
4. Cumulative Impacts

4.1 Introduction

Sections 15126 and 15130 of the State CEQA Guidelines provide that EIRs consider the significant environmental effects of a proposed project, as well as cumulative impacts. “Cumulative impacts” are two or more individual effects which, when considered together, are considerable or which compound and increase other environmental impacts (State CEQA Guidelines Section 15355). Cumulative impacts may be analyzed by considering a list of past, present, and possible future projects producing related or cumulative impacts (State CEQA Guidelines Section 15130[b][1][A]) or through a summary of projections adopted in a local, regional, or statewide plan (State CEQA Guidelines Section 15130[B]).

An EIR is to focus the discussion on the cumulative impacts of a project when the project’s incremental effect is cumulatively considerable (State CEQA Guidelines Section 15130). “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (State CEQA Guidelines Section 15065[a][3]).

As set forth in the State CEQA Guidelines (Section 15130[b]), the discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. The analysis should be guided by the standards of practicality and reasonableness, and it should focus on the cumulative impacts to which the other identified projects contribute to the cumulative impact. “The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project’s incremental effects are cumulatively considerable.”

Based on the foregoing direction, the analysis in this EIR chapter provides:

- a list of related past, present, and future projects;
- long-range demographic forecasts based on adopted regional plans;
- a determination of whether the long-term impacts of all related past, present, and future plans and projects would cause a cumulatively significant impact; and
- a determination as to whether implementation of the proposed project would have a “cumulatively considerable” contribution to any significant cumulative impact. (See State CEQA Guidelines Sections 15130[a] and 15130[b], 15355[b], 15064[h], and 15065[c].)

4.2 Cumulative Context

4.2.1 Regional Growth

The Sacramento Area Council of Governments (SACOG) has developed a regional plan for growth known as the Metropolitan Transportation Plan (MTP)/Sustainable Communities Strategy (SCS). The MTP/SCS includes a land use strategy to improve mobility and reduce travel demand from passenger vehicles by prioritizing compact and transit-oriented development and reducing the growth in vehicle miles traveled (VMT) and associated greenhouse gas (GHG) emissions. The MTP/SCS is based on projections of growth in the region, between jurisdictions and among housing place types (i.e., infill and greenfield development). The document serves as the adopted regional plan that provides a summary of projections based on which certain cumulative impacts are considered later in this chapter.

The Town of Loomis is located in rapidly growing southwest Placer County, which is home to the cities of Rocklin and Roseville. The *Town of Loomis General Plan* (General Plan) aims to maintain the town’s rural character by directing growth into the Town Center. Demographic forecasts in the MTP/SCS predict that Loomis will expand by 1,629 new employees and 779 new housing units by 2036. The MTP/SCS recognizes that this growth will occur as infill

development in the Town Center area and places the designation of Center/Corridor Community on this planning area. The MTP/SCS forms the basis for a comparison of cumulative project impacts with regional plans.

4.2.2 Approved, Pending, and Planned Projects

A list of related past, present, and reasonably foreseeable future projects used for certain portions of the cumulative impact analysis includes development projects that have been constructed, are approved for construction, or are pending a decision by the Town of Loomis and neighboring jurisdictions. The related projects identified in Table 4-1 correspond with the numbers that appear on the map in Figure 4-1.

Table 4-1. Approved and Pending Projects

Map Key	Project Name	Location	Dwelling Units	Commercial/Office Area (sq. ft.)
1	Rocklin Crossings	Shopping center I-80/Sierra College Boulevard	NA	83,000
2	Rocklin Commons	Shopping center I-80/Sierra College Boulevard	NA	120,000
3	Garnet Creek	Granite Drive opposite Target	81 single-family dwelling units; 260 apartments	–
4	Granite Dominguez Subdivision	Granite Drive west of Dominguez Road	71 du	–
5	Los Cerros Subdivision	On ridge along Hillside Drive	115 du	–
6	Brighton Subdivision	Northeast corner of Granite Drive and Dominguez Road	72 du	–
7	Rocklin 60	Behind Rocklin Crossings along Schriber Way	179 du	–
8	Croftwood	East of Schriber Way	51 du	–
9	Granite Terrace	Behind Rocklin Library	42 du	–
10	Avalon Subdivision	On Rocklin Road east of Grove Street	76 du	–
11	Sierra Gateway Apartments	Southeast corner of Rocklin Road/Sierra College Boulevard	195 apartments	–
12	Clover Valley Residential	West of Sierra College Boulevard and east of Whitney Oaks	558 du	–
13	Parklands Subdivision	North of Pacific Street and west of Delmar Avenue	142 du	–
14	The Center at Secret Ravine	East of Sierra College Boulevard and south of Rocklin Crossings	–	16,000
15	Rocklin Gateway Apartment	North of Pacific Street and east of Midas Avenue	204 apartments	–
16	Quarry Row Subdivision	Southeast corner of Grove and Pacific Streets	64 du	–
17	Sierra Pine Subdivision	West side of Dominguez Road between Pacific Street and Granite Drive	199 du	–
18	Rocklin Station	West side of Sierra College Boulevard south of the I-80/Sierra College Boulevard interchange	–	33,000
19	Oak Vista Subdivision	Southwestern corner of Makabe Lane and Dias Lane, adjacent on one boundary to the eastern limits of the City of Rocklin	63 du	–
20	Croftwood 2	West side of Barton Road at the terminus of Lakepointe Drive	63 du	–
21	Sierra Villages North (SCB Site)	North Village: Northeast corner of Rocklin Road/Sierra College Boulevard (72 +/- acres)	349 du 14.8-acre park	15.9 acres mixed use
22	Sierra Villages South (Rocklin Road)	South Village: Southeast corner of Rocklin Road/El Don Drive (36 +/- acres)	37 du 16.4-acre park	11.7 acres mixed use
23	Bickford Ranch Phase 1	Four miles north of Interstate 80 and south of State Route 193 (1,927.9-acres)	Full project is 940 single family homes, 950 active-adult homes, Phase 1 is approximately 50 percent of site.	14.7 acres Recreation Center, 500 student elementary school
24	Amazing Facts	Bordered by Sierra College Boulevard on the north, between Nightwatch Drive and Ridge Park Drive, and extends south to Oak Hill Lane	NA	1,650 seat church

Notes: du = dwelling units; I-80 = Interstate 80; NA = not applicable; sq. ft. = square feet
 The Villages of Loomis development is not anticipated to be constructed and occupied by the project opening of 2020.
 Source: Kittelson & Associates 2019

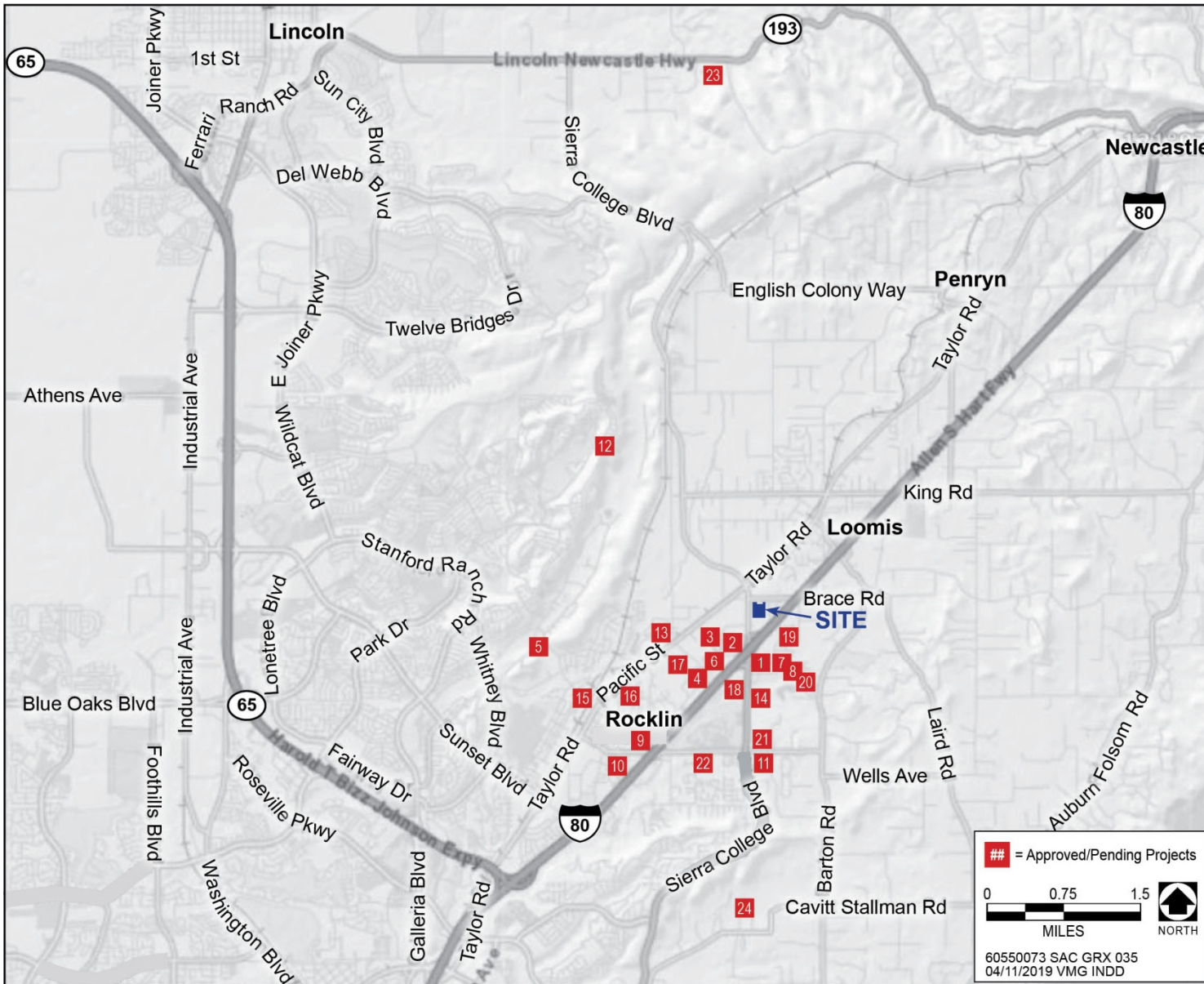


Figure 4-1. Cumulative Projects

4.2.3 Scope of the Cumulative Impact Analysis

The geographic boundary considered in the environmental analysis varies depending on the type of issue considered. For instance, impacts related to air quality would be regional because the emissions from construction and operation of the proposed project would not be restricted to the project site boundaries. Consequently, the cumulative impact analysis considers environmental impacts within the air basin.

