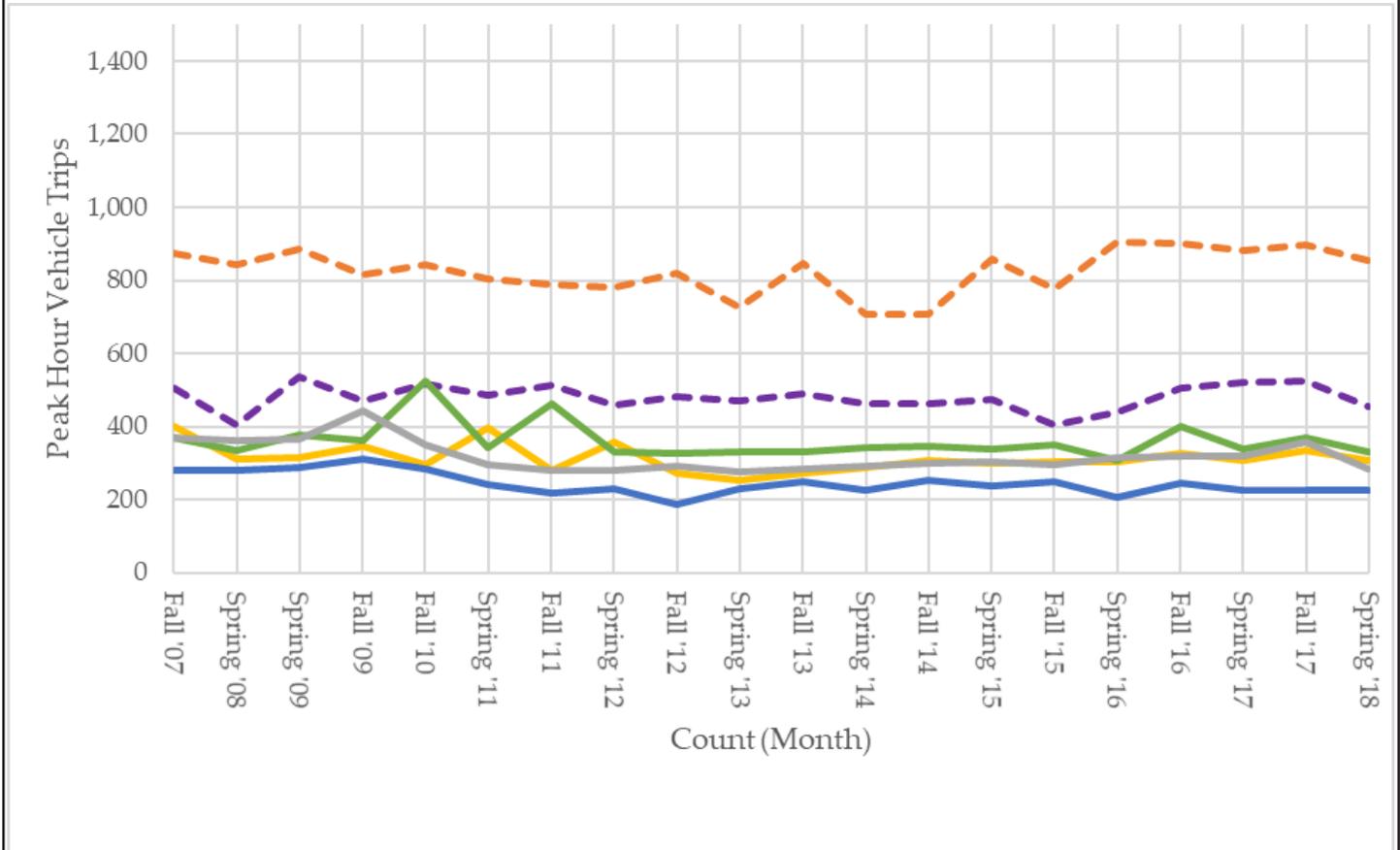
The Campus has been in compliance with the Settlement Agreement since 2008. As of the 2016-17, the Campus generated 22,859 average daily trips (ADT), which is below the trip cap (28,700 ADT) in the Settlement Agreement. The Campus made a payment to the City in September 2008 to cover the traffic impact fee (TIF) equivalent for 3,900 new ADT above the baseline of 24,800 ADT. The Campus has also been paying TIF-equivalent payments for redevelopment of 2300 Delaware Avenue and the Coastal Science Campus as individual projects that support an increase in occupancy are completed. The Campus and the City have met to discuss projects to be included in the TIF program and have identified an improvement to the Bay Street/High Street intersection. The Campus has continued to implement a variety of transportation demand management programs (vanpools, carpools, car share, transit programs, bike shuttle); as a result, 60 to 62 percent of trips to Campus have been made using alternative modes of transportation, exceeding the objective of maintaining an alternative mode share of more than 55 percent. The Campus has also been in compliance with other commitments in the Settlement Agreement, including expansion of public transit service, coordination with the City on non-TIF projects, and implementing long-term off-campus parking by permit.

4.11.2.10 UC Santa Cruz Historical Traffic Volumes

Since 2005, TAPS has been conducting traffic counts at the two campus gateways (main entrance on High Street, and west entrance on Empire Grade Road) and on several on-campus streets since 2007 in Fall and Spring of every year. The traffic count data was tabulated and analyzed to establish the change in AM and PM peak hour traffic at the two entrances and some of the on-campus streets that are relevant to the proposed SHW project.

TAPS provided the historical traffic counts between Fall 2007 and Spring 2018 for the campus's gateways and on-campus streets. The gateway counts were collected for two weeks in the Fall and Spring while the on-campus street counts were collected for one week in the Fall and Spring. The counts were processed to report the AM and PM peak hours during a typical weekday during the academic year. The historical morning peak hour counts are shown in **Figure 4.11-2** and the evening peak hour counts are shown in **Figure 4.11-3**.

The analysis shows that peak hour traffic volumes at the campus gateways and on key on-campus streets have remained flat even though campus enrollment has increased since 2007. A more detailed discussion is provided in **Appendix 4.11, Historical On-Campus Traffic Count Summary, Attachment A**.



SOURCE: Fehr and Peers 2018

FIGURE 4.11-2

Historical Morning Peak Hour Count



4.11.2.11 Campus Trip Generation Rates

The gateway traffic counts were used, in conjunction with enrollment data, to estimate daily and peak hour student trip rates for the campus between 2005 through 2017 (see **Appendix 4.11, Trip Generation Memorandum**). The average daily student trips rates from 2005 through 2017 are presented in **Figure 4.11-4, Student Daily Trip Rate (2005 -2017)**. As the graphic shows, the student trip rate has declined over the years from a high of 1.34 daily trips per student in 2006 to 0.92 daily trips per student in 2017.

4.11.3 REGULATORY CONSIDERATIONS

4.11.3.1 Federal and State Laws and Regulations

There are no federal or State transportation regulations applicable to the proposed project.

4.11.3.2 Local Plans and Policies

There are no local plans and policies related to traffic and transportation that are applicable to the proposed project.

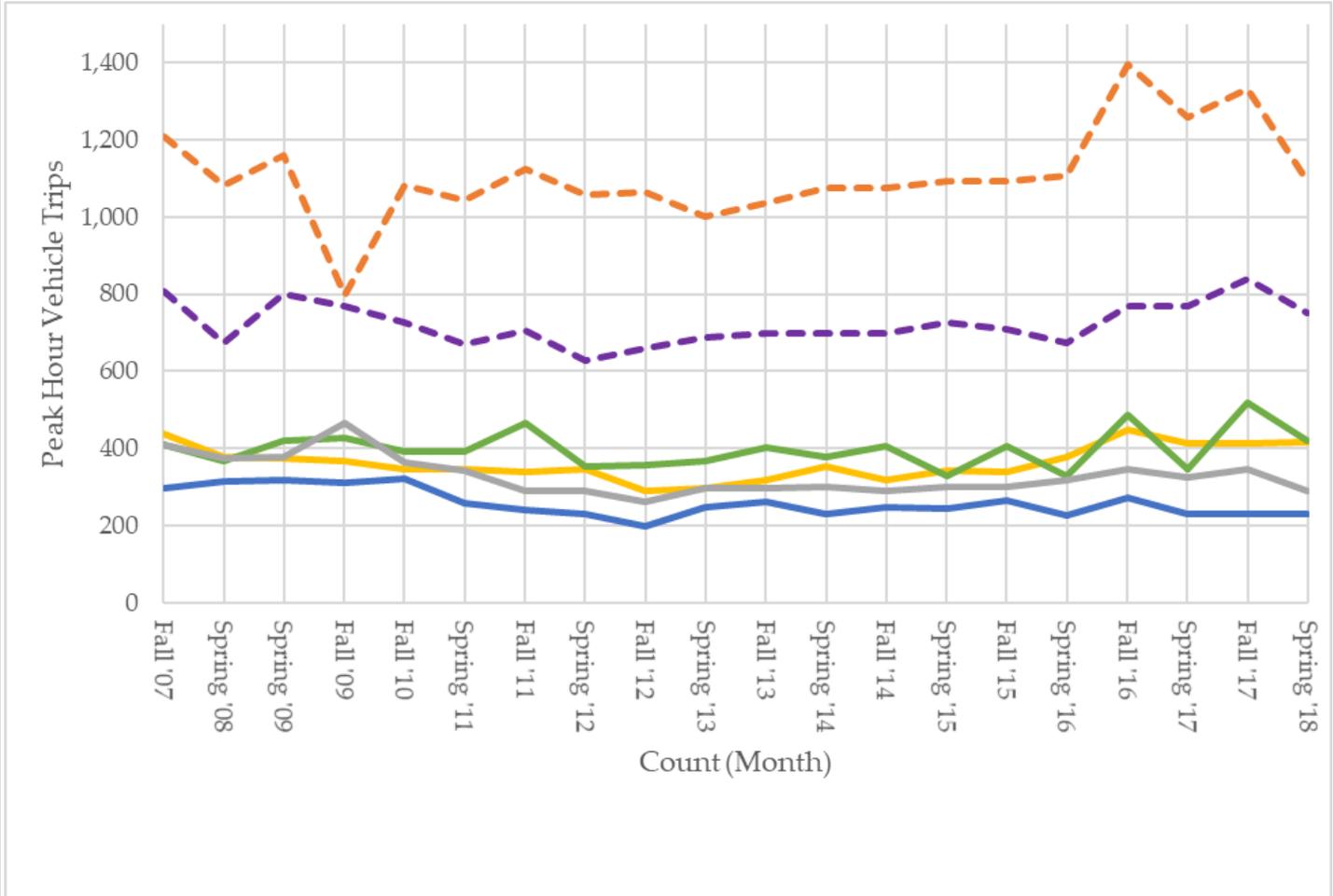
4.11.4 IMPACTS AND MITIGATION MEASURES

4.11.4.1 Significance Criteria

The impacts on transportation and traffic from the implementation of the proposed project would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the State CEQA Guidelines:²

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

² The first two CEQA checklist questions under Transportation and Traffic were revised since the preparation of the 2005 LRDP Final EIR. This EIR uses the current wording from the checklist and not the wording that was included in the 2005 LRDP Final EIR.