The discussion of cumulative traffic impacts also includes a regional component because the analysis must consider land use plans from surrounding agencies, the implementation of which could generate traffic that would travel along roadway segments and through intersections in the Town of Loomis. In other cases, impacts (e.g., unstable soils, exposure to a stationary noise source) would be limited to a specific site. Table 4-2 presents the typical geographic areas associated with the environmental topics addressed in this EIR.

Table 4-2. Geographic Scope of Cumulative Impacts

Issue Area	Geographic Area
Aesthetics	Viewshed of the project site
Air Quality	Sacramento Valley Air Basin
Biological Resources	Town of Loomis and watershed boundaries
Greenhouse Gases and Energy	Global impact with emissions levels and rates established at the statewide level
Noise	Studied roadway segments and adjacent land uses exposed to project-related noise
Transportation and Traffic	Roadways and intersections affected by project-related traffic

Source: Data compiled by AECOM in 2017

4.3 Analysis of Cumulative Impacts

4.3.1 Aesthetics

IMPACT 4.3-1: Cumulative Impacts on Aesthetics. *There are 24 proposed development projects within the Loomis town limits and adjacent jurisdictions. These projects are dispersed across the landscape and are not all visible from a single vantage point. The physical removal or alteration of trees or rock outcroppings, or, the introduction of new structures and lighting where none presently exist, are circumstances that may combine to form cumulative impacts. However, the General Plan Land Use Element places similar uses adjacent to one another and retains a large portion of rural land in parts of the Town located away from the I-80 and Sierra College Boulevard Corridor. Further, all development is subject to design review and must comply with the standards of the Town regulating building height, massing, signage, lighting and landscape setbacks. The application of development standards to future uses in the Town would ensure the visual character of the Town remains, so the project **would not contribute toward a significant cumulative effect.***

Cumulative impacts on aesthetics may result when multiple projects are located within the same viewshed or are contiguous to one another and affect mutually shared landscape elements such as topography, hedgerows, woodland, or greenbelts. For example, trees may be physically removed from or altered within the landscape, or new elements or features such as roads and utility transmission lines may be added to the landscape where none presently exist. In the case of the proposed project, cumulative development found within the project's viewshed includes Rocklin Crossings shopping center (project 1), Rocklin Commons shopping center (project 2), and the Garnet Creek residential development (project 3). Rocklin Crossing and Rocklin Commons are existing commercial centers found at the interchange of Sierra College Boulevard with Interstate 80 (I-80), while Garnet Creek is a residential development containing a mix of single-family homes and apartments. All are multi-story structures similar in scale to the project and located at the existing commercial node located at the Sierra College Boulevard and I-80 interchange.

The General Plan guides the pattern of development and intensity of land uses. The Town of Loomis addresses the regulation of land use and density of development through the General Plan's land use designations and zoning code. The General Plan includes a Community Design and Character Element that provides goals, policies, and design guidelines to help retain and enhance the unique character of both the urbanized and predominantly rural

areas of Loomis. As noted in the Town's General Plan EIR (Town of Loomis 2001b), development in the Town would incrementally alter the small-town character of the community, converting it to a more urban environment. However, the General Plan places similar types of land uses adjacent to each other and retains a large proportion of rural residential land. These factors were found to limit the effect of ongoing development such that "development would not fundamentally alter the small-town character of the Town" (Town of Loomis 2001b). Therefore, cumulative impacts to the community character, including visual character, are expected to be less than significant, and there is no significant cumulative impact to which the project could contribute.

The project site is located in the Town Center planning area, as the town's primary commercial corridor. As described in Section 3.2, Aesthetics, the area is mostly developed, and development is large-scale commercial, similar to the proposed project. The building height, building mass, and parking field coverage of the proposed project is similar to that of the existing Rocklin Crossings and Rocklin Commons shopping centers within the viewshed of the proposed project site. The height and mass of the project is visually compatible with the Garnet Creek development (260 dwelling unit, multi-story apartment) due to the similarity in building height and lot coverage.

All development is subject to Town design standards that regulate building height, mass, site coverage, and landscape requirements. Compliance with these existing standards ensures that development is planned and constructed in a manner consistent with the visual character of the Town and avoid adverse aesthetic impacts. The proposed project would not create an unavoidable significant visual impact at the project level, and the three cumulative projects are compatible with the scenic character of the area. Project impacts are not cumulatively considerable, and **no significant** cumulative impact is associated with the visual interaction of these projects.

4.3.2 Air Quality

IMPACT 4.3-2: Result in a Cumulatively Considerable Net Increase in a Criteria Pollutant for which the Region is Nonattainment under an Applicable Federal or State Ambient Air Quality Standard. *Existing and new development generate additional emissions of ozone precursors (volatile organic compounds [VOCs] and oxides of nitrogen [NO_x]) and particulate matter, which may adversely affect the ability of the region to achieve attainment with the applicable air quality standards. The project's contribution to this impact **would not be cumulatively** considerable.*

Because of its nonattainment status relative to the federal and state ozone standards, the geographic scope of the area for the proposed project's cumulative impact analysis includes the areas within the Sacramento Federal Nonattainment Area (SFNA) for ozone. The SFNA includes Sacramento and Yolo Counties, parts of Solano and Sutter Counties, and Placer and El Dorado Counties (except the Lake Tahoe Air Basin). The SFNA is in nonattainment for ozone and particulate matter. Ongoing development and operation of new land uses would generate additional emissions of ozone precursors (VOCs and NO_x) and particulate matter, which may adversely affect the region's ability to achieve attainment with the applicable air quality standards representing a significant cumulative impact.

As discussed in Section 3.3.2, "Regulatory Setting," in Section 3.3 of this EIR, "Air Quality," regional air quality plans have been prepared to identify strategies to achieve attainment of the ambient air quality standards. New development in the SFNA that would result in greater air pollutant emissions than assumed in regional air quality plans could contribute to cumulative air quality impacts. Development of the project site with primarily commercial uses is contemplated in the City's General Plan, and general plans throughout the region are used as the basis of assumptions in regional air quality planning, so air pollutant emissions are accounted for in growth projections that form the basis for attainment plans.

In October 2017, Placer County Air Pollution Control District (PCAPCD) held a public hearing to consider, and ultimately adopted, the *Sacramento Regional 2008 National Ambient Air Quality Standard 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Attainment and Progress Plan). The Attainment and Progress Plan geographically covers the SFNA, which includes all of Sacramento and Yolo counties, and portions of Placer, El Dorado, Solano, and Sutter counties. The project site is located in the portion of Placer County that lies within the SFNA. The Attainment and Progress Plan documents how the region is meeting requirements under the federal Clean Air Act (CAA) in demonstrating reasonable further progress and attainment of the 2008 NAAQS (PCAPCD 2017).

Despite the progress made towards attainment, in accordance with Placer County Air Pollution Control District (PCAPCD) guidance, the contribution of a project with construction emissions of reactive organic gases (ROG), or

NO_x or PM₁₀ in excess of 82 pounds per day (lb/day) or with operational emission of ROG or NO_x in excess of 55 lb/day or PM₁₀ in excess of 82 lb/day would represent a cumulatively considerable contribution to a significant impact. The project's contribution to the cumulative impact is assessed below.

Construction

As shown in Table 3.3-4, daily emissions generated by any single phase of project construction would not exceed the PCAPCD-recommended thresholds of significance. Additionally, PCAPCD requires that all construction projects implement dust control requirements, in accordance with PCAPCD Rule 228. Because the project construction emissions are below thresholds, project construction related activity would not generate criteria air pollutants at a level that inhibits the ability to achieve attainment of air quality standards. Therefore, the project's contribution is not cumulatively considerable.

Operation

As shown in Table 3.3-5, the project's maximum operational VOC emissions would be 37 lb/day, NO_x emissions would be 37 lb/day, and PM₁₀ emissions would be 12 lb/day. None of these emissions would exceed PCAPCD's threshold of significance and would not make a cumulatively considerable contribution to a significant cumulative impact.

Direct emissions of PM_{2.5} in the Sacramento metropolitan area decreased between 2000 and 2010 but are projected to increase very slightly through 2035. Similarly, emissions of diesel PM (DPM) decreased from 2000 through 2010 because of reduced exhaust emissions from diesel mobile sources; these emissions are anticipated to continue to decline through 2035 (ARB 2013).

Conclusion

As described in Section 3.3 (Air Quality) of this EIR, emissions generated during construction and operation of the project would not exceed the PCAPCD cumulative thresholds for either daily or operational emissions. Therefore, the project would not impede attainment of the ambient air quality standards and the project contribution is **less than cumulatively considerable**.

IMPACT 4.3-3: Result in Cumulatively Considerable Contribution to Human Health Risk Through Exposure of Sensitive Receptors to Toxic Air Contaminants. *Ongoing development and operation of certain land uses, including fueling stations, would generate emissions of toxic air contaminants. Exposure of sensitive receptors to TACs could represent a health risk. The project's contribution to this impact would not be cumulatively considerable.*

According to Office of Environmental Health Hazard Assessment methodology, health effects from carcinogenic toxic air contaminants are usually described in terms of individual cancer risk for the maximum exposed individual resident and worker. Key factors that influence exposure to hazards include dose, distance from source, and length of exposure. Land uses near the project site include several fueling stations, such as a Chevron station immediately south of the site and an Arco station to the southwest opposite Sierra College Boulevard.

A Health Risk Assessment (HRA) for the proposed project was performed to evaluate toxic air contaminant (TAC) emissions associated with project construction and operations. The HRA relied upon PCAPCD methodology, which is based on guidance provided by the Office of Environmental Health Hazard Assessment. Under this approach, the health effects from carcinogenic toxic air contaminants are described in terms of individual cancer risk, which uses a theoretical scenario in which an individual is exposed to the maximum estimated concentration of TACS over a 30-year period (lifetime). This approach represents a cumulative, worst-case condition, as no single individual would be exposed to all the TACS associated with project operation. As detailed in Tables 3.3-9, 3.3-13, and 3.3-17 in Section 3.3 of this EIR, "Air Quality," the proposed project does not substantially increase concentrations of TACs near sensitive receptors. The study found the level of exposure at the Point of Maximum Impact for the Maximum Exposed Individual and Worker are below the cancer risk of 10 in one million, which is a less-than-significant impact.

Table 3.3-8 summarizes the fueling center emissions used in the HRA. The air quality analysis contained in Section 3.3 of this EIR details compliance with PCAPCD permit requirements, as well as PCAPCD Rules 213 and 214, applicable California Health and Safety Code Sections 41950-41964, the California Code of Regulations Sections 94010-94168 and the ARB Vapor Recovery Executive Orders. Compliance with these regulatory requirements reduces evaporative emissions associated with fuel storage and dispensing. Issuance of an authority to construct permit by the air district is dependent on an affirmative review of the plans to ensure all vapor recovery measures are included and the findings of an HRA that shows the use does not result in exceedance of the cancer risk threshold. The design, installation, and proper maintenance of a vapor recovery system would reduce emissions of benzene

(the primary TAC of concern for human health from fuel dispensing facilities) and other TACs. Application of these regulations ensures that the project contribution to a health risk is **not cumulatively considerable**.

IMPACT 4.3-4: Result in Cumulatively Considerable Contribution to Odor Related Impacts. *Ongoing development and operation of bakery and fast food restaurants would generate odors that some may consider to be a nuisance. The project's contribution to this impact would not be cumulatively considerable.*

Land uses near the site include a McDonalds and Carl's Jr. fast food restaurants and food odors from these locations are detectible. While some may find an odor to be a nuisance, food odors are a common sensory experience that are found in typical residential setting. All restaurants must comply with state regulations associated with cooking equipment and controls, including the use of grease filtration and removal systems, exhaust hood systems, blowers to move air into the hood, through air cleaning equipment, and then outdoors. Such equipment would ensure that pollutants associated with smoke and exhaust from cooking surfaces would be captured and filtered prior to release into the atmosphere, which also provides odor control from use of char broilers. Like the existing fast food restaurants, the project itself proposes food service preparation and sales that may generate odors. Application of existing regulations ensures that no significant cumulative odor impact presently occurs so any contribution by the project is **not cumulatively considerable**.

4.3.3 Biological Resources

IMPACT 4.3-5: Cumulative Impacts on Biological Resources. *According to the 2001 Loomis General Plan EIR, buildout of land uses under the Land Use Element of the General Plan would result in a significant cumulative impact on habitat for common and special-status species (Town of Loomis 2001a). The loss of oak woodlands on the project site would represent a **cumulatively considerable** contribution to the loss of natural habitat.*

Construction of the approved and proposed projects listed in Table 4-1, permitted by the General Plan, would combine with related project impacts to form a significant cumulative impact on natural resources if not mitigated. Each project would be subject to the Town's policies for conservation and protection of natural resources. Those policies include development standards intended to avoid or minimize direct impacts, where feasible, and call for mitigation in the form of restoration or replacement when impacts on such resources cannot be avoided. If each future project were to comply with the General Plan policies pertaining to natural resources, the impacts of each project on its own could be avoided. As described in Chapter VII, "Conservation of Resources," of the General Plan, the majority of the habitat of high ecological value in Loomis is located in areas designated for developed land use types, as opposed to protected open space or parklands (Town of Loomis 2001b). Development throughout the town represents a **significant cumulative** impact.

The project site represents one of the largest undeveloped tracts in the town, and the loss of oak woodland habitat and riparian resources would contribute to the cumulative loss of natural habitats. Construction and operation of the proposed project would result in the loss of habitat that provides foraging and nesting value, and in the loss of sensitive natural communities. The project site also provides habitat for a variety of small mammals, reptiles, and some bird species. In addition, the proposed project would result in the loss of woodland and riparian habitat and associated effects on special-status wildlife species. The impact is **cumulatively considerable**.

Implementing project Mitigation Measures Bio-1 through Bio-4 would reduce and/or provide compensation for the direct impacts on sensitive habitats and special-status species found on the project site, resulting in a less-than-significant project impact. However, the proposed project, in conjunction with buildout of the General Plan, would contribute to the permanent loss of habitat in Loomis. The loss of this habitat would represent a cumulatively considerable contribution to the impact caused by General Plan buildout. Other than providing for reductions and compensation for biological resources that would be affected by the project, as required by the mitigation measures in Section 3.4 of this EIR, "Biological Resources," there is no additional feasible mitigation. Therefore, this cumulative impact would be **significant and unavoidable**, consistent with the findings of the General Plan EIR.

4.3.4 Greenhouse Gases

IMPACT 4.3-6: Cumulative Greenhouse Gas Impacts. *Emissions of GHGs have the potential to adversely affect the environment because such emissions contribute cumulatively to global climate change. It is unlikely that a single project will contribute significantly to climate change, but cumulative emissions from many projects could affect global GHG concentrations and the climate system,*

which is considered a significant cumulative effect. Given that predicted emissions of greenhouse gas from project operation exceed air district thresholds, the project contribution to the significant cumulative effect is **cumulatively considerable**.

Emissions of GHGs have the potential to adversely affect the environment because such emissions contribute cumulatively to global climate change. It is unlikely that a single project will contribute significantly to climate change, but cumulative emissions from many projects could affect global GHG concentrations and the climate system, which is considered a **significant cumulative** effect.

As described in Section 3.5, “Greenhouse Gases,” estimated GHG emissions for the proposed project’s construction-related emissions would not exceed the PCAPCD bright-line threshold of significance of 10,000 MT CO₂e per year. However, long-term (annual) operational GHG emissions would exceed PCAPCD’s de minimis threshold of significance of 1,100 MT CO₂e per year outlined in the PCAPCD’s CEQA Air Quality Handbook. Exceedance of the de minimis threshold requires the project to undergo a secondary level of review that considers forecast emissions relative to the project footprint. Using the PCAPCD methodology, the proposed project’s operational GHG emissions of 6,178 MT CO₂e per year were calculated relative to project size and expressed in terms of calculated MT CO₂e per year per 1,000 square feet. Compared to PCAPCD’s efficiency matrix–defined threshold of 27.3 MT CO₂e per year per 1,000 square feet, the proposed project’s annual operational emissions are estimated to be 40 MT CO₂e per year per 1,000 square feet, which exceeds the PCAPCD-recommended threshold. No feasible mitigation could reduce emissions below the PCAPCD-recommended threshold. Therefore, the contribution of GHG emissions generated by the proposed project would be **cumulatively considerable and unavoidable**. See Section 3.5 of this EIR for additional detail regarding the GHG emissions estimates and analysis.

4.3.5 Noise

IMPACT 4.3-7: Cumulative Noise Impacts. *Project operation would generate noise from both stationary and mobile sources that would combine with noise from existing and future land uses operating along the studied roadways and in the vicinity to increase levels above ambient conditions. There is **no significant cumulative** impact.*

Construction

Cumulative construction noise and vibration impacts have the potential to occur when multiple construction projects in the same area are taking place during the same time period. Noise and vibration are a localized occurrence and attenuates rapidly with distance. Therefore, only future cumulative development projects in the direct vicinity of the project site could add to anticipated project-generated transportation and stationary-source noise, thus resulting in cumulative noise impacts. Since there are no planned construction projects within the vicinity of the project site, construction noise attenuates due to distances and existing intervening structures, and since all project-specific construction and would conform to the time-of day restrictions of the City’s Municipal Code, cumulative noise impacts during construction of future development would not combine to affect the same sensitive receptors and the project. Construction source noise associated with the proposed project could potentially result in an exceedance of the standards established by the Town’s noise regulations if not properly controlled. Noise generated by construction sources would be controlled at the source (by means of limited idling time and use of acoustical shielding for stationary equipment). However, other development projects are not proposed to be constructed adjacent to the project site such that the combined construction noise effects would generate a significant cumulative impact. The project’s construction noise would not have a cumulatively considerable contribution to any significant cumulative impact because there are not projects proposed for construction adjacent to the project site, and therefore, there is **no significant cumulative** impact.

Operation

A two-tier approach is used to determine whether mobile source noise from project vehicle trips represents a cumulatively considerable contribution to a significant noise impact. The first step is to predict noise levels experienced along studied roadway segments in the “future with project” condition and compare these levels to existing conditions in order to determine whether those cumulative levels would represent a substantial, permanent increase in noise that exceeds adopted standards. Next, the project’s contribution to predicted “future with project” conditions is determined by comparing the “future without project” to the “future with project” conditions for each roadway segment. If the project’s contribution to future roadway noise at studied segments is less than 3 dBA, the contribution would not be perceptible and therefore, would not be a cumulatively considerable contribution to the impact.

Table 4-3 summarizes the modeling output for ambient roadway noise levels along studied roadway segments assuming no attenuation from barriers, such as walls and elevation changes. Existing noise levels along studied roadway segments range from a high of 81 dB(A) day-night average noise level (L_{dn}) at 100 feet along I-80 to a low of 59 dB(A) L_{dn} along a segment of Brace Road from Barton Road to Sierra College Boulevard.

Table 4-3. Existing Roadway Noise Levels

Roadway	Roadway Segment	dBA, L_{dn} at 100 feet	
		Weekday	Weekend
I-80	From Horseshoe Bar Road to Sierra College Boulevard	80	81
I-80	From Sierra College Boulevard to Rocklin Road	80	81
Sierra College Boulevard	From King Road to Taylor Road	69	67
Sierra College Boulevard	From Taylor Road to Brace Road	70	68
Sierra College Boulevard	From Brace Road to Granite Drive	68	67
Sierra College Boulevard	From Granite Drive to I-80 ramps	69	68
Sierra College Boulevard	From I-80 ramps to Rocklin Road	72	70
Granite Drive	From Rocklin Road to Sierra College Boulevard	64	64
Taylor Road	From Horseshoe Bar Road to Sierra College Boulevard	66	65
Taylor Road	From Sierra College Boulevard to Delmar Avenue	67	66
Pacific Street	From Delmar Avenue to Rocklin Road	68	66
Brace Road	From Barton Road to Sierra College Boulevard	59	59
Rocklin Road	From Sierra College Boulevard to I-80 ramps	69	67
Rocklin Road	From I-80 ramps to Granite Drive	69	67
Rocklin Road	From Granite Drive to Pacific Street	67	65

Notes: dBA = A-weighted decibels; I-80 = Interstate 80; L_{dn} = day-night average noise level

Source: Modeling conducted by AECOM in 2018

Table 4-4 depicts modeled noise levels along these same roadway segments with the addition of trips generated under “future without project” and “future with project conditions.” Based on the noise modeling, cumulative vehicular noise under the short-term future no project conditions shown in Table 4-4 would increase traffic noise from +0 A-weighted decibels (dBA) to +1 dBA L_{dn} , depending on the segment under review. The largest increase is experienced during the weekend along Sierra College Boulevard from Brace Road to Granite Drive, an increase from 70 dB(A) L_{dn} to 71 dB(A) L_{dn} , which would not be perceived by most people. Land uses along this segment of Sierra College Boulevard are zoned for commercial development, which is not considered a noise sensitive use by the Loomis General Plan. Therefore, the cumulative increase in noise levels at this roadway segment would not represent a cumulative impact on noise-sensitive receptors. The project’s contribution to noise levels in the short-term cumulative condition ranges from +0 dBA to +1 dBA L_{dn} (multiple segments of Sierra College Boulevard, Taylor Road from Sierra College Boulevard to Delmar Avenue). An increase of 1 dBA or less is not perceptible to most people; thus, the project’s contribution to noise levels along studied roadway segments in the cumulative short-term scenario is **not cumulatively considerable**.