SOURCE: Fehr and Peers 2017

FIGURE 4.11-3

Historical Evening Peak Hour Count



- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The 2005 LRDP EIR set forth the thresholds of significance that UC Santa Cruz determined it would use to evaluate the significance of LOS impacts at campus intersections. As noted in the 2005 LRDP EIR, LOS D is the minimum acceptable LOS for intersections in the lower campus and LOS E is the minimum acceptable LOS for intersections in the central and north campus. These thresholds are used in this EIR to evaluate the project traffic's impacts at campus intersections.

As the proposed project would not increase campus traffic above the approved trip generation studied in the 2005 LRDP FEIR (see discussion of trip generation in **Section 4.11.4.3** below), LOS thresholds used by the City of Santa Cruz are not reiterated in this EIR, although those are identified in the 2005 LRDP EIR.

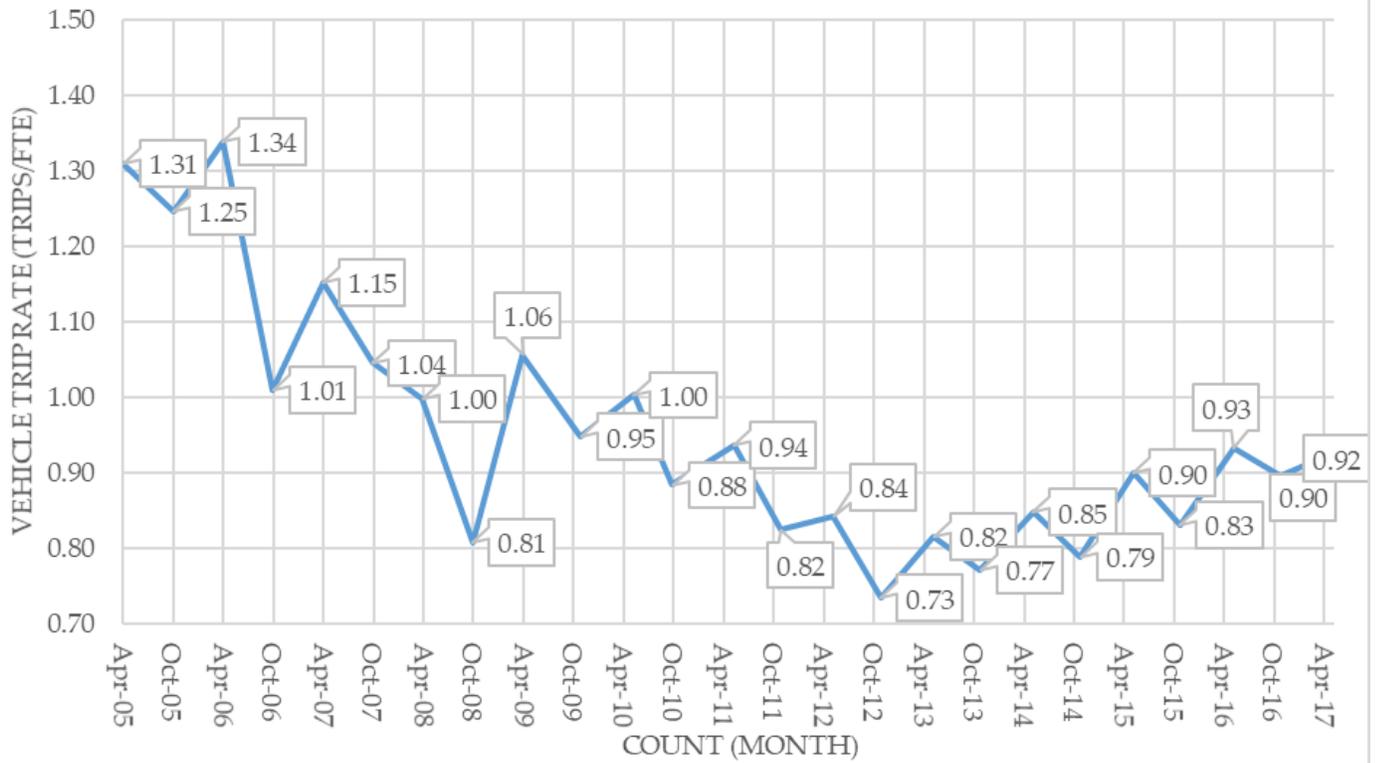
4.11.4.2 CEQA Checklist Items Adequately Analyzed at the 2005 LRDP Level or Not Applicable to the Project

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks

The 2005 LRDP Final EIR concluded that campus growth and development under the 2005 LRDP would have no potential to affect air traffic patterns, and that the main campus was not within an air safety zone that would require restrictions on development. No impact would occur.

4.11.4.3 Methodology

As noted above, the proposed project would add housing to the campus and thereby reduce the percentage of enrolled students who would live off campus, compared to existing conditions as well as the conditions analyzed in the 2005 LRDP Final EIR. Therefore, the proposed SHW project is expected to reduce rather than increase daily and peak hour vehicle trips. Furthermore, the project is within the scope of campus development under the 2005 LRDP. Therefore, the traffic analysis for the proposed project is tiered from the traffic impact analysis in the 2005 LRDP EIR, supplemented by a project-level analysis of traffic impacts on on-campus intersections.



SOURCE: Fehr and Peers 2018

FIGURE 4.11-4

Student Daily Vehicle Trip Rate (2005-2017)

Approach to Tiered Analysis under the 2005 LRDP EIR

Because the 2005 LRDP is a long-range plan to guide campus development between 2005 and 2020, the 2005 LRDP Final EIR analyzed the programmatic impacts of the 2005 LRDP for the year 2020, the planning horizon year by which the 2005 LRDP anticipates that the projected 19,500 student enrollment would be reached. The 2005 LRDP's programmatic impacts were analyzed by adding traffic from the full development of the campus under the 2005 LRDP to projected future traffic volumes in the study area in 2020, and determining the change in 2020 traffic conditions as a result of the additional 2005 LRDP-related traffic.

The 2005 LRDP included goals to house 50 percent of undergraduate students and 25 percent of graduate students in on-campus housing. Thus, the 2005 LRDP Final EIR evaluated the addition of 2,300 student beds to the inventory of 6,891 beds existing in fall 2004, for a total of 9,190 student beds by 2020. As part of the 2008 Comprehensive Settlement Agreement, the University agreed to provide housing to accommodate 67 percent of new-student enrollment above 15,000 FTE within four years of reaching that enrollment level. At a total enrollment of 19,500, under the 2008 Comprehensive Settlement Agreement UC Santa Cruz would need to provide on-campus or University controlled housing for 10,125 students. This would be 935 more beds than analyzed in the 2005 LRDP Final EIR. The Campus proposes to add 3,072 beds under the SHW project and about 200 net new beds in Kresge College and 22 new beds in Crown Colleges for a total of 3,294 new beds, while removing approximately 1,096 aging or overflow beds (including the 196 beds in the existing FSH complex), such that by 2023,³ there would be 2,198 additional student beds on the campus compared to 2017 conditions. The total on-campus housing would be about 11,467 student beds and the total campus-controlled housing would be approximately 11,597 beds (including 130 off-campus beds) (see **Table 3.0-5 in Section 3.0, Project Description**). The total campus-controlled housing would be about 2,407 more beds than planned originally under the 2005 LRDP, and about 1,472 more beds than required to satisfy the Settlement Agreement. Therefore, the proposed project would add substantially more student housing to the campus than previously planned.

While the number of beds to be added by the proposed project exceeds the 2005 LRDP bed estimate, the proposed SHW project is, nonetheless, within the scope of the campus development under the 2005 LRDP because the building space that would be added by the project is within the building space projections in the 2005 LRDP. Furthermore, the proposed housing would meet existing demand and

³ Although the construction of the SHW project would commence in 2019 within the time horizon of the 2005 LRDP, it would be completed by 2023. Similarly, the construction of Kresge College project would commence in 2019 but it would be completed in 2023 and the new student beds would be added by 2023. Therefore year 2023 was selected as the analysis year to provide a complete picture of the effects of new housing on the campus.

projected demand under the 2005 LRDP. The Campus will remain below an enrollment level of 19,500 FTE students until such time that a new LRDP is adopted.

Pursuant to the 2005 LRDP and the 2008 Comprehensive Settlement Agreement, the enrollment at UC Santa Cruz is projected to increase to a three-quarter average of 19,500 students, and for purposes of analysis, the 2005 LRDP Final EIR analyzed this enrollment level as attained by 2020. As of Spring 2017 (the baseline year for this EIR), the enrollment level was 17,870 students. Assuming that enrollment continues to increase as previously projected to 19,500 students, campus vehicle traffic is expected to increase between 2017 and 2020. The increase in traffic will, however, be a result of this enrollment growth, and the addition of student housing would reduce the potential increase in daily and peak hour trips on the area roadways by increasing the number of students living on-the-campus. As explained in **Chapter 3.0, Project Description**, the SHW project does not result in enrollment growth.

As a first step in evaluating the change in traffic due to the SHW project, a trip generation analysis was conducted for the proposed project. The purpose of the analysis was to confirm that with the provision of the additional housing on the campus, the total daily and peak hour trips to the campus would be comparable to or less than the trips previously estimated for the campus at full development under 2005 LRDP, i.e., 2020 conditions in the 2005 LRDP EIR. In the event that a higher number of trips were identified, additional transportation impact analyses would be required in order to comply with the California Environmental Quality Act (CEQA).