Table 4-4. Predicted Traffic Noise Levels, Cumulative Short-Term Conditions

Roadway	Segment	L _{dn} at 100 Feet, dBA					
		Weekday			Weekend		
		Future No Project	Plus Project	Net Change	Future No Project	Plus Project	Net Change
I-80	From Horseshoe Bar Road to Sierra College Boulevard	80	80	0	80	80	0
I-80	From Sierra College Boulevard to Rocklin Road	81	81	0	81	81	0
Sierra College Boulevard	From King Road to Taylor Road	72	72	0	71	71	0
Sierra College Boulevard	From Taylor Road to Brace Road	72	72	0	71	72	1
Sierra College Boulevard	From Brace Road to Granite Drive	71	71	0	70	71	1
Sierra College Boulevard	From Granite Drive to I-80 ramps	71	72	1	71	72	1
Sierra College Boulevard	From I-80 ramps to Rocklin Road	74	74	0	73	73	0
Granite Drive	From Rocklin Road to Sierra College Boulevard	65	65	0	65	65	0
Taylor Road	From Horseshoe Bar Road to Sierra College Boulevard	67	68	1	67	67	0
Taylor Road	From Sierra College Boulevard to Delmar Avenue	68	68	0	67	67	0
Pacific Street	From Delmar Avenue to Rocklin Road	69	69	0	67	68	1
Brace Road	From Barton Road to Sierra College Boulevard	61	61	0	61	61	0
Rocklin Road	From Sierra College Boulevard to I-80 ramps	70	70	0	69	69	0
Rocklin Road	From I-80 ramps to Granite Drive	71	71	0	71	71	0
Rocklin Road	From Granite Drive to Pacific Street	69	69	0	67	67	0

Notes: dBA = A-weighted decibels; I-80 = Interstate 80; L_{dn} = day-night average noise level

Traffic noise levels are predicted at a standard distance of 100 feet from the roadway centerline and do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: Modeling conducted by AECOM in 2018

Table 4-5 illustrates future noise levels under long-term conditions. Implementation of long-term cumulative conditions would result in traffic noise level increases ranging from +0 dBA to +1 dBA L_{dn} (compared to existing noise levels without the project). The following segments experience a cumulative increase in noise levels that would be perceptible to most people:

Sierra College Boulevard from King Road to Taylor Road—Exterior noise levels in the cumulative long-term future with project condition are predicted to reach 72 dB(A) L_{dn} at 100 feet from roadway centerline. There are residential uses along this roadway segment that have large set backs from the roadway. Exposure at the exterior façade of the dwelling units would be substantially reduced from the predicted noise levels due to attenuation provided by the distance between receptor and the source and presence of soft terrain.¹ There is **no significant cumulative impact** along this segment.

Sierra College Boulevard from Taylor Road to Brace Road—Exterior noise levels in the cumulative future with project condition are predicted to reach 73 dB(A) L_{dn} at 100 feet from roadway centerline. Land uses along this roadway segment are commercial in nature and are not considered noise sensitive by either the Loomis or City of Rocklin General Plans. There is **no significant cumulative impact** along this segment.

Sierra College Boulevard from Brace Road to Granite Drive—Exterior noise levels in the cumulative future with project condition are predicted to reach 71 dB(A) L_{dn} at 100 feet from roadway centerline. Land uses along this

¹ Highway Noise fundamentals (Springfield, Virginia: U.S. Department of Transportation, Federal Highway Administration, September 1980). Sound typically diminishes at a rate of 7 dB(A) for each doubling of distance from the source of the receptor at acoustically soft sites like earth and vegetation which contains absorptive properties.

roadway segment are commercial in nature and are not considered as noise sensitive by either the Loomis or City of Rocklin General Plans. There is **no significant cumulative impact** along this segment.

Brace Road from Barton to Sierra College Boulevard—Exterior noise levels in the cumulative future with project condition are predicted to reach 64 dB(A) L_{dn} at 100 feet from roadway centerline. Land uses along this roadway segment are residential in nature and are considered as noise sensitive by the Town of Loomis General Plan. Predicted noise levels under the cumulative long-term with project condition would fall within the acceptable exterior noise levels for residential uses established by the Town at 65 dB(A) L_{dn} . Therefore, no significant noise impacts would occur along this studied roadway segment in the cumulative long-term with project condition. There is **no significant cumulative impact** along this segment.

Table 4-5. Predicted Traffic Noise Levels, Cumulative Long-Term Conditions

Roadway	Segment	L_{dn} at 100 Feet, dBA					
		Weekday			Weekend		
		Future No Project	Plus Project	Net Change	Future No Project	Plus Project	Net Change
I-80	From Horseshoe Bar Road to Sierra College Boulevard	81	81	0	81	81	0
I-80	From Sierra College Boulevard to Rocklin Road	82	82	0	82	82	0
Sierra College Boulevard	From King Road to Taylor Road	72	72	0	70	70	0
Sierra College Boulevard	From Taylor Road to Brace Road	73	73	0	71	71	0
Sierra College Boulevard	From Brace Road to Granite Drive	71	72	1	70	70	0
Sierra College Boulevard	From Granite Drive to I-80 ramps	72	72	0	70	71	1
Sierra College Boulevard	From I-80 ramps to Rocklin Road	75	75	0	73	73	0
Granite Drive	From Rocklin Road to Sierra College Boulevard	65	65	0	65	65	0
Taylor Road	From Horseshoe Bar Road to Sierra College Boulevard	68	68	0	67	67	0
Taylor Road	From Sierra College Boulevard to Delmar Avenue	67	67	0	66	67	1
Pacific Street	From Delmar Avenue to Rocklin Road	70	70	0	68	69	1
Brace Road	From Barton Road to Sierra College Boulevard	64	64	0	63	63	0
Rocklin Road	From Sierra College Boulevard to I-80 ramps	71	71	0	69	69	0
Rocklin Road	From I-80 ramps to Granite Drive	72	72	0	70	71	1
Rocklin Road	From Granite Drive to Pacific Street	69	69	0	67	67	0

Notes: dBA = A-weighted decibels; I-80 = Interstate 80; L_{dn} = day-night average noise level

Traffic noise levels are predicted at a standard distance of 100 feet from the roadway centerline and do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: Modeling conducted by AECOM in 2018

The proposed project’s contribution to the long-term cumulative increase would be no more than 1 dBA, which is not perceptible to the human ear. Therefore, noise levels from project-generated traffic sources would not result in a substantial permanent increase in ambient noise levels (3 dB or greater) under long-term cumulative conditions and most likely would not be perceivable to existing noise-sensitive receptors. Although regional growth could result in a substantial permanent increase in traffic noise along roadway segments, the proposed project’s contribution toward this impact **would not be cumulatively considerable**.

Future development would be required to conduct site-specific analyses and mitigation at the time of consideration. In most cases, new development, similar to the proposed project, will be required to include the necessary setbacks, construction materials, sound walls, berms, or other features necessary to ensure that internal and external noise levels meet applicable standards. Application of these requirements as each project is proposed and constructed would ensure that cumulative noise impacts are **less than significant**.

Stationary-source noise associated with the proposed project could potentially result in an exceedance of the standards established by the Town’s noise regulations if not properly controlled. Noise generated by stationary sources, including mechanical equipment such as HVAC, loading dock, and similar equipment associated with the project operation would be controlled at the source (by means of mechanical rooms and use of setbacks from sensitive uses). While the project would have a project-level impact related to the routing of delivery trucks, there

would not be other trucks operating on the project site operating in the same on-site route that would combine to create a cumulative impact that is different than the project-level impact detailed in Section 3.6 of this EIR. There is **no significant cumulative impact**.

4.3.6 Transportation and Traffic

This section addresses the potential for traffic from the proposed project site to reduce level of service (LOS) at studied intersections or increase vehicular delays that may result in a cumulatively considerable impact on roads and intersections in the future growth scenarios. As described in Section 3.7, "Transportation and Traffic," traffic growth forecasts were implemented to examine both the short-term operating condition (the project approach) and the long-term operating condition (the plans and policies approach) for study intersections and the freeway mainline under future short-term (project based) and longer-term growth horizons. Table 3.7-7 (short-term baseline forecast), Table 3.7-8 (short-term baseline freeway mainline forecast), Table 3.7-9 (long-term baseline growth forecast, weekday a.m./p.m. and weekend midday peak hours), and Table 3.7-10 (long-term baseline growth forecast, freeway mainline) provide a summary of the operating condition of intersections and roadway segments in the future without-project condition. Project traffic was added to these predicted traffic growth forecasts to evaluate the potential for cumulative impacts, as discussed below.

IMPACT 4.3-8: Cumulative Impacts of Short-Term plus Project Intersection Operations. *Adding project-generated traffic to cumulative traffic generated by approved and pending projects would cause the LOS at studied intersections to degrade below adopted standards, requiring the need for restriping, re-phasing, and optimization of the cycle length at study area intersections. The project's contribution to this impact is **cumulatively considerable** at certain study intersections.*

Project Driveway Access Option 1A

Figure 22 of the transportation impact analysis (Kittelsohn & Associates 2019) shows the Cumulative Short-Term plus Project traffic volumes for Project Driveway Access Option 1A during the weekday a.m. and p.m. peak hours, while Figure 23 of the transportation impact analysis (Kittelsohn & Associates 2019) shows the Cumulative Short-Term plus Project traffic volumes during the weekend midday peak hour for Project Driveway Access Option 1A.

Cumulative Short-Term No-Project and Plus Project delays and LOS for study intersections during the weekday a.m. and p.m. peak hours are depicted in Table 4-6 for Project Driveway Access Option 1A. Table 4-7 shows the baseline Cumulative Short-Term No-Project and Plus Project delays and LOS for the study intersections during weekend midday peak hour for Project Driveway Access Option 1A. Please note that the delays at some study intersections may be lower than under Existing or Existing plus Project conditions because of signal timing optimization and/or recirculation of traffic with the addition of approved/pending projects. Appendix B of the transportation impact analysis (Kittelsohn & Associates 2019) includes the LOS worksheets.

As shown in Tables 4-6 and 4-7, regional growth would result in a significant impact at the following intersections, causing them to operate at unacceptable LOS in the Cumulative Short-Term plus Project condition:

- Taylor Road & King Road (PM)
- Horseshoe Bar Road & I-80 Eastbound Ramp (AM and PM)
- Sierra College Boulevard & Taylor Road (PM and MD)
- Sierra College Boulevard & Granite Drive (AM, PM, and MD)
- Sierra College Boulevard & I-80 Westbound Ramps (PM and MD)
- Sierra College Boulevard & Rocklin Road (AM, PM, and MD)
- Pacific Street & Dominguez Road/Delmar Avenue (AM, PM, and MD)
- Pacific Street & Rocklin Road (AM, PM, and MD)
- Granite Drive & Rocklin Road (PM and MD)
- Sierra College Boulevard & SR-193 (AM, PM, and MD)
- Sierra College Boulevard & English Colony Way (PM and MD)
- Sierra College Boulevard & Delmar Avenue (AM, PM, and MD)
- Taylor Road & English Colony Way (MD)

Table 4-6. Cumulative Short-Term plus Project—Intersection LOS Analysis, Weekday A.M./P.M. Peak Hour— Project Driveway Access Option 1A

ID	Intersection	Traffic Control Type	LOS Operating Goal	Weekday A.M.					Weekday P.M.				
				Cumulative Short-Term		Cumulative Short-Term Plus Project		Change in Delay (sec)	Cumulative Short-Term		Cumulative Short-Term Plus Project		Change in Delay (sec)
				Delay (sec)	LOS	Delay (sec)	LOS		Delay (sec)	LOS	Delay (sec)	LOS	
1	Taylor Rd/ King Rd	Signal	D	38.9	D	39.5	D	0.6	59.8	E	62.0	E	2.2
2	Taylor Rd/ Horseshoe Bar Rd	Signal	D	23.3	C	23.6	C	0.3	30.0	C	31.6	C	1.6
3	Horseshoe Bar Rd/ I-80 Westbound Ramp	Signal	D	13.7	B	13.7	B	0.0	14.0	B	14.0	B	0.0
4	Horseshoe Bar Rd/ I-80 Eastbound Ramp ¹	TWSC	D	70.2	F	70.2	F	0.0	68.2	F	68.2	F	0.0
5	Barton Rd/Brace Rd	TWSC	C	11.8	B	11.9	B	0.1	12.9	B	13.1	B	0.2
6	Sierra College Blvd/ Taylor Rd	Signal	C	29.5	C	30.3	C	0.8	40.5	D	44.1	D	3.6
7	Sierra College Blvd/ Brace Rd	Signal	D	10.7	B	14.1	B	3.4	18.3	B	16.9	B	-1.4
8	Sierra College Blvd/ Granite Dr	Signal	C	35.9	D	36.7	D	0.8	58.2	E	105.1	F	46.9
9	Sierra College Blvd/ I-80 WB Ramps	Signal	E	34.3	C	41.9	D	7.6	66.5	E	96.6	F	30.1
10	Sierra College Blvd/ I-80 EB Ramps	Signal	E	23.9	C	24.2	C	0.3	43.6	D	45.2	D	1.6
11	Sierra College Blvd/ Schriber Way	Signal	C	15.3	B	15.3	B	0.0	17.0	B	17.1	B	0.1
12	Sierra College Blvd/ Bass Pro Dr-Dominguez Rd	Signal	C	7.2	A	7.3	A	0.1	12.2	B	12.4	B	0.2
13	Sierra College Blvd/ Stadium Dwy	Signal	C	7.2	A	7.2	A	0.0	7.1	A	7.2	A	0.1
14	Sierra College Blvd/ Rocklin Rd	Signal	C	99.6	F	99.7	F	0.1	90.0	F	92.4	F	2.4
15	Pacific St/Dominguez Rd-Delmar Ave	Signal	C	43.6	D	44.0	D	0.4	67.3	E	68.3	E	1.0
16	Pacific St/ Rocklin Rd	Signal	C	88.7	F	89.0	F	0.3	78.9	E	80.0	E	1.1
17	Granite Dr/ Rocklin Rd	Signal	C	27.6	C	27.7	C	0.1	43.7	D	45.2	D	1.5
18	I-80 WB Ramps/ Rocklin Rd	Signal	D	23.6	C	23.6	C	0.0	53.7	D	53.7	D	0.0
19	I-80 Eastbound Ramps/ Rocklin Rd	Signal	D	35.5	D	35.5	D	0.0	44.6	D	44.6	D	0.0
20	Aguilar Rd/ Rocklin Rd	Signal	C	11.3	B	11.4	B	0.1	9.4	A	9.5	A	0.1
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	C	0.2	A	0.2	A	0.0	17.6	C	18.3	C	0.7
22	Granite Dr/ Dominguez Rd	TWSC	C	14.0	B	14.1	B	0.1	21.5	C	22.1	C	0.6
23	El Don Dr/ Rocklin Rd	Signal	C	34.7	C	34.8	C	0.1	33.9	C	34.0	C	0.1
24	Sierra College Boulevard/ Project Driveway	Signal	C	DNE		6.6	A	-	DNE		13.5	B	-
25	Brace Road/ Project Driveway	TWSC	C	DNE		0.0	A	-	DNE		10.1	B	-
26	Sierra College Blvd/ SR-193	AWSC	D	41.8	E	43.3	E	1.5	79.4	F	83.1	F	3.7
27	Sierra College Blvd/ English Colony Way	TWSC	C	14.0	B	14.9	B	0.9	78.8	F	97.7	F	18.9

Table 4-6. Cumulative Short-Term plus Project—Intersection LOS Analysis, Weekday A.M./P.M. Peak Hour— Project Driveway Access Option 1A

ID	Intersection	Traffic Control Type	LOS Operating Goal	Weekday A.M.					Weekday P.M.				
				Cumulative Short-Term		Cumulative Short-Term Plus Project		Change in Delay (sec)	Cumulative Short-Term		Cumulative Short-Term Plus Project		Change in Delay (sec)
				Delay (sec)	LOS	Delay (sec)	LOS		Delay (sec)	LOS	Delay (sec)	LOS	
28	Sierra College Blvd/ Delmar Avenue ²	TWSC	C	103.3	F	108.4	F	5.1	328.6	F	388.4	F	59.8
29	Taylor Rd/English Colony Way	AWSC	C	23.6	C	23.9	C	0.3	16.0	C	16.2	C	0.2
30	Taylor Rd/Penryn Road (North)	TWSC	C	14.6	B	14.6	B	0.0	10.5	B	10.5	B	0.0
31	Taylor Rd/Penryn Road (South)	TWSC	C	347.2	F	354.9	F	7.7	25.7	D	27.3	D	1.6
32	Taylor Rd/Del Oro High School North Lot ¹	TWSC	C	40.0	E	40.8	E	0.8	14.0	B	14.2	B	0.2
33	Taylor Rd/Del Oro High School Drop-Off ¹	TWSC	C	358.0	F	365.5	F	7.5	17.4	C	17.7	C	0.3
34	Taylor Rd/Del Oro High School South Lot ¹	TWSC	C	48.0	E	48.5	E	0.5	18.7	C	18.9	C	0.2
35	Taylor Rd/ Rippey Road	TWSC	C	14.3	B	14.3	B	0.0	12.3	B	12.4	B	0.1
36	Taylor Rd/ Webb Street ¹	TWSC	C	25.2	D	25.9	D	0.7	59.1	F	66.4	F	7.3
37	Sierra College Boulevard/ Project Driveway East	TWSC	C	DNE		10.4	B	–	DNE		11.2	B	–

Notes:
DNE = intersection does not exist under no project conditions; EB = eastbound; I-80 = Interstate 80; ID = identification number of study intersection; LOS = level of service; sec = seconds;
TWSC = two-way stop control—delay reported reflects the critical movement; AWSC: All-way stop control – The average intersection delay is reported; WB = westbound

- ¹ An impact is significant in situations when the intersection is already operating at unacceptable LOS and the Project adds trips to the intersection exceeding 5% of the total traffic already at the intersection. At these locations, the project does not contribute 5% or more of the volumes.
- ² Intersection does not meet signal warrants for impacts condition, therefore per the Placer County guidelines, this intersection is not significantly impacted. Traffic signal warrants provided in Appendix J.

Boldface type indicates intersections performing below acceptable LOS.

Source: Kittelson & Associates 2019

Table 4-7. Cumulative Short-Term plus Project—Intersection LOS Analysis, Weekend Midday Peak Hour—Project Driveway Access Option 1A