Scenarios for Trip Generation Analysis

Using the number of on-campus student housing beds, student enrollment, faculty/staff estimates presented in **Table 4.11-8** below, and trip generation rates for commuting and resident students, trip generation estimates for the following scenarios were developed:

- *Existing Conditions* – Spring 2017 conditions
- *Year 2020 Conditions (2005 LRDP FEIR)* – Year 2020 student and faculty growth per the 2005 LRDP FEIR
- *Year 2020 without Project Conditions* – Currently projected maximum student and faculty growth to Year 2020 with existing on-campus bed total

- *Year 2023 with Project Conditions* – Maximum student and faculty growth to Year 2020 and 2,198 net-added beds. This scenario assumes full occupancy of the Student Housing West Project and other new beds by 2023.⁴

As the table indicates, current student enrollment projections for 2020 (without Project) are unchanged from the projections for 2020 in the 2005 LRDP Final EIR and the 2008 Comprehensive Settlement Agreement. However, current faculty and staff projections for 2020 (without Project) are lower than the projections for 2020 in the 2005 LRDP Final EIR. Projections for the other daily populations (non-UC campus employees, construction workers, and visitors) are also lower. Projections of these populations under Year 2023 with Project conditions are the same as projections of these populations under Year 2020 without Project conditions.

**Table 4.11-8
On-Campus Student Housing and Population Summary**

Scenario	Student Beds	Campus Population			
		Students ¹	Faculty and Staff	Other Daily Population ²	Campus Total
Existing (2017)	9,269	17,870	3,996	556	22,422
Year 2020 Conditions (from the 2005 LRDP FEIR)	9,190	19,500	4,499	750	24,749
Year 2020 without Project Conditions	9,269	19,500	3,994	640	24,134
Year 2023 with Project Conditions ³	11,467	19,500	3,994	640	24,134

Source: UCSC and Fehr & Peers, 2017.

Notes:

- The on-campus student population increases from Existing Conditions to 2023 with Project (Full Occupancy) Conditions.*
- Other daily population includes non-UC employees working on campus, construction workers, and visitors.*
- Student housing projection for Year 2023 with Project Conditions includes the addition of the 3,072 beds in the SHW project, 200 net new beds in Kresge College, 22 net new beds in Crown College, and the removal of 1,096 existing beds on campus.*

⁴ The 2005 LRDP, adopted in 2006, was developed to guide the Campus's growth to an enrollment level of 19,500 FTE students, which was projected to be attained by 2020-21. Therefore the 2005 LRDP EIR, which was certified in 2006, evaluated the impacts of campus growth between approximately 2003-04 (which was used as the baseline year in the EIR) and 2020-21. The 2005 LRDP is unchanged with regard to the maximum enrollment level of 19,500 FTE students and at this point in time it is still projected that this enrollment level would be attained by 2020-21. However, the new housing that would be constructed under the 2005 LRDP to serve this enrollment level will not be completed until 2023. Therefore, year 2023 is used in this section to analyze the effect the SHW project and other proposed housing would have with respect to traffic.

Spring 2017 traffic counts at the campus's gateways were used to establish existing trip generation estimates for the campus. These counts were used to develop campus vehicle trip rates for students and other campus users. Separate vehicle trip rates were developed for commuting students and students living on campus using the UC Santa Cruz Spring 2016 Travel Survey collected by TAPS, gateway counts, and proportions of students residing on and off-campus. The Travel Survey collected mode-split data for residential (on-campus) and commuting (off-campus) students over the course of one week during the Spring quarter, which was used to develop a ratio between trip generation rates for on-campus to off-campus students. The ratio was then applied to the base (existing) overall student trip rates established from the gateway counts to develop vehicle trip rates for students residing on- and off-campus students. A summary of the process used to generate campus trip generation rates is presented in **Figure 4.11-4, Trip Generation Analysis Process**, and the details are provided in **Appendix 4.11, Trip Generation Memorandum, Attachment A**.

Trip Generation Estimates

Trip generation estimates for existing conditions (2017) from the campus gateway counts and for 2020 Conditions from the 2005 LRDP Final EIR are presented in **Table 4.11-9**. New projections for the following scenarios are also included:

- *Year 2020 without Project Conditions* – Trip generation with the existing 9,269 beds and the 2020-2021 campus student and faculty/staff projections.
- *Year 2023 with Project Conditions* – Cumulative trip generation with the proposed housing projects and the 2020-2021 enrollment and faculty/staff projections. This scenario includes the demolition and replacement of 1,096 existing beds and 2,198 additional beds on-campus.

Table 4.11-9
UCSC Campus Vehicle Trip Generation Estimates

Scenario	Daily	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Existing Conditions Gateway Counts							
Existing (2017)	22,764	1,404	1,059	345	2,022	781	1,241
2005 LRDP EIR Trip Estimates							
2020 Conditions ¹ [A]	32,044	1,885	1,470	415	2,593	1,037	1,556
Updated Trip Estimates (with and without Project)							
2020 without Project Conditions ²	25,580	1,573	1,187	386	2,266	876	1,390
Net New Beds On-Campus	-684	-46	-34	-12	-66	-25	-41
2023 with Project Conditions [B]	24,896	1,527	1,153	374	2,200	851	1,349
Difference between 2005 LRDP EIR Trip Estimates and Updated Estimates with Project							
Vehicle Trip Change [B-A]	-7,148	-358	-317	-41	-393	-186	-207

Scenario	Daily	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Percent Change [(B-A)/A]	-22%	-19%	-22%	-10%	-15%	-18%	-13%

Source: Fehr & Peers 2018.

Notes:

1. Total daily vehicle trip generation and the peak hour trip generation estimates per the 2005 LRDP FEIR (Table 2-7).
2. This analysis assumes the 2020-2021 enrollment and faculty/staff projections are the same in 2023-2024.
3. The With Project Conditions in this table include the addition of 200 new beds at Kresge College and 22 new beds at Crown College by 2023.

As the table above shows, compared to existing conditions when there are approximately 22,764 daily trips to the campus, the total daily trips to the campus in 2020 (without the Project) would increase to 25,580 trips when enrollment increases to 19,500 students. The effect of the proposed housing projects would be to reduce that increase in daily trips by about 684 trips. Therefore, under with-Project conditions, while the number of trips would still increase (compared to existing conditions) as enrollment increases to 19,500 students, the SHW project would offset a portion of that increase.

Secondly, the table above also shows that once the proposed housing is constructed and occupied, the total daily vehicle trips to the campus would be 7,148 trips less than the trips estimated and analyzed in the 2005 LRDP Final EIR. Similarly, the total AM and PM peak hour vehicle trips would be about 358 and 393 trips lower, respectively than the peak hour trips used in the 2005 LRDP Final EIR traffic analysis.

Approach to Analysis of Localized Traffic Impacts

Development on the Hagar site was not contemplated under the 2005 LRDP. Furthermore, the Hagar site is adjacent to an important intersection on the campus, and the Hagar site development includes an expanded childcare center which could result in new vehicle trips. Therefore, a level of service (LOS) analysis of the proposed project’s impact to the adjacent intersection of Hagar Drive/Glenn Coolidge Drive was prepared. In addition, an LOS analysis of operations at the two proposed project entrances on Hagar Drive and Glenn Coolidge Drive was performed, to determine whether the proposed project could result in increased congestion or hazardous conditions at these locations.

4.11.4.4 2005 LRDP EIR Mitigation Measures Included in the Proposed Project

Table 4.11-10, 2005 LRDP EIR Mitigation Measures, presents the mitigation measures in the 2005 LRDP EIR that are applicable to the proposed project. Since these previously adopted mitigation measures are already being carried out as part of implementation of the 2005 LRDP, they are included in and are a part of the proposed project and will not be readopted. Implementation of these mitigation measures is assumed as part of the project impact analysis.

**Table 4.11-10
2005 LRDP EIR Mitigation Measures**

Mitigation Measure	Description
TRA-1	The Campus shall monitor the level of service at two intersections (Hagar Drive/McLaughlin Drive and Heller Drive/Meyer Drive) every three years beginning in 2007, and implement intersection improvements or signalization as needed to maintain an acceptable level of service.
TRA-2A	In addition to any project-level traffic analyses required by CEQA, UC Santa Cruz shall, at intervals of no more than three years or increments of no more than 1,000 students in enrollment growth (whichever occurs first), conduct traffic counts at the identified intersections to determine if the additional traffic generated by Campus growth or a specific project would trigger the need for the specific intersection improvements listed in Table 4.14-18, or other improvements to achieve the City's level of service standards. If the analysis indicates that, with the traffic contribution of campus growth or of a specific proposed project, the levels of service would degrade to unacceptable levels, the Campus shall inform the City of this conclusion, and contribute its "fair share" (as defined below) of the cost of the needed improvements.
TRA-2B	UC Santa Cruz shall continue to implement and will expand its existing Transportation Demand Management programs with the objectives of increasing sustainable transportation modes (use of modes other than single-occupant vehicles) above 55 percent during the planning horizon of the 2005 LRDP and reducing peak hour traffic volumes. Potential measures that the Campus will consider for achieving this objective are listed in Table 4.14-19.
TRA-4A	UC Santa Cruz shall monitor campus and Metro transit service and other alternative modes of transportation on an annual basis, to assess the need for improvements in campus circulation to accommodate changes in campus-related circulation demands.
TRA-4B	Based on results of LRDP Mitigation TRA 4A, the Campus shall improve the operational efficiency and capacity of the campus transit system as needed to maintain transit cycle time, and shall work with SCMTD and other agencies to maintain and improve efficiency and capacity of the public transit system serving University facilities.
TRA-4C	Based on the results of LRDP Mitigation TRA-4A, the Campus shall implement measures, physical and operational improvements, that will ensure that transit travel times between the two most widely-separated colleges does not exceed the time interval between class periods. These measures may include, but are not limited to; channelization of pedestrian crossings, installation of signal-controlled pedestrian crossings, and grade-separated pedestrian crossings where appropriate.
TRA-4D	The Campus shall coordinate implementation of needed campus roadway and circulation improvements identified in the 2005 LRDP with the pace of campus development.
TRA-4E	Based on the results of LRDP Mitigation TRA-4A, the Campus shall implement the bicycle circulation elements of the 2005 LRDP as needed to maintain and enhance the effectiveness of bicycles as a transportation mode.
TRA-4F	The Campus shall implement integrated transit, bicycle and pedestrian way-finding systems on the main campus.
TRA-6A	The Campus shall implement LRDP Mitigation TRA-2B.
TRA-6B	UC Santa Cruz shall contribute its fair share of the local cost of the needed improvements as identified by the state at the five significantly affected freeway facilities, based on the cost of the needed improvements less the value of grants, regional, state and federal funds identified for each improvement.
<i>Source: UC Santa Cruz 2006</i>	

4.11.4.5 Project Impacts and Mitigation Measures

SHW Impact TRA-1: Implementation of the proposed project would not increase traffic volumes and degrade off-campus intersection levels of service under 2020 or 2023 conditions. (No Impact)

The 2005 LRDP Final EIR analyzed the traffic impacts from campus growth and development under the 2005 LRDP on off-campus intersections, roadways, and freeways (LRDP Impacts TRA-2 and TRA 6). The Final EIR analyzed traffic conditions that would exist in 2020 without the 2005 LRDP growth, and the conditions that would exist with the addition of traffic generated by campus growth under the 2005 LRDP. The analysis of off-campus intersections revealed that 10 off-campus intersections would operate unacceptably with the addition of campus-related traffic growth. The Final EIR set forth mitigation measures to mitigate the significant impacts. Pursuant to LRDP Mitigation TRA-2A, the Campus has made payments to the City to compensate for impacts on city intersections. Furthermore, in compliance with LRDP Mitigation TRA-2B, the Campus continues to implement UC Santa Cruz's TDM programs to help mitigate traffic volumes to/from campus. In 2016-17, the Commuter Vanpool program operated on 18 routes using 12-passenger vans serving more than 140 participants. The Zipcar car-sharing program, completing its 11th year at UC Santa Cruz, had 19 on-campus cars accommodating approximately 2,155 active members and average 24/7 utilization exceeding 31 percent during the 2016-17 academic year. The Spring 2017 Mode Split Study indicates that 61.3 percent of all person-trips to/from the campus are made via alternative transportation modes. Single-occupant autos account for only 35.3 percent of all person-trips. The remaining 3.4 percent of trips were generated by UC Service, construction and delivery vehicles, and motorcycles.

As **Figure 4.11-3** above shows, based on historic and recent traffic counts at the campus entrances, the average trip generation rate per student for the campus has been declining and the current rate is lower than the rate used in the 2005 LRDP Final EIR trip generation estimate. Additionally, the Campus is now projecting a smaller increase in faculty, staff, and other daily populations than previously assumed in developing the 2005 LRDP Final EIR trip generation estimate. Lastly, about 2,277 more student beds are projected to be added on the campus compared to the number of beds used in the 2005 LRDP Final EIR trip generation estimate.

As a result of the lower vehicle trip rates and lower employment projections, as shown in **Table 4.11-9** above, with the enrollment increase to 19,500 students, the total daily trips to the campus would increase to 25,580 daily trips, an increase of about 12.4 percent over 2017 daily trips. While there would be an increase compared to 2017 conditions, the revised 2020 without Project daily trips would be 20 percent

lower (6,464 fewer daily trips) than the 32,044 daily trips previously projected and analyzed in the 2005 LRDP EIR.

By 2023, when all of the proposed housing is constructed and occupied, due to lower trip generation rates of resident students compared to commuting students, the daily trips to the campus would be about 24,896 trips, an increase of about 9.4 percent over 2017 daily trips, but a decrease of about 3 percent compared to 2020 without Project conditions. While there would be an increase compared to 2017 conditions, the 2023 daily trips would be 22 percent lower (7,148 fewer daily trips) than the 32,044 daily trips analyzed in the 2005 LRDP EIR.

In the comments received on the Draft EIR, commenters incorrectly assert that the EIR stated that “traffic would be reduced as students living on the campus would not drive.” The analysis above does not claim that students living on the campus would not drive; rather, it states that the resident students would drive but have a lower daily trip rate compared to commuting students. The analysis above first estimates separate trip rates for commuting students and resident students and then uses those rates (**Appendix 4.11, Trip Generation Analysis, Attachment A**) to develop the total daily trips to the campus under both with and without project conditions. Due to the lower trip rate of resident students, there would be fewer daily and peak hour trips compared to the without Project condition. As a result, the project would reduce the traffic to the campus compared to the without Project condition.

In summary, while the projected enrollment increase to 19,500 students would cause an increase in daily and peak hour trips to the campus compared to existing conditions, the proposed SHW project would reduce, rather than increase, daily and peak hour trips. Furthermore, both with and without the project, the projected daily trips (and the related peak hour trips) would be less than the vehicle trips analyzed in the 2005 LRDP EIR. Therefore, the project would not result in new or more severe traffic impacts than previously analyzed in the 2005 LRDP Final EIR. Comments received on the Draft EIR assert that the 2005 LRDP Final EIR traffic study is dated and therefore cannot be relied upon. The reliance on a previously certified program EIR is authorized under CEQA to streamline subsequent approvals. With respect to concerns about the validity of the prior analysis due to the time lapse, that is not a concern for the SHW project because the project would reduce the potential increase in gateway vehicle traffic. A project that does not increase vehicle trips does not need to be evaluated for its traffic impacts. Furthermore, as shown in **Figure 4.11-2**, based on the analysis of historical peak hour counts at the campus gateways, peak hour traffic to the campus has remained flat and the peak hour trips to the campus in 2017-2018 are comparable to the peak hour trips in 2007. Therefore, the 2005 LRDP EIR traffic analysis continues to provide a conservative analysis of the traffic impacts of the campus’ growth under the 2005 LRDP. No impact would occur on off-campus intersections and freeways as a result of the proposed project.

Mitigation Measures: No mitigation is required.

SHW Impact TRA-2: Implementation of the proposed project would not substantially increase traffic volumes and degrade levels of service at existing and new intersections on the campus under 2020 conditions. (*Less than Significant*)

The 2005 LRDP Final EIR analyzed the traffic impacts from campus growth and development under the 2005 LRDP on operations at on-campus intersections. The analysis of on-campus intersections revealed that two on-campus intersections (Hagar/McLaughlin and Heller/Meyer intersections) would operate unacceptably with the addition of campus-related traffic growth. The Final EIR set forth mitigation measures to mitigate the significant impacts. In compliance with the 2005 LRDP Final EIR Mitigation Monitoring Program, turning movement counts were conducted by the Campus at Hagar/McLaughlin and Heller/Meyer intersections during Fall 2010. As the average daily number of weekday vehicle trips to/from campus has remained lower through 2016-17 than the LRDP EIR baseline (2003-04), turning movement counts have not been collected on a regular basis since 2010 to evaluate the need for the improvements at these intersections which were identified in the LRDP EIR.

Heller Site

By providing on-campus housing and as shown in **Table 4.11-9** above, the proposed project would reduce the total daily and peak hour traffic on off and on-campus roadways because students who would otherwise live off campus and make trips to the campus would instead live on campus. The project would add 2,932 resident students to the Heller site while removing 196 student families and the childcare facility from the site and associated vehicle trips from Heller Drive. Of the 2,932 residents, only 92 students would live with spouses or partners, some of whom may travel to and from the campus during the peak hours for work or other purposes. Some of the resident students may also make trips off campus for work or other reasons during peak hours. However, the students would generally not make peak-hour trips to and from off-campus locations. (For project trip generation, see **Appendix 4.11**). Furthermore, as limited parking is available for undergraduates on the central campus and only 174 spaces would be provided on the Heller site for use by student residents, the students living in the proposed on-campus housing would generally walk, ride a bike or take a UC Santa Cruz shuttle or Santa Cruz Metro buses to travel between the project sites and the classes. Therefore, the proposed project would not have the potential to degrade operations at any of the on-campus intersections, including the intersection of Oakes Road with Heller Drive near the Heller site. Furthermore, based on the western entrance and Heller Drive traffic counts, the traffic volumes on Heller Drive, a two-lane roadway, are

below the roadway's capacity of approximately 1,500 peak hour vehicles. Lastly, the Campus has stipulated that the developer design the intersection to operate at least at LOS C. Therefore, the intersection would be designed and constructed to operate acceptably.

Hagar Site

The project would construct approximately 140 housing units for students with families at the intersection of Hagar and Glenn Coolidge Drives, as well as locate an expanded child care center at this location to serve not only the student families living in the new housing complex but also faculty and staff living both on and off-campus. The Hagar site development would have the potential to add traffic to the Hagar/Glenn Coolidge Drive intersection such that a significant impact could potentially occur. Therefore, a LOS analysis for this intersection and the two project entrances on Hagar and Glenn Coolidge Drives was conducted. Both entrances are proposed as right-in right-out entrances and no left turns on to Hagar Drive or Coolidge Drive would be allowed. The complete analysis is presented in **Appendix 4.11**.

The Hagar site housing and childcare center would be completed and occupied by 2020. Therefore, to evaluate impacts of the project, two scenarios were developed. The 2020 without Project Conditions provides an assessment of the impact of non-project traffic in the year 2020. These volumes were projected using 2017 traffic count data for the Hagar/Coolidge intersection and applying an annual growth rate of two percent. This annual growth rate is greater than the historical annual growth rates of the total entering volume of traffic from 2003 to 2017 at the Hagar Drive/Glenn Coolidge Drive intersection (one percent for the AM peak hour and 0.2 percent for the PM peak hour). The 2020 with Project Conditions volumes were projected by adding the project-related vehicle trips to the 2020 without Project Conditions volumes.

The trips to be added by the project during the AM and PM peak hours were estimated based on data provided by UC Santa Cruz staff, and trip generation rates derived from the average of the Spring 2017, Fall 2017 and Spring 2018 count data at the existing family student housing project located at the Heller site.

The proposed project is student family housing that will be replacing existing family housing units at the Heller site, and a childcare center for children of students, faculty, and staff. The Campus anticipates that the majority of the children at the childcare center will be children from families living on the project site. The remaining children will be dropped off by faculty, staff and students living off campus on their way to and from the central campus, or dropped off by walking to the childcare center from the nearby employee housing. Therefore, the trip generation estimate described below is the trip generation at the

project entrances. For this analysis, the project trips are considered new trips at the project entrances and Hagar Drive / Glenn Coolidge Drive intersection.

The Hagar site development would generate 1,676 daily vehicle trips, 152 AM peak hour trips (64 inbound and 88 outbound) and 176 PM peak hour trips (93 inbound and 83 outbound). **Table 4.11-11** summarizes the trip generation results.