ID	Intersection	Traffic Control Type	LOS Operating Goal	Cumulative Short-Term		Cumulative Short Term Plus Project		Change in Delay (sec)
				Delay (sec)	LOS	Delay (sec)	LOS	
1	Taylor Rd/King Rd	Signal	D	42.5	D	48.8	D	6.3
2	Taylor Rd/Horseshoe Bar Rd	Signal	D	20.1	C	22.0	C	1.9
3	Horseshoe Bar Rd/I-80 Westbound Ramp	Signal	D	13.4	B	13.4	B	0.0
4	Horseshoe Bar Rd/I-80 Eastbound Ramp	TWSC	D	28.7	D	28.7	D	0.0
5	Barton Rd/Brace Rd	TWSC	C	17.0	C	18.0	C	1.0
6	Sierra College Blvd/Taylor Rd	Signal	C	31.7	C	38.9	D	7.2
7	Sierra College Blvd/Brace Rd	Signal	D	15.1	B	17.4	B	2.3
8	Sierra College Blvd/Granite Dr	Signal	C	39.9	D	75.1	E	35.2
9	Sierra College Blvd/I-80 WB Ramps	Signal	E	76.5	E	126.6	F	50.1
10	Sierra College Blvd/I-80 EB Ramps	Signal	E	55.5	E	43.1	D	-12.4 ⁴
11	Sierra College Blvd/Schriber Way	Signal	C	20.8	C	21.0	C	0.2
12	Sierra College Blvd/Bass Pro Dr-Dominguez Rd	Signal	C	13.3	B	13.5	B	0.2
13	Sierra College Blvd/Stadium Dwy	Signal	C	5.7	A	6.0	A	0.3
14	Sierra College Blvd/Rocklin Rd	Signal	C	60.1	E	64.4	E	4.3
15	Pacific St/Dominguez Rd-Delmar Ave	Signal	C	32.1	C	35.4	D	3.3
16	Pacific St/Rocklin Rd	Signal	C	48.7	D	50.6	D	1.9
17	Granite Dr/Rocklin Rd	Signal	C	32.4	C	35.2	D	2.8
18	I-80 Westbound Ramps/Rocklin Rd	Signal	D	24.9	C	24.9	C	0.0
19	I-80 Eastbound Ramps/Rocklin Rd	Signal	D	25.3	C	25.3	C	0.0
20	Aguilar Rd/Rocklin Rd	Signal	C	8.6	A	8.7	A	0.1
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	C	0.1	A	0.1	A	0.0
22	Granite Dr/Dominguez Rd	TWSC	C	19.5	C	20.4	C	0.9
23	El Don Dr/Rocklin Rd	Signal	C	15.4	B	15.7	B	0.3
24	Sierra College Boulevard/Project Driveway	Signal	C	DNE		16.0	B	-
25	Brace Road/Project Driveway	TWSC	C	DNE		9.9	A	-
26	Sierra College Blvd/SR-193	AWSC	D	48.0	E	54.0	F	6.0
27	Sierra College Blvd/English Colony Way	TWSC	C	25.5	D	30.3	D	4.8
28	Sierra College Blvd/Delmar Avenue ²	TWSC	C	145.2	F	205.3	F	60.1
29	Taylor Rd/English Colony Way	AWSC	C	24.8	C	27.5	D	2.7
30	Taylor Rd/Penryn Road (North)	TWSC	C	10.9	B	11.0	B	0.1
31	Taylor Rd/Penryn Road (South)	TWSC	C	17.7	C	18.9	C	1.2
32	Taylor Rd/Del Oro High School North Lot	TWSC	C	19.5	C	20.5	C	1.0
33	Taylor Rd/Del Oro High School Drop-Off ¹	TWSC	C	42.3	E	48.2	E	5.9
34	Taylor Rd/Del Oro High School South Lot	TWSC	C	23.1	C	24.2	C	1.1
35	Taylor Rd/Rippey Road	TWSC	C	14.4	B	15.0	C	0.6
36	Taylor Rd/Webb Street	TWSC	C	8006.9	F	ERR³	F	-
37	Sierra College Boulevard/Project Driveway East	TWSC	C	DNE		11.1	B	-

Notes:

DNE = intersection does not exist under no project conditions; EB = eastbound; I-80 = Interstate 80; ID = identification number of study intersection; LOS = level of service; sec = seconds; AWSC: All-way stop control – The average intersection delay is reported; TWSC = two-way stop control = the delay reported reflects the critical movement; WB = westbound.

¹ An impact is significant in situations when the intersection is already operating at unacceptable LOS and the Project adds trips to the intersection exceeding 5% of the total traffic already at the intersection. At these locations, the project does not contribute 5% or more of the volumes.

² Intersection does not meet signal warrants for impacts condition, therefore per the Placer County guidelines, this intersection is not significantly impacted. Traffic signal warrants provided in Appendix J.

³ Due to the high volumes, HCM2010 was unable to report approach delay.

⁴ Timing was held constant between No Project and Project conditions. Volume increases at certain movements adds more weight to the average intersection delay calculation, lowering the overall intersection delay

Boldface type indicates intersections performing below acceptable LOS.

Source: Kittelson & Associates 2019

- Taylor Road & Penryn Road (South) (AM and PM)
- Taylor Road & Del Oro High School North Lot (AM)
- Taylor Road & Del Oro High School Drop Off (AM and MD)
- Taylor Road & Del Oro High School South Lot (AM)
- Taylor Road & Webb Street (AM, PM, and MD)

Based on the impact criteria defined earlier, the project would have a cumulatively considerable contribution to impacts at the following intersections:

- Sierra College Boulevard & Taylor Road (MD)
- Sierra College Boulevard & Granite Drive (PM and MD)
- Sierra College Boulevard & I-80 WB Ramps (PM and MD)
- Pacific Street & Dominguez Road/Delmar Avenue (MD)
- Granite Drive & Rocklin Road (MD)
- Sierra College Boulevard & SR-193 (PM and MD)
- Sierra College Boulevard & English Colony Way (PM and MD)
- Taylor Road & English Colony Way (MD)
- Taylor Road & Penryn Road (South) (AM)
- Taylor Road & Webb Street (MD)

Project Driveway Access Options 1B & 1C

Project Driveway Access Options 1B and 1C would affect Cumulative Short Term plus Project traffic volumes at study intersections 7, 8, 21, 24, 25, and 37 due to the driveway trip routing. All other study intersections would have the same Cumulative Short Term plus Project traffic volumes under Project Driveway Access Options 1B and 1C, as they would under Project Driveway Access Option 1A.

Figure 24 of the transportation impact analysis (Kittelson & Associates 2019) shows the Cumulative Short Term plus Project traffic condition during the weekday AM and PM peak hours for all three Project Driveway Access Options at those study intersections affected by the options. Figure 25 shows the Cumulative Short Term plus Project Alternative traffic condition during the weekend midday peak hour for all three Project Driveway Access Options at those study intersections affected by the options.

Alternative driveway configurations would affect operations at a limited number of study intersections. Table 4-8 shows the Cumulative Short Term and Plus Project delays and LOS for those affected intersections during weekday AM and PM peak hours. Table 4-9 shows the baseline Cumulative Short Term and Plus Project delays and LOS for the affected study intersections during the weekend midday peak hour. For Project Driveway Access Options 1B and 1C, Figure 24 of the transportation impact analysis (Kittelson & Associates 2019) shows the Cumulative Short Term plus Project traffic condition during the weekday AM and PM peak hours and Figure 25 of the transportation impact analysis (Kittelson & Associates 2019) shows the Cumulative Short Term plus Project traffic condition during the weekend midday peak hour. In addition to the intersections impacted by Project Driveway Access Option 1A that would also be significantly impacted by Project Driveway Access Options 1B and 1C, the following study intersection would be significantly impacted by the proposed project for Project Driveway Access Options 1B and 1C:

Weekday PM Peak Hour (Options 1B and 1C)

- 8 Sierra College Blvd/Granite Dr

Weekend Midday Peak Hour (Options 1B and 1C)

- 8 Sierra College Blvd/Granite Dr

The proposed project would contribute to an impact at the study locations listed above by increasing delay or dropping the LOS to below acceptable levels. The project's contribution would be cumulatively **considerable**, and mitigation is needed to improve the operating conditions. Table 4-10 presents the intersection mitigation measures under Cumulative Short Term plus Project Conditions for Options 1A, 1B, and 1C.

Table 4-8. Cumulative Short Term Plus Project - Intersection LOS Analysis, Weekday AM/PM Peak Hour – Project Driveway Access Options 1B & 1C

ID	Intersection	Traffic Control Type	Weekday AM					Weekday PM				
			Short Term		Plus Project		Change in Delay (sec)	Short Term		Plus Project		Change in Delay (sec)
			Delay (sec)	LOS	Delay (sec)	LOS		Delay (sec)	LOS	Delay (sec)	LOS	
Driveway Option 1B												
7	Sierra College Blvd/Brace Rd	Signal	10.7	B	15.0	B	4.3	18.3	B	40.5	D	22.2
8	Sierra College Blvd/Granite Dr	Signal	35.9	D	39.3	D	3.4	58.2	E	83.0	F	24.8
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.2	A	0.2	A	0.0	17.6	C	18.3	C	0.7
24	Sierra College Blvd/Project Driveway	Signal	DNE		6.6	A	-	DNE		13.3	B	-
25	Brace Road/Project Driveway	TWSC	DNE		0.0	A	-	DNE		10.1	B	-
37	Brace Road/Project Driveway East	TWSC	DNE					DNE				
Driveway Option 1C												
7	Sierra College Blvd/Brace Rd	Signal	10.7	B	14.1	B	3.4	18.3	B	16.9	B	-1.4
8	Sierra College Blvd/Granite Dr	Signal	35.9	D	39.3	D	3.4	58.2	E	83.0	F	24.8
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.2	A	0.2	A	0.0	17.6	C	18.2	C	0.6
24	Sierra College Blvd/Project Driveway	Signal	DNE		6.6	A	-	DNE		13.1	B	-
25	Brace Road/Project Driveway	TWSC	DNE		0.0	A	-	DNE		10.1	B	-
37	Brace Road/Project Driveway East	TWSC	DNE		10.4	B	-	DNE		11.2	B	-

Notes:
 AWSC: All-way stop control – The average intersection delay is reported.
 TWSC: Two-way stop control - delay reported reflects the critical movement.
 DNE: Intersection does not exist under no Project conditions.
Boldface type indicates intersections performing below acceptable LOS. Refer to Table 1 for applicable operating standards.
 Source: Kittelson & Associates, Inc. 2019

Table 4-9. Cumulative Short Term Plus Project - Intersection LOS Analysis, Weekend Midday Peak Hour – Project Driveway Access Options 1B & 1C

ID	Intersection	Traffic Control Type	Short Term		Plus Project		Change in Delay (sec)
			Delay (sec)	LOS	Delay (sec)	LOS	
Driveway Option 1B							
7	Sierra College Blvd/Brace Rd	Signal	15.1	B	31.1	C	16
8	Sierra College Blvd/Granite Dr	Signal	39.9	D	60.1	E	20.2
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.1	A	0.1	A	0.0
24	Sierra College Boulevard/Project Driveway	Signal	DNE		16.4	B	-
25	Brace Road/Project Driveway	TWSC	DNE		10.0	B	-
37	Brace Road/Project Driveway East	TWSC	DNE				
Driveway Option 1C							
7	Sierra College Blvd/Brace Rd	Signal	15.1	B	17.4	B	2.3
8	Sierra College Blvd/Granite Dr	Signal	39.9	D	60.1	E	20.2
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.1	A	0.1	A	0.0
24	Sierra College Boulevard/Project Driveway	Signal	DNE		15.7	B	-
25	Brace Road/Project Driveway	TWSC	DNE		9.9	A	-
37	Brace Road/Project Driveway East	TWSC	DNE		11.1	B	-

Notes:
 AWSC: All-way stop control – The average intersection delay is reported.
 TWSC: Two-way stop control - The delay reported reflects the critical movement.
 DNE: Intersection does not exist under no Project conditions.
Boldface type indicates intersections performing below acceptable LOS. Refer to Table 1 for applicable operating standards.
 Source: Kittelson & Associates, Inc. 2019.