**Table 4.11-11
Hagar Site Trip Generation**

Land Use	Size	Unit	Daily	AM Peak Hour			PM Peak Hour			
				Total	In	Out	Total	In	Out	
Student Family Housing (A) ¹	140	Units	1,354	93	34	59	105	58	47	
Childcare Center ²	Children of Students (B)	60	Kids	44	10	5	5	12	6	6
	Children of Employees (C)	80	Kids	229	46	23	23	56	28	28
	Employees (D)	30	Emp	49	3	2	1	3	1	2
	-Total Trip Generation (E = B+C+D)			322	59	30	29	71	35	36
Net New Vehicle Trip Generation (A + E)			1,676	152	64	88	176	93	83	
<p>Source: Fehr & Peers, July 2018.</p> <p>Notes:</p> <p>1. Trip generation rates for student family housing were derived from driveway counts collected at the existing Heller student family housing site.</p> <p>2. Base trip rates for childcare center: 4 trips per child per day (2 inbound and 2 outbound); 2 trips per child (1 inbound and 1 outbound) during the drop-off and pick-up times. Trip rates for employees are based on campus-wide employee vehicle trip generation rates, derived from 2016 driveway counts.</p>										

The trip generation and off-site vehicle distribution is described below for each land use. The assignment of the childcare center and student family housing trips are shown in **Figure 4.11-5**.

Family Student Housing

The student family housing units are estimated to generate 93 AM peak hour trips (34 inbound and 59 outbound) and 105 PM peak hour trips (58 inbound and 47 outbound). The distribution of the family student housing trips is as follows:

- 90 percent of trips traveling on Glenn Coolidge Drive west of Hagar Drive

- 10 percent of trips traveling on Hagar Drive north of Glenn Coolidge Drive

The majority of the trips are assumed to be trips by non-student family members that work off-campus; therefore, most of the student family housing trips are assigned as traveling on Glenn Coolidge Drive to and from the campus's main entrance.

Childcare Center

Information regarding the portion of enrolled children living on-campus and off-campus was provided by UC Santa Cruz staff in March 2018, and is summarized below:

1. 112 of the 140 children will be enrolled in the all-day program and 28 will be enrolled in the after-school program
2. Children of UC Santa Cruz students: 60 children
 - a. 49 would live on the Hagar site
 - b. 11 would live off-campus
3. Children of UC Santa Cruz employees: 80 children
 - a. 48 would live in on-campus employee housing
 - b. 32 would live off-campus

Based on the information above, for the analysis it was assumed that children living at the Hagar site would not generate new vehicle trips at the project entrances. They would either be dropped off by walking to the childcare center, dropped-off or picked-up by adults stopping at the childcare center on their way in or out of the site as part of other trips. Children living off-campus would be dropped-off or picked-up as a part of trips traveling from off-campus into the campus at the childcare center. For children living at on-campus faculty housing units, it was assumed that half of them would be dropped off by driving while the remaining would be dropped off by walking to the childcare center.

The net new childcare center trips occurring outside the project site would be 322 daily trips, 59 AM peak hour trips (30 inbound and 29 outbound) and 71 PM peak hour trips (35 inbound and 36 outbound).

Intersection Operations

To analyze the effect of project trips on the study intersections, levels of service (LOS) were calculated for the intersection of Hagar Drive/Glenn Coolidge Drive as well as for the new project entrance intersections with Hagar Drive and Glenn Coolidge Drive under 2020 without Project conditions and 2020 with Project conditions, and are summarized in **Table 4.11-12, 2020 Without Project Conditions and With Project Conditions Intersection Level of Service**. The LOS results for the Hagar Drive/Glenn Coolidge Drive intersection from the 2005 LRDP EIR are also presented alongside the results of the new analysis (referred to as the '2018 Analysis' in the table below).

Table 4.11-12
2020 without Project Conditions and with Project Conditions Intersection Level of Service

Intersection ¹	Peak Hour	2020 without SHW Project				2020 with SHW Project			
		2005 LRDP EIR		2018 Analysis		2005 LRDP EIR		2018 Analysis	
		Average Delay ²	LOS						
1. Hagar Drive and Glenn Coolidge Drive	AM	9.9	A	10.1	B	11.5	B	17.1	B
	PM	10.8	B	16.1	B	14.5	B	19.6	B
2. Hagar Drive and Project Entrance	AM	N/A	N/A	N/A	N/A	N/A	N/A	12.7	B
	PM							10.7	B
3. Coolidge Drive and Project Entrance	AM	N/A	N/A	N/A	N/A	N/A	N/A	9.0	A
	PM							11.2	B

Source: Source: Fehr & Peers, July 2018.

1. Hagar Drive/Coolidge Drive is signalized, and Hagar Drive/Entrance is side-street stop controlled.

2. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections.

3. An LOS of D is the UC Santa Cruz LOS standard for intersections on the lower campus.

According to the 2005 LRDP EIR, an LOS of D is the minimum acceptable LOS for intersections on the lower campus. As shown in **Table 4.11-11**, the existing signalized intersection will perform at acceptable levels under 2020 without Project and 2020 with Project conditions. The results for the signalized study intersection are consistent with the 2005 LRDP EIR results, with minor differences in average delay and LOS calculations. The impact of the proposed project on intersection operations at the Hagar and Glenn Coolidge intersection would be less than significant. Both project entrance intersections would also operate at a satisfactory level of service.

In summary, the proposed project would result in less than significant traffic impacts at existing and new on-campus intersections.

Comments received on the Draft EIR assert that the Hagar site development would add a substantial number of new trips to off-campus intersections. That would not be the case for a number of reasons. First, a majority of the trips associated with the Hagar site development are trips that would be relocated from the Heller site to the Hagar site. **Table 4.11-13** shows a comparison between the existing trip generation at the Heller site and the project trip generation at the Hagar site. Based on traffic counts collected on Koshland Way, the existing occupied 196 family housing units and the childcare center at the Heller site generate 966 daily trips, 71 AM peak hour trips and 81 PM peak hour trips. The proposed project at the Hagar site would generate 1,676 daily trips, 152 AM peak hour and 176 PM peak hour trips. So about 58 percent of the Hagar site traffic would be relocated trips that would not add traffic to off-campus intersections. The approximately 710 additional daily trips, 81 additional AM peak hour trips and 95 additional PM peak hour trips would be new trips to the Hagar site, but would be part of the overall daily and peak hour trips to the campus made by students and employees related to school and

work and are accounted for in the daily trips projected for the campus as a whole in the 2005 LRDP EIR analysis. As shown by the analysis in **SHW Impact TRA-1**, the projected daily trips to and from the campus under with and without project conditions are substantially less than the trips analyzed in the 2005 LRDP Final EIR. Therefore, the proposed project, including both the Heller site development and the Hagar site development, would not result in off-campus traffic impacts that are greater than the impacts previously analyzed and disclosed in the 2005 LRDP Final EIR.

Table 4.11-13
Trip Generation Comparison

Land Use	Daily	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Existing Student/Family Student Housing and Childcare Center at Heller Site (A) ¹	966	71	29	42	81	43	38
Proposed Family Student Housing and Childcare Center at Hagar Site (B)	1,676	152	64	88	176	93	83
Volume Difference (C = B – A)	710	81	35	46	95	50	45
<p>Source: Fehr & Peers, July 2018. Notes: 1. Trip generation by the existing Heller site is calculated as the average of the driveway counts collected on Koshland Way in spring 2017, fall 2017 and spring 2018.</p>							

Mitigation Measures: No mitigation is required.

SHW Impact TRA-3: Construction period traffic could temporarily impact traffic conditions along roadways serving the project sites, including potential effect on emergency vehicle access. (Potentially Significant; Less than Significant with Mitigation)

Construction activities include those associated with site preparation and building construction. Major components of site preparation would involve removal of the existing buildings and parking lots, excavation and grading of the sites, and construction of necessary infrastructure. A variety of equipment would be required for the site preparation stage, including bulldozers, grading machines, cranes, and dump trucks, which would be responsible for the removal and deposition of cut and fill material on the site. Building construction would involve the assembly of the buildings and parking facilities. Major elements of building construction would include construction of building foundation, assembling the

concrete reinforcing bars as the building frame, pouring concrete, and completing the building accessories such as elevators.

Construction activities are expected to commence in Spring 2019 and be completed by the end of Fall 2023. Construction of the proposed development would occur in phases, with the first phase of construction at the Hagar site and the next two phases at the Heller site. The project will provide off-site and on-site staging, and use nearby campus property for some temporary construction office trailers. Project materials will also be delivered as needed. Near the project site, Bay Drive and Mission Street will be the designated through truck routes for construction traffic. The contractor provided a summary of construction activities by month with an estimate of the average monthly construction worker count and truck deliveries by delivery type. For purposes of developing a conservative estimate of peak construction traffic, the following assumptions were made:

- It was assumed that all construction workers will park on the campus. On-campus there will be 68 dedicated parking spaces during construction at the Hagar project site and 402 dedicated parking spaces during construction for the Heller project site. Additional potential parking has been identified on the campus, including the West Remote Parking Lot, Lot 162, and Lot 135/136.⁵
- Allowed work hours would be between 7:00 AM and 7:00 PM Monday through Friday. General arrival and departure times for workers will be 6:30 AM and 3:30 PM, respectively. This means that many of the construction worker and truck trips would occur outside of the evening peak period commute. However, with the gateway morning peak hour beginning at 7:30 AM some of the construction workers and even construction trucks are likely to arrive during the UC Santa Cruz morning commute. Specifically, this analysis assumes that about 30 percent of the construction workers would arrive during the morning peak hour.
- Truck trips would occur throughout the day with approximately 15 percent occurring during the morning peak hour and one percent occurring during the evening peak hour to account for any unexpected deliveries.

⁵ Note that the Campus and contractors are considering remote parking lots with carpool and shuttles transporting construction workers to the project sites. Potential remote locations include potential 150 parking spots at the UCSC Administration Building, at 2300 Delaware Avenue in Santa Cruz and parking in Scotts Valley. If a shuttle service from one or more parking lots in Scotts Valley is selected as the preferred plan for construction worker parking, with a shuttle capacity of 36 construction workers per shuttle, the morning peak hour trip generation associated with construction workers could be reduced to fewer than 10 morning peak hour trips.

The duration and intensity of construction activities will vary over the construction period with December 2021 being the peak construction month with 510 construction vehicle trips generated per day by the construction at the Heller site (for comparison the peak construction month for the Hagar site would generate 85 construction vehicle trips per day). During the peak month, the Heller project site would generate 510 daily trips, 128 AM peak hour trips and 2 PM peak hour trips (see **Table 4.11-14**). The complete analysis is presented in **Appendix 4.11**.

**Table 4.11-14
Heller Site Peak Construction Period Trip Estimates**

Item	Daily		AM Peak Hour		PM Peak Hour	
	Maximum	Average	Maximum	Average	Maximum	Average
Workers [A]	515	476	155	143	0	0
Trucks [B]	167	145	25	22	2	1
Worker Vehicles [C] = [A] / 1.5	343	317	103	95	0	0
Construction Traffic [D] = [B] + [C]	510	462	128	117	2	1

Source: UC Santa Cruz, Capstone Development Partners, and Fehr & Peers, 2018.

Notes:

1. A carpool factor of 1.5 is applied to the number of workers.
2. 30 percent of the workers are assumed to arrive during the morning peak hour with an average vehicle occupancy of 1.5 workers per vehicle. Approximately 15 percent of truck deliveries would occur during the morning peak hour. One percent of truck trips will be assumed for the evening peak period to account for any unexpected deliveries.

Project Construction Traffic – Off-Campus Impacts

Project construction would occur while UC Santa Cruz is in-session. Therefore, the project would add construction traffic to the traffic generated by campus operations, and the total number of daily and peak hour vehicle trips that would occur at the campus gateways would increase. To analyze the incremental effect of construction traffic, the following approach was utilized:

- As a first step, campus gateway trips under Existing Conditions and under future Maximum Student Enrollment (19,500 students) Conditions were estimated. Gateway trips under Existing Conditions were derived from traffic counts at the campus entrances, and gateway trips under future Maximum Student Enrollment Conditions were estimated using trip generation rates discussed under **SHW Impact TRA-1**. The Maximum Student Enrollment Conditions assumed an enrollment level of 19,500 students and no increase in on-campus housing from current conditions.
- As a second step, the trips generated during the peak construction month (estimated using the methodology outlined above and reported in **Table 4.11-14**) were added to these estimates from

the first step to obtain the total gateway trips under Existing and Maximum Student Enrollment with Construction Traffic Conditions.

- The total gateway trips from step two were then compared to the trip generation estimates in the 2005 LRDP Final EIR to determine if project construction would generate more traffic and therefore have the potential to exacerbate previously analyzed traffic impacts and/or necessitate construction mitigation.

The gateway trip estimates both with and without the peak construction month trips are presented in **Table 4.11-15**.

**Table 4.11-15
Peak Construction Traffic and Gateway Volumes**

Scenario	Daily	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Existing Conditions with Peak Construction Traffic							
Existing (2017)	22,764	1,404	1,059	345	2,022	781	1,241
Peak Construction Traffic	510	128	116	12	2	1	1
<i>Total Trips [A]</i>	23,274	1,532	1,175	357	2,024	782	1,242
Maximum Student Enrollment with Peak Construction Traffic							
Maximum Student Enrollment	25,580	1,573	1,187	386	2,266	876	1,390
Peak Construction Traffic	510	128	116	12	2	1	1
<i>Total Trips [B]</i>	26,090	1,701	1,303	398	2,268	877	1,391
2005 LRDP EIR Trip Estimates							
2020 Conditions ¹ [A]	32,044	1,885	1,470	415	2,593	1,037	1,556
Traffic Difference							
Vehicle Trip Difference with Existing Student Population [A-C]	-8,770	-353	-295	-58	-569	-255	-314
Percent Difference [(A-C)/C]	-27%	-19%	-20%	-14%	-22%	-25%	-20%
Vehicle Trip Difference with Maximum Student Population [B-C]	-5,954	-184	-167	-17	-325	-160	-165
Percent Difference [(B-C)/C]	-19%	-10%	-11%	-4%	-13%	-15%	-11%
<i>Source: UCSC and contractor staff, and Fehr & Peers, 2018.</i>							
<i>Notes:</i>							
1. Total daily vehicle trip generation and the peak hour trip generation estimates per the 2005 LRDP FEIR (Table 2-7).							

The table above shows that if the construction traffic associated with the peak construction month at the Heller project site is added to the gateway volumes under the Existing Conditions, there would be a total of about 23,274 daily vehicle trips, 1,532 AM peak hour vehicle trips, and 2,024 PM peak hour vehicle trips to and from the campus. Even with the construction traffic added, the total daily vehicle trips would be 8,770 trips lower than the traffic volume analyzed in the 2005 LRDP FEIR. The morning and evening peak hour vehicle trip estimates would be 295 and 569 trips lower, respectively.

If the same peak construction month traffic is added to the gateway volumes under the Maximum Student Enrollment Conditions, there would be about 26,090 daily vehicle trips, 1,701 AM peak hour vehicle trips, and 2,268 PM peak hour vehicle trips to and from the campus. Under this scenario, the total daily vehicle trip generation would be 5,945 trips lower than the trip generation used in the 2005 LRDP Final EIR analysis. The morning and evening peak hour vehicle trip generation estimates would be 184 and 325 trips lower, respectively.

In summary, while construction traffic would cause an increase in daily and peak hour trips to the campus compared to existing conditions and to the future no project construction condition, the total traffic at the campus gateways, both daily and peak hour, would be less than the traffic analyzed in the 2005 LRDP Final EIR. Therefore, the construction traffic would not result in new or more severe traffic impacts than previously analyzed in the 2005 LRDP Final EIR while the project is under construction. No impacts would occur on off-campus intersections and freeways as a result of the proposed project under construction, beyond those analyzed, reported, and mitigated under the 2005 LRDP EIR.

Project Construction Traffic – On-Campus Impacts

Construction vehicle traffic associated with the proposed project would have the potential to result in a temporary and intermittent lessening of the capacities of roadways in the immediate vicinity of the two project sites due to construction vehicles entering or exiting the project sites. Furthermore, project construction could require temporary closure of traffic lanes or roadway segments on the campus to permit the delivery of construction materials to both sites, and building elements that would be delivered to the sites for just-in-time use in the project construction sequence, which could result in traffic congestion as well as have the potential to affect emergency vehicle access near the project site. The impact would be potentially significant.

Project construction would also have the potential to affect pedestrians near the project sites. At the Heller project site, the nearby facilities would not be affected and the bicycle lane along Heller Drive and the Oakes College bus stop adjacent to the Heller project site would remain open. At the Hagar site, project frontages along Hagar Drive demonstrate a possibility of blocking the pedestrian sidewalk. The arrival or departure of construction vehicles and delivery of construction materials could intermittently disrupt pedestrian travel along pedestrian routes adjacent to construction sites.

The impact on vehicular and pedestrian circulation, although temporary and short-term, would be potentially significant. To address this potentially significant impact, a project specific mitigation measure (**SHW Mitigation TRA-3**) is proposed that requires the Project Developer to prepare and implement a Construction Traffic Management Plan (CTMP) to manage the movement of construction vehicles in a

safe and effective manner. The CTMP would include information such as the number and size of trucks per day, times of the day when truck movement is allowed, truck circulation patterns, location of staging areas, location/amount of construction employee parking, and the proposed use of traffic control/partial street closures on public streets. The CTMP would also include both vehicular and pedestrian way-finding signage. The overall goal of the CTMP would be to minimize traffic impacts to campus and public streets and maintain a high level of safety for all vehicles and pedestrians.

Mitigation Measures:

SHW Mitigation TRA-3: The University shall require the Project Developer to prepare and implement a Construction Traffic Management Plan that will include, but will not necessarily be limited to, the following elements:

- Identify proposed truck routes to be used.
- Specify construction hours, including limits on the number of truck trips during the AM and PM peak traffic periods (7:00 – 9:00 AM and 4:00 – 6:00 PM), if conditions demonstrate the need.
- Include a parking management plan for ensuring that construction worker parking results in minimal disruption to surrounding uses.
- Include a public information and signage plan to inform student, faculty and staff of the planned construction activities, roadway changes/closures, and parking changes.
- Store construction materials only in designated areas that minimize impacts to nearby roadways.
- Limit the number of lane closures during peak hours to the extent possible. At no time will more than one lane on any roadway be closed. Inform the Campus at least two weeks before any partial road closure.
- Use California Department of Transportation (Caltrans) certified flag persons for any temporary lane closures to minimize impacts to traffic flow, and to ensure safe access into and out of the project sites.
- Install traffic control devices as specified in the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones.

- When a pedestrian/bicycle path is to be closed, detour signs will be installed to clearly designate an alternative route. Temporary fencing or other indicators of pedestrian and bicycle hazards will be provided.
- To minimize disruption of emergency vehicle access, affected jurisdictions (Campus Police, City Police, County Sheriff, and City Fire Department) will be consulted to identify detours for emergency vehicles, which will then be posted by the construction contractor.
- Ensure that access routes for firefighting equipment shall be maintained. Fire hydrants and fire department connections shall be kept clear of any obstructions.
- Coordinate with local transit agencies for temporary relocation of routes or bus stops in works zones, as necessary.
- Coordinate with other projects under construction in the immediate vicinity including the Kresge College project, so an integrated approach to construction-related traffic is developed and implemented.

Significance after Mitigation: Implementation of this mitigation measure would reduce the project's construction traffic impact to a less than significant level.

SHW Impact TRA-4: Implementation of the proposed project would not result in hazards due to design features or land use incompatibilities. (*Less than Significant*)

As discussed in SHW Impact LU-1 (in Section 4.7, Land Use and Planning) implementation of the proposed project would not result in land use incompatibilities with either on-campus or off-campus land uses. Thus, no traffic hazards related to land use incompatibilities related to new development or redevelopment at the project sites would result. The entrances to both project sites would create new intersections. The potential for these new intersections to result in hazards is addressed below by site.

Heller Site

The existing 3-way stop-controlled intersection at Heller and Koshland Way would be eliminated and two new entrances would be provided on the site. The southern entrance at the Heller site would be across from Oakes Road and would turn that T-intersection into a 4-way intersection. As only a limited amount of parking would be provided on the Heller site, it is anticipated that the four-way intersection would remain a stop-controlled intersection, with a stop sign on each approach. Adequate sight distances are available from this intersection, and this configuration would not result in a hazard at this location. A second, northern entrance would be constructed at the Heller site near the northern end of the site and would create a new 3-way intersection. This intersection would be a right-in/right-out intersection and with this configuration, it would not result in a hazard at this location.