Table 4-10. Cumulative Short Term plus Project – Mitigation Measures

ID	Intersection	Option(s) Requiring Mitigation	Jurisdiction	Impact Type	Current Traffic Control	Mitigation Measure	Specific Actions Recommended	Effects of Mitigation
2	Taylor Road & Horseshoe Bar Road	Options 1A, 1B, 1C	Loomis	Queue	Signal	TR MM 1: Modify signal timing	Optimize cycle length and splits.	Assigns green time to the highest demand movements allowing more vehicles to travel through the intersection
6	Sierra College Boulevard & Taylor Road	Options 1A, 1B, 1C	Loomis	LOS/Queue	Signal	TR MM 1: Modify signal timing TR MM 3: Modify signal phasing TR MM 7: Add storage to turn pockets	Provide eastbound right turn overlap phasing and optimize cycle length and splits. Modify median to provide additional storage for northbound and westbound left turn lanes (Project to provide fair share funding for modification to be implemented with the Town's Sierra College Boulevard roadway widening project between Taylor Road and Brace Road).	Provides right turn with green arrow allowing more vehicles to travel through the intersection. Creates longer turn pockets to hold more vehicles.
7	Sierra College Boulevard & Brace Road	Option 1B	Loomis	Queue	Signal	TR MM 1: Modify signal timing TR MM 4: Restripe Intersection	Restripe the westbound right lane to a shared westbound left-right lane. Optimize cycle length and splits.	Provides additional left turn lane, allowing more vehicles to turn left during each signal phase
8	Sierra College Boulevard & Granite Drive	Option 1A	Rocklin	LOS/Queue	Signal	TR MM 2: Provide signal coordination TR MM 4: Restripe Intersection	Restripe northbound right turn lane to shared through-right lane. Optimize cycle length with optimized splits based on current demand.	Provides additional through lane, allowing more vehicles to travel through the intersection. Provides additional left turn lane, allowing more vehicles to turn left during each signal phase
8	Sierra College Boulevard & Granite Drive	Options 1B, 1C	Rocklin	LOS/Queue	Signal	TR MM 2: Provide signal coordination TR MM 4: Restripe Intersection	Restripe the southbound right turn lane to a shared through-right lane. Restripe westbound through lane to left turn and restripe westbound right turn lane to a shared through-right lane. Provide eastbound right turn overlap phasing. Coordinate signal timing with I-80 ramps.	Provides additional through lane, allowing more vehicles to travel through the intersection. Provides additional left turn lane, allowing more vehicles to turn left during each signal phase.
9	Sierra College Boulevard & I-80 WB Ramps	Options 1A, 1B, 1C	Caltrans	LOS/Queue	Signal	TR MM 1: Modify signal timing TR MM 5: Add exclusive turn lanes	Provide an additional northbound left turn lane. Restripe westbound through- right lane to through lane and provide an additional westbound right turn lane. Optimize coordinated cycle.*	Provides additional left turn lane, allowing more northbound vehicles to turn left during each signal phase. New right- turn lane allows for separation of through and right turn traffic, increasing capacity
15	Pacific St & Dominguez Rd- Delmar Ave	Options 1A, 1B, 1C	Rocklin	LOS	Signal	TR MM 1: Modify signal timing	Optimize cycle length and splits.	Assigns green time to the highest demand movements allowing more vehicles to travel through the intersection

Table 4-10. Cumulative Short Term plus Project – Mitigation Measures

ID	Intersection	Option(s) Requiring Mitigation	Jurisdiction	Impact Type	Current Traffic Control	Mitigation Measure	Specific Actions Recommended	Effects of Mitigation
17	Granite Drive & Rocklin Road	Options 1A, 1B, 1C	Rocklin	LOS/Queue	Signal	TR MM 1: Modify signal timing	Optimize cycle length and splits.	Assigns green time to the highest demand movements allowing more vehicles to travel through the intersection
24	Sierra College Boulevard & Project Driveway	Option 1A	Loomis	Queue	Signal	TR MM 1: Modify signal timing	Provide cycle length optimized for queues with optimized splits based on current demand.	Assigns green time to the highest demand movements allowing more vehicles to travel through the intersection
26	Sierra College Boulevard & SR-193	Options 1A, 1B, 1C	Placer	LOS/Queue	TWSC	TR MM 6: Provide a traffic signal	Install a traffic signal. ¹	Provides protected time (stops major street) to facilitate minor street movements
27	Sierra College Boulevard & English	Options 1A, 1B, 1C	Placer	LOS	TWSC	TR MM 6: Provide a traffic signal	Install a traffic signal. ¹	Provides protected time (stops major street to facilitate minor street movements
29	Taylor Road & English Colony Way	Options 1A, 1B, 1C	Placer	LOS	TWSC	TR MM 6: Provide a traffic signal.	Install a traffic signal. ¹	Provides protected time (stops major street) to facilitate minor street movements
31	Taylor Road & Penryn Road (South)	Options 1A, 1B, 1C	Placer	LOS	TWSC	TR MM 6: Provide a traffic signal.	Install a traffic signal. ¹	Provides protected time (stops major street) to facilitate minor street movements
36	Taylor Road & Webb Street	Options 1A, 1B, 1C	Loomis	LOS	TWSC	TR MM 4: Restripe Intersection	Eliminate 3 parking spaces on the north side of Webb Street and provide a 50 foot westbound right turn pocket.	Provides right turn lane, allowing these vehicles to move through intersection without waiting behind left/through vehicles

Notes:

¹ Traffic signal warrants met for impacted condition and provided in Appendix J of the transportation impact analysis.

* Mitigation measure is considered infeasible to do limited right-of-way.

Source: Kittelson & Associates, Inc. 2019

Significance after Mitigation

To determine the effectiveness of mitigation an intersection analysis was conducted by applying the mitigation measures identified in Table 65 of the transportation impact analysis (Kittelson & Associates 2019). Table 4-11 presents the LOS results in comparison to no Project conditions. The mitigation measures would reduce the LOS impacts to less than cumulatively considerable levels at some of the impacted locations; however, **significant and cumulatively considerable** impacts remain as shown. Some impacts are deemed to be significant and unavoidable impacts because the respective intersections are located beyond the Town of Loomis (lead agency) jurisdiction.

Table 4-11. Cumulative Short Term - Intersection LOS Analysis, Mitigation Results

ID	Intersection	Jurisdiction	Scenario	Short Term		Mitigated		Change in Delay (sec)	Impact with mitigation?
				Delay (sec)	LOS	Delay (sec)	LOS		
Project Driveway Access Option 1A									
6	Sierra College Boulevard & Taylor Road	Loomis	MD	31.7	C	33.4	C	1.7	Less than cumulatively considerable
8	Sierra College Boulevard & Granite Drive	Rocklin	PM	58.2	E	36.7	D	-25.1	Significant and Cumulatively considerable*
			MD	39.9	D	42.0	d	2.1	Significant and Cumulatively considerable*
9	Sierra College Boulevard & I-80 Westbound Ramps	Caltrans	PM	66.5	E	75.1	E	6.6	Significant and Cumulatively considerable*
			MD	76.5	E	70.9	E	-5.6	Significant and Cumulatively considerable*
15	Pacific St & Dominguez Rd-Delmar Ave	Rocklin	MD	32.1	C	31.8	C	-0.3	Significant and Cumulatively considerable*
17	Granite Drive & Rocklin Road	Rocklin	MD	32.4	C	33.0	C	0.6	Significant and Cumulatively considerable*
26	Sierra College Boulevard & SR-193	Placer	PM	79.4	F	15.2	B	-64.2	Significant and Cumulatively considerable*
			MD	48.0	E	23.4	C	-24.6	Significant and Cumulatively considerable*
27	Sierra College Boulevard & English Colony Way	Placer	PM	78.8	F	8.4	A	-70.4	Significant and Cumulatively considerable*
			MD	25.5	D	5.0	A	-20.5	Significant and Cumulatively considerable*
29	Taylor Road & English Colony Way	Placer	MD	24.8	C	8.6	A	-16.2	Significant and Cumulatively considerable*
31	Taylor Road & Penryn Road (South)	Placer	AM	347.2	F	10.0	A	-337.2	Significant and Cumulatively considerable*
36	Taylor Road & Webb Street	Loomis	MD	8006.9	F	52.9 ¹	F	-7,954.0	Less than cumulatively considerable
				9141.2 ¹	F	52.9 ¹	F	-9,088.3	
Project Driveway Access Option 1B									
6	Sierra College Boulevard & Taylor Road	Loomis	MD	31.7	C	Same results as Option 1A			
8	Sierra College Boulevard & Granite Drive	Rocklin	PM	58.2	E	47.2	D	-11.0	Significant unavoidable*
			MD	39.9	D	31.6	C	-8.3	Significant unavoidable*
9		Caltrans	PM	66.5	E	54.6	D	-11.9	Significant unavoidable*

Table 4-11. Cumulative Short Term - Intersection LOS Analysis, Mitigation Results

ID	Intersection	Jurisdiction	Scenario	Short Term		Mitigated		Change in Delay (sec)	Impact with mitigation?
				Delay (sec)	LOS	Delay (sec)	LOS		
	Sierra College Boulevard & I-80 Westbound Ramps		MD	76.5	E	69.9	E	-6.6	Significant unavoidable*
15	Pacific St & Dominguez Rd-Delmar Ave	Rocklin	MD	32.1	C	Same results as Option 1A			
17	Granite Drive & Rocklin Road	Rocklin	MD	32.4	C	Same results as Option 1A			
26	Sierra College Boulevard & SR-193	Placer	PM	79.4	F	Same results as Option 1A			
			MD	48.0	E	Same results as Option 1A			
27	Sierra College Boulevard & English Colony Way	Placer	PM	78.8	F	Same results as Option 1A			
			MD	25.5	D	Same results as Option 1A			
29	Taylor Road & English Colony Way	Placer	MD	24.8	C	Same results as Option 1A			
31	Taylor Road & Penryn Road (South)	Placer	AM	347.2	F	Same results as Option 1A			
36	Taylor Road & Webb Street	Loomis	MD	8006.9	F	Same results as Option 1A			
				9141.2 ¹	F				
Project Driveway Access Option 1C									
6	Sierra College Boulevard & Taylor Road	Loomis	MD	31.7	C	Same results as Option 1A			
8	Sierra College Boulevard & Granite Drive	Rocklin	PM	58.2	E	Same results as Option 1B			
			MD	39.9	D	Same results as Option 1B			
9	Sierra College Boulevard & I-80 Westbound Ramps	Caltrans	PM	66.5	E	Same results as Option 1B			
			MD	76.5	E	Same results as Option 1B			
15	Pacific St & Dominguez Rd-Delmar Ave	Rocklin	MD	32.1	C	Same results as Option 1A			
17	Granite Drive & Rocklin Road	Rocklin	MD	32.4	C	Same results as Option 1A			
26	Sierra College Boulevard & SR-193	Placer	PM	79.4	F	Same results as Option 1A			
			MD	48.0	E	Same results as Option 1A			
27	Sierra College Boulevard & English Colony Way	Placer	PM	78.8	F	Same results as Option 1A			
			MD	25.5	D	Same results as Option 1A			
29	Taylor Road & English Colony Way	Placer	MD	24.8	C	Same results as Option 1A			
31	Taylor Road & Penryn Road (South)	Placer	AM	347.2	F	Same results as Option 1A			
36	Taylor Road & Webb Street	Loomis	MD	8006.9	F	Same results as Option 1A			

Notes:

*Though the mitigation measure improves the intersection operation to less than significant levels, the mitigation measures are outside of the lead agency jurisdiction's ability to determine feasibility and implement.