Hagar Site

Access to the Hagar site would be provided at two right-in/right-out intersections. The first intersection would be on Hagar Drive, approximately 500 feet north of the Hagar and Glenn Coolidge Drive intersection. As noted under **SHW Impact TRA-2**, the proposed intersection at the site entrance and Hagar Drive is estimated to operate acceptably during the AM and PM peak hours under 2020 Conditions. Furthermore, based on a review of sight lines by Fehr & Peers, the sight lines from the project entrance road north and south along Hagar Drive would be unobstructed. For these reasons, the proposed Hagar entrance would not result in a hazard.

The second entrance would be approximately 830 feet east of the Hagar and Glenn Coolidge Drive intersection on Glenn Coolidge Drive. To ensure that left turns from Coolidge Drive into the Hagar site are avoided, the Coolidge Drive entrance is planned with a separate right-in lane and a separate right out lane and a raised concrete island between the two lanes. A stopping sight distance analysis for the Glenn Coolidge Drive intersection was prepared by BKF Engineers. A speed survey performed by Marquez Transportation (dated May 7, 2018) showed that the design speed (85th percentile) on Glenn Coolidge Drive is 50 miles per hour (mph). Based on BKF's sight distance analysis, a 516-foot stopping sight distance would be required for this design speed on a downhill slope. The proposed placement of the intersection on Glenn Coolidge Drive would provide an adequate stopping sight distance of 540 feet for vehicles travelling along Glenn Coolidge Drive. The project would provide adequate sight distance and would modify the existing bike lane striping and signage to Caltrans standards for the proposed intersection. The proposed entrance road would therefore not result in a hazard to vehicles and bicyclists at this location.

Mitigation Measures: No mitigation is required.

SHW Impact TRA-5: The proposed project would not impair emergency access in the long-term. (No Impact)

Construction activities associated with the proposed project could require temporary closure of traffic lanes or roadway segments, which could result in impaired emergency access in the short-term. The impact during project construction is discussed under **SHW Impact TRA-3** above and would be mitigated by the mitigation measure set forth under that impact.

With respect to the proposed project's long term impact on emergency access, no impact would result from the development at the Heller site as project development would not alter or close any existing roadways in that portion of the campus and emergency vehicle access to all portions of the Heller site development would be available via the roadways included in the project. With regard to the Hagar site, that development would also not make any alterations to Hagar or Glenn Coolidge Drives such that emergency access to other parts of the campus could be affected. The proposed site plan for the Hagar site includes a loop road that would allow emergency vehicles to access all parts of the site. There would be no impact to emergency access as a result of the proposed project.

Mitigation Measures: No mitigation is required.

SHW Impact TRA-6: The proposed project would conflict with UC Santa Cruz policies related to alternative transportation. (Potentially Significant; Less than Significant with Mitigation)

The 2005 LRDP Final EIR concluded under LRDP Impact TRA-4 that campus growth under the 2005 LRDP would result in increases in circulation volumes (numbers of pedestrians, bicycles, and transit and other motor vehicles) that would conflict with and reduce the effectiveness of alternative modes of transportation, including transit, bicycle and pedestrian travel. The analysis found that due to increases in pedestrian volumes at certain key intersections on the campus, transit service would experience delays. The EIR also concluded that increases in bicycle, pedestrian, and vehicular travel under the proposed 2005 LRDP would result in an increase in potential conflicts among these modes, particularly along Hagar and Heller Drives and on internal streets within the campus core, including McLaughlin Drive and Steinhart Way. The Final EIR set forth a series of mitigation measures (LRDP Mitigations TRA-4A through -4F) to address various alternative transportation modes that could be affected by the projected growth. The Campus has been implementing those mitigation measures.

Impact on Transit Services

The proposed project would not conflict with any of the campus programs related to alternative transportation. A small amount of resident vehicle parking (174 spaces at the Heller site for 2,832 student beds) would be provided to discourage use of personal vehicles by the residents. For the Hagar site the project includes 140 parking spaces for student families; this rate is also not considered a high rate of parking given that many of the families would have two adults and some spouses and partners living in the proposed housing would need to travel off-campus for work and other activities. Bicycle parking would be provided throughout the project sites to encourage bicycle use. Although the proposed project would increase the on-campus resident population and thereby reduce the need for transit or other transportation modes to bring students from off-campus locations, students living on the project sites would make transit trips for jobs, shopping and entertainment, and the use of transit services could increase substantially compared to existing conditions. An analysis of the effect of the proposed on-campus housing on transit services was conducted by Fehr & Peers. The complete analysis is presented in **Appendix 4.11**, and the results are summarized below.

As described earlier in this section, the public transit system that connects the campus to the greater Santa Cruz area is operated by SCMTD, and intra-campus shuttle service is provided by TAPS. As the campus enrollment increases from the current level to 19,500 students, the demand on SCMTD transit service would increase as 47 percent of off-campus student trips are by transit. With the addition of on-campus housing, the Campus Transit shuttle routes would experience an increase in ridership while the SCMTD ridership would likely decrease proportionally. To evaluate the project's effect, two scenarios were analyzed. The first scenario involved estimating the increase in transit ridership due to increased enrollment (from the baseline of 17,850 students to 19,500 students under the 2005 LRDP and Settlement Agreement) but with no increase in on-campus housing. The second scenario involved increasing the enrollment to 19,500 students and increasing the on-campus housing by the planned number of beds (SHW, Kresge College, and Crown College beds), and estimating the potential changes in Campus Transit shuttle and SCMTD ridership.

Table 4.11-16 shows the average weekday ridership per bus trip under Existing Conditions and Year 2020 without Project Conditions.

Table 4.11-16
Average Weekday Ridership Per Bus Trip without on-Campus Housing

Route	Existing Conditions ¹	Year 2020 without Project Conditions ¹
SCMTD Transit Routes		
10	55	60

Route	Existing Conditions ¹	Year 2020 without Project Conditions ¹
15	65	80
16	80	80
19	60	60
20	60	60
22	45	60
UCSC TAPS Shuttle Routes		
Day Loop	20	20
Night Loop	45	60
Upper Campus	40	40
East Night Core	10	20
West Night Core	10	20
<i>Source: UCSC, and Fehr & Peers, 2018.</i> <i>Notes:</i> 1. Average boardings per trip rounded to the nearest multiple of 5.		

The proposed SHW project, along with the Kresge College and Crown College projects, would add 3,269 beds while about 1,096 beds would be removed, resulting in a net increase of about 2,198 beds, i.e., a 23.7 percent increase in the on-campus student beds over existing conditions. This housing would be expected to decrease the ridership on SCMTD buses serving the campus and increase the use of the Campus Transit shuttle buses.

To assess the effect on Campus Transit shuttles, the SCMTD rates from **Table 4.11-16** were reduced by 23.7 percent and the Campus Transit shuttle rates by increased by 23.7 percent. **Table 4.11-17** presents the ridership under the increased on-campus housing scenario.

Table 4.11-17
Average Weekday Ridership Per Bus Trip with On-campus Housing

Route	Existing with Project Conditions ¹	Year 2023 with Project Conditions ¹
SCMTD Transit Routes		
10	40	45
15	50	60
16	60	60
19	45	45
20	45	45
22	35	45
Campus Transit Shuttle Routes		

Route	Existing with Project Conditions ¹	Year 2023 with Project Conditions ¹
Day Loop	25	25
Night Loop	55	75
Upper Campus	50	50
East Night Core	10	25
West Night Core	10	25
Source: UCSC, and Fehr & Peers, 2018. Notes: 1. Average boardings per trip rounded to the nearest multiple of 5.		

Lastly, using average weekday ridership per bus numbers reported in **Table 4.11-17** above and transit vehicle passenger capacities for each route, a load factor was calculated for each transit/shuttle route. The load factor is the ratio of average passenger boardings per trip to vehicle capacity. The load factor describes the average level of utilization of each transit route. A load factor greater than 1.0 indicates that the projected ridership exceeds bus capacity. The calculated load factors are presented in **Table 4.11-18** below.

Table 4.11-18
Estimated Load Factors

Route	Existing Conditions	Existing with Project Conditions ¹	Year 2020 without Project Conditions ²	Year 2023 with Project Conditions ³
SCMTD Transit Routes				
10	0.79	0.57	0.86	0.64
15	0.93	0.71	1.14	0.86
16	1.14	0.86	1.14	0.86
19	0.86	0.64	0.86	0.64
20	0.86	0.64	0.86	0.64
22	0.64	0.50	0.86	0.64
Campus Transit Shuttle Routes				
Day Loop	0.27	0.34	0.27	0.34
Night Loop	0.61	0.74	0.81	1.01
Upper Campus	0.54	0.68	0.54	0.68
East Night Core	0.36	0.36	0.71	0.89
West Night Core	0.36	0.36	0.71	0.89
Source: Fehr & Peers, 2018. Note: Bold text indicates transit load factor greater than 1.0.				

As the table above shows, SCMTD Transit Route 16 exceeds capacity on average under Existing Conditions and Routes 15 and 16 exceed capacity on-average under Year 2020 without Project Conditions. With the addition of on-campus housing, the transit load factor would drop below 1.0. The night loop Campus Transit shuttle would exceed its capacity with the projected enrollment increase and the addition of on-campus housing. The needed capacity would be provided by expanding the use of 60-foot articulated buses on Metro routes, providing a longer transit pullout at the relocated SHW downhill stop on Heller Drive, and lengthening the uphill transit stop on Heller Drive.

Finally, it should be noted that the analysis above is for the average weekday boardings per trip, which means that there are conditions when the boardings are both higher and lower than these averages. TAPS staff regularly monitors the transit usage and works with SCMTD to adjust transit service to meet the average and peak demands when possible.

The proposed project is estimated to increase peak hour transit passengers. The addition of passengers from the project will increase demand on the SCMTD transit routes and UCSC Campus transit routes. Increasing frequency and/or capacity of the bus service would mitigate this impact. This effort to increase transit capacity is a partnership between UC Santa Cruz and SCMTD.

The 2005 LRDP includes policies to encourage and serve transit ridership, and decrease dependence on motor vehicles. The increase in demand for transit service caused by UC Santa Cruz would be accommodated by existing and planned improvements to the transit system. Transit vehicle preemption, signal coordination, and other improvements would help reduce the effect of peak hour traffic congestion on transit operations. While the project would add transit riders, implementation of the project would not disrupt existing service or interfere with planned transit services or facilities. The project builds on and is consistent at a policy level with the LRDP policies supporting multimodal transportation options. Therefore, the project would have a less-than-significant effect on transit ridership and facilities and no mitigation measures would be required.

Other Transit and Pedestrian Impacts - Heller Site

It is anticipated that residents of the new housing would use two existing bus stops to travel north on Heller Drive to central campus facilities. These include the bus stop on the east side of Heller Drive north of Oakes Road and the bus stop on the east side of Heller Drive near Rachel Carson College, with more students likely to use the Rachel Carson College stop as their housing would be closer to that stop. For travel south on Heller Drive, the residents would use the existing bus stop on the west side of Heller Drive just north of the pedestrian overcrossing. Although the existing pedestrian overcrossing would be maintained and would continue to be used by the residents to cross Heller Drive, the pedestrian bridge does not provide a direct path of travel to the two bus stops, and it is anticipated that project residents

would use the crosswalks at the southern project entrance intersection to cross Heller Drive, and a new sidewalk from the northern entrance to the Rachel Carson College bus stop along the north side of Heller Drive to access that bus stop. Due to the large number of students that would be housed on the Heller site, the number of crossings at the at-grade crosswalks would likely increase with the project. This could result in transit delays and would be a potentially significant impact. Mitigation is set forth below to address this impact.

The proposed project will meet current code and ADA requirements. Furthermore, the project sites would be served by the campus's Disability Van Service to accommodate the transportation needs for persons with disabilities as required.

Other Transit and Pedestrian Impacts - Hagar Site

The proposed project would also bring 140 student families and a childcare center to the Hagar site that is currently not developed with any housing or any other facilities. This would have the potential to increase pedestrian activity near this site. Pedestrian trips to the Hagar site would primarily be trips from the bus stops west of the Hagar Drive/Glenn Coolidge Drive intersection on both sides of Glenn Coolidge Drive. To access the site, pedestrians would travel east on the south side of Glenn Coolidge Drive from the bus stop then north on Hagar Drive. Currently, there are paved paths on the east side of Hagar Drive north of the study intersection and on the south side of Glenn Coolidge Drive west of the intersection; therefore, direct pedestrian access from the project site to transit is only available to the stop on the south side of Glenn Coolidge Drive. To access the bus stop on the north side of Glenn Coolidge Drive, pedestrians would continue along the path on the south side of Glenn Coolidge Drive, utilize the crosswalk along the eastern leg of the Ranch View Road/Glenn Coolidge Drive intersection, and then walk approximately 150 feet east to the stop. As a result, pedestrian access is available to all bus stops in the area. However, while access is available, the travel path is not direct and therefore inconsistent with University policies promoting safe, convenient access to transit. Furthermore, the existing dirt footpath formed on the north side of Glenn Coolidge Drive from the Hagar Drive/Glenn Coolidge Drive intersection to the bus stop suggests a desire for a paved path to the stop on the north side of Glenn Coolidge Drive. Persons living on the Hagar site would likely be tempted to cross Hagar Drive on the north side of Glenn Coolidge Drive, which could represent a safety hazard. However, to avoid this potential hazard, the proposed project includes the construction of a crosswalk and a paved path along the north side of Glenn Coolidge Drive.

The addition of a marked crosswalk to the north leg of the Hagar Drive/Glenn Coolidge Drive intersection would have minimal to no effect on LOS, as shown below in **Table 4.11-19, 2020 Conditions Intersection Level of Service with New Crosswalk**, below. Along with providing direct access for

pedestrians, providing a path with a width of at least four feet with five feet passing spaces at intervals of 200 feet (or 5 foot paths along the entire length), as described in the 2010 ADA Standards for Accessible Design, would provide accessible path from the project site to the bus stop on the north side of Glenn Coolidge Drive. A similar improvement to the existing path on the south side of Glenn Coolidge Drive would also improve pedestrian access to the bus stop on the south side of the roadway.

**Table 4.11-19
2020 Conditions Intersection Level of Service with New Crosswalk**

Intersection ¹	Peak Hour	2020 without Project		2020 with Project		2020 with Project and North Leg Crosswalk	
		Average Delay ²	LOS	Average Delay ²	LOS	Average Delay ²	LOS
1. Hagar Drive and Glenn Coolidge Drive	AM	10.1	B	11.9	B	12.1	B
	PM	16.1	B	19.6	B	19.8	B

Source: Fehr & Peers, January 2018.

1. Hagar Drive/Glenn Coolidge Drive is signalized.

2. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections.

3. An LOS of D is the UC Santa Cruz's LOS standard for the lower campus.

SHW Mitigation TRA-6 is proposed to address the impact on transit from the high volume of pedestrian crossings on Heller Drive. The proposed improvement would not result in any secondary environmental effects.

Mitigation Measures:

SHW Mitigation TRA-6: Consistent with LRDP Mitigations TRA-4A and TRA-4C, the Campus shall monitor pedestrian traffic and transit times at and near the Heller Drive crossings adjacent to the project site and, if warranted, extend the existing crossing guard program to the crossings.

Significance after Mitigation: Impacts on transit service as well as access to transit would be reduced to a less than significant level with the implementation of the mitigation measures set forth above.

4.11.5 PORTER AND RACHEL CARSON DINING FACILITIES EXPANSION PROJECT IMPACTS AND MITIGATION MEASURES

Environmental Setting

The Rachel Carson dining facilities expansion would take place in an area east of Heller Drive whereas the Porter College dining facilities expansion would be in an area west of Porter-Kresge Road.

Impacts and Mitigation Measures

DF Impact TRA-1: **The implementation of the proposed dining facilities expansion project would not conflict with any applicable plans, ordinances or policies establishing measures of effectiveness for the performance of the traffic circulation system; increase traffic hazards; or result in inadequate emergency access. (*Less than Significant*)**

Effect on Traffic Circulation System

The proposed dining facilities expansion project would not result in a substantial increase in vehicle trips to and from the campus. Other than a small increase in the number of delivery truck trips, no increase in traffic would result from the project. The users of the expanded facilities would be students residing on the campus. The project's traffic impacts would be less than significant. Furthermore, the proposed project is within the scope of the 2005 LRDP, and to the extent that it generates any vehicle trips, those are captured and adequately analyzed in the traffic analysis conducted for the 2005 LRDP in the 2005 LRDP Final EIR.

Increase in Traffic Hazards

The proposed dining facilities expansion project would not construct any vehicular roadways or traffic improvements. No impact related to traffic hazards due to design features would occur.

Inadequate Emergency Access

Due to the small scale of the construction project and the location of the proposed facilities, the dining facilities expansion project would not impede emergency access. No impact would occur.

Mitigation Measures: No mitigation measures are required.

4.11.6 CUMULATIVE IMPACTS AND MITIGATION MEASURES

SHW Impact C-TRA-1: Implementation of the proposed SHW project would not result in significant cumulative traffic impacts. (*Less than Significant*)

The cumulative operational traffic impacts of campus development under the 2005 LRDP are analyzed in the 2005 LRDP EIR under LRDP Impacts TRA-1, TRA-2, and TRA-6. Those impacts evaluate the increase in traffic in 2020 under two scenarios: a Without Project scenario that estimates the increase in traffic along campus roadways, city streets, and freeways as a result of 2020 background traffic volumes, and a With Project scenario that adds 2005 LRDP-related traffic volumes to 2020 background traffic volumes and then estimates the levels of service operations of the facilities. The analysis presented under LRDP Impacts TRA-1, TRA-2, and TRA-6, therefore, presents the cumulative traffic impacts in the study area and finds that the traffic added to city streets as a result of campus growth under the 2005 LRDP would result in significant cumulative traffic impacts (UCSC 2006). As discussed above, the proposed SHW project would have the effect of reducing the increase in daily and peak hour traffic to and from the campus which would occur due to enrollment increases that are projected to occur independent of the project. Therefore, the project will not contribute substantially to the previously evaluated cumulative traffic impacts and would, in fact, reduce the severity of the previously analyzed cumulative traffic impacts.

The cumulative analysis in the 2005 LRDP EIR extends to 2020. No analysis of cumulative traffic impacts beyond 2020 is required in this EIR because the proposed project would not cause the traffic to and from the campus to increase or exceed the traffic that was analyzed for the LRDP through 2020.

Near Term Cumulative Construction Phase Impacts

With respect to near-term cumulative construction traffic impacts, those would occur if other projects were to be under construction at the same time as the proposed project, and if these concurrent projects would be in close proximity of the proposed project such that the construction traffic from the concurrent projects would affect the same roadways. **Table 4.0-1** (in **Section 4.0**) presents the other reasonably foreseeable campus projects that would be under construction during the same time period as the proposed project. The potential for construction phase cumulative traffic impacts is discussed below.

Heller Site

Construction of the proposed housing on the Heller site would occur between 2020 and 2023 over a period of about 3 years. Construction of the dining facilities at Rachel Carson and Porter College and the construction of the Kresge College improvements would also occur during this time period. The construction of the Kresge College project is planned to start in Fall 2019 and be completed by Fall 2023 with an anticipated peak construction period between Summer 2020 to Spring 2021. The Kresge College

project peak construction period will not overlap with the Hagar site peak construction period; however, it will overlap with the Heller site construction period during Summer 2020 and Summer 2021. The amount of Kresge College construction traffic is unknown at this time. The concurrent construction would have the potential to result in localized cumulative traffic impacts. However, the proposed SHW project would implement **SHW Mitigation TRA-3**, which would mitigate any construction traffic impacts and render the project's contribution cumulatively not considerable.

Hagar Site

With the exception of one campus project, none of the cumulative projects are near the Hagar site, and therefore there is no potential for cumulative construction traffic impacts for that site. Although the Campus is in the early stages of planning for development of new employee housing, potentially utilizing the Ranch View Terrace Phase 2 site, the number and type of units and the location have not been determined. Therefore, construction schedule for a potential project at the Ranch View Terrace Phase 2 site is not known at this time and it is highly unlikely that that project would be constructed in 2019-20, the same time as the project construction on the Hagar site. There would be no construction-phase cumulative impacts.

Mitigation Measures: No mitigation is required.

4.11.7 REFERENCES

- Fehr & Peers. 2018. Student Housing West Project – Historical On-Campus Traffic Count Summary. Memorandum dated August 24.
- Fehr & Peers. 2018. Student Housing West Project – Intersection Operations and Multimodal Site Access Evaluation. Memorandum dated August 23.
- Fehr & Peers. 2018. Student Housing West Project – Transit Analysis. Memorandum dated August 23.
- Fehr & Peers. 2018. Student Housing West Project – Trip Generation Analysis. Memorandum dated August 24.
- Fehr & Peers. 2018, Student Housing West Project – Construction Impact Analysis. Memorandum dated August 23, 2018.