¹ Analysis run in HCS Software as the Synchro software was unable to assess the mitigation measure. The Short-Term Baseline condition was also analyzed in HCS to provide a comparison.

Source: Kittelson & Associates, Inc. 2019

IMPACT 4.3-9: Cumulative Impacts of Short-Term plus Project I-80 Mainline Operations. Adding project-generated traffic to cumulative short-term traffic would not cause the LOS on the I-80 mainline in the study area to degrade below the applicable thresholds. The project's contribution is **not cumulatively considerable**.

Cumulative Short-Term traffic volumes for the weekday a.m. and p.m. peak hours were added to project-generated traffic to arrive at the Short-Term plus Project total traffic volumes. Appendix E of the transportation impact analysis

(Kittelson & Associates 2019) includes the freeway mainline LOS worksheets. Table 4-12 through Table 4-14 outline the forecasted Short-Term and Cumulative Short-Term plus Project mainline volume, density, and associated LOS for each roadway segment, and apply to all Project Driveway Access Options. As shown, all study segments operate at acceptable LOS D or better regardless of the Project Driveway Access Option considered. Therefore, the project would not result in a cumulatively considerable contribution to a significant impact on the freeway mainline Cumulative Short-Term plus Project conditions. The Project would have a **less than cumulatively considerable impact** on I-80 mainline operations.

Table 4-12. Cumulative Short-Term—I-80 Mainline LOS Analysis, Weekday A.M. Peak Hour

ID	Segment	Direction	Cumulative Short-Term			Cumulative Short-Term plus Project			Change in Density
			Volume	Density*	LOS	Volume	Density*	LOS	
1	I-80 east of Sierra College Boulevard	EB	3,288	20.1	C	3,310	20.2	C	0.1
		WB	4,134	26.0	C	4,157	26.1	D	0.1
2	I-80 west of Sierra College Boulevard	EB	3,216	19.7	C	3,223	19.7	C	0.0
		WB	3,923	24.4	C	3,930	24.5	C	0.1

Notes: EB = eastbound; I-80 = Interstate 80; ID = identification number of study roadway segment; LOS = level of service; WB = westbound

* Density means passenger cars per mile per lane.

Source: Kittelson & Associates 2019

Table 4-13. Cumulative Short-Term—I-80 Mainline LOS Analysis, Weekday P.M. Peak Hour

ID	Segment	Direction	Cumulative Short-Term			Cumulative Short-Term plus Project			Change in Density
			Volume	Density*	LOS	Volume	Density*	LOS	
1	I-80 east of Sierra College Boulevard	EB	4,564	29.0	D	4,635	29.6	D	0.6
		WB	4,068	25.5	C	4,135	26.0	C	0.5
2	I-80 west of Sierra College Boulevard	EB	4,419	27.8	D	4,338	27.9	D	0.1
		WB	4,016	25.1	C	4,036	25.2	C	0.1

Notes: EB = eastbound; I-80 = Interstate 80; ID = identification number of study roadway segment; LOS = level of service; WB = westbound

* Density means passenger cars per mile per lane.

Source: Kittelson & Associates 2019

Table 4-14. Cumulative Short-Term—I-80 Mainline LOS Analysis, Weekday MD Peak Hour

ID	Segment	Direction	Cumulative Short-Term			Cumulative Short-Term plus Project			Change In Density
			Volume	Density*	LOS	Volume	Density*	LOS	
1	I-80 east of Sierra College Boulevard	EB	4,187	23.8	C	4,317	24.6	C	0.8
		WB	4,243	23.6	C	4,380	24.4	C	0.8
2	I-80 west of Sierra College Boulevard	EB	4,392	25.1	C	4,431	25.3	C	0.2
		WB	4,198	23.3	C	4,236	23.5	C	0.2

Notes: EB = eastbound; I-80 = Interstate 80; ID = identification number of study roadway segment; LOS = level of service; WB = westbound

* Density means passenger cars per mile per lane.

Source: Kittelson & Associates 2019

IMPACT 4.3-10: Cumulative Impacts of Long-Term plus Project Intersection Operations. *Adding project-generated traffic to cumulative long-term traffic would cause the LOS to degrade below the applicable thresholds and would result in the need for restriping, re-phasing, and optimization of the cycle length at study area intersections. The project's contributions to these impacts are cumulatively considerable.*

Project Driveway Access Option 1A

Figures 28 and 29 of the transportation impact analysis (Kittelson & Associates 2019) show the Cumulative Long-Term future without and plus Project traffic volumes for Project Driveway Access Option 1A during the weekday a.m. and p.m. peak hours and during the weekend midday peak hour, respectively. To determine the impact of proposed project traffic on the baseline roadway network, the project analysis assumed that study intersection signal timings would be unchanged from those under no project conditions.

Table 4-15 and Table 4-16 show the baseline Cumulative Long-Term No-Project and Plus Project delays and LOS for the study intersections during weekday a.m. and p.m. peak hours and during the weekend midday peak hour, respectively. Appendix B of the transportation impact analysis (Kittelson & Associates 2019) includes the LOS worksheets.

As shown in Tables 4-15 and 4-16, the following intersections operate at unacceptable LOS in the Cumulative Long Term Plus Project condition representing a **significant cumulative impact**:

- Taylor Road & King Road (AM and PM)
- Horseshoe Bar Road & I-80 Eastbound Ramp (AM, PM, and MD)
- Barton Road & Brace Road (MD)
- Sierra College Boulevard & Taylor Road (AM, PM, and MD)
- Sierra College Boulevard & Brace Road (PM)
- Sierra College Boulevard & Granite Drive (AM and PM)
- Sierra College Boulevard & Schriber Way (AM)
- Sierra College Boulevard & Bass Pro Drive/Dominguez Road (AM, PM, and MD)
- Sierra College Boulevard & Rocklin Road (AM, PM, and MD)
- Pacific Street & Dominguez Road/Delmar Avenue (AM, PM, and MD)
- Pacific Street & Rocklin Road (AM, PM, and MD)
- Granite Drive & Rocklin Road (AM, PM, and MD)
- I-80 Westbound Ramps & Rocklin Road (PM)
- I-80 Eastbound Ramps & Rocklin Road (AM)
- Granite Drive & Dominguez Road (AM, PM, and MD)
- El Don Drive & Rocklin Road (PM)
- Sierra College Boulevard & SR-193 (PM and MD)
- Sierra College Boulevard & English Colony Way (PM)
- Taylor Road & English Colony Way (AM and MD)
- Taylor Road & Del Oro High School North Lot (AM)
- Taylor Road & Del Oro High School Drop Off (AM and MD)
- Taylor Road & Del Oro High School South Lot (AM)
- Taylor Road & Rippey Road (AM)
- Taylor Road & Webb Street (AM and MD)

Based on the impact criteria defined earlier, the following intersections would be significantly impacted by the proposed project:

- Sierra College Boulevard & Taylor Road (MD)
- Sierra College Boulevard & Granite Drive (PM)
- Sierra College Boulevard & Bass Pro Drive/Dominguez Road (MD)
- Sierra College Boulevard & SR-193 (MD)
- Taylor Road & Webb Street (MD)

Table 4-15. Cumulative Conditions—Long-Term Traffic Conditions, Weekday A.M. and P.M. Peak Hours– Project Driveway Access Option 1A

ID	Intersection	Traffic Control Type	LOS Operating Goal	Weekday A.M.					Weekday P.M.				
				Cumulative Long-Term		Plus Project		Change in Delay (sec)	Cumulative Long-Term		Plus Project		Change in Delay (sec)
				Delay (sec)	LOS	Delay (sec)	LOS		Delay (sec)	LOS	Delay (sec)	LOS	
1	Taylor Road/King Road	Signal	D	85.8	F	86.6	F	0.8	72.8	E	75.6	E	2.8
2	Taylor Road/Horseshoe Bar Road	Signal	D	28.7	C	29.4	C	0.7	45.4	D	47.7	D	2.3
3	Horseshoe Bar Road/ I-80 WB ramp	Signal	D	13.1	B	13.1	B	0.0	15.5	B	15.5	B	0.0
4	Horseshoe Bar Road/ I-80 EB ramp	TWSC	D	213.9	F	213.9	F	0.0	978.6	F	978.6	F	0.0
5	Barton Road/Brace Road	TWSC	C	15.8	C	16.0	C	0.2	23.6	C	24.4	C	0.8
6	Sierra College Boulevard/Taylor Road	Signal	C	67.3	E	69.0	E	1.7	51.9	D	55.9	E	4.0
7	Sierra College Boulevard/Brace Road	Signal	D	12.9	B	17.1	B	4.2	137.4	F	76.5	F	-60.9
8	Sierra College Boulevard/Granite Drive	Signal	C	36.4	D	37.6	D	1.2	68.5	E	118.0	F	49.5
9	Sierra College Boulevard/I-80 WB ramps	Signal	E	37.1	D	37.4	D	0.3	46.1	D	70.0	E	23.9
10	Sierra College Boulevard/I-80 EB ramps	Signal	E	39.7	D	47.5	D	7.8	48.6	D	52.0	D	3.4
11	Sierra College Boulevard/Schriber Way	Signal	C	37.6	D	38.6	D	1.0	16.1	B	16.2	B	0.1
12	Sierra College Boulevard/Bass Pro Drive–Dominguez Road	Signal	C	122.3	F	123.4	F	1.1	102.4	F	106.9	F	4.5
13	Sierra College Boulevard/Stadium driveway	Signal	C	26.7	C	27.1	C	0.4	19.3	B	20.5	C	1.2
14	Sierra College Boulevard/Rocklin Road	Signal	C	66.1	E	66.7	E	0.6	172.8	F	175.7	F	2.9
15	Pacific Street/Dominguez Road–Delmar Avenue	Signal	C	444.3	F	445.7	F	1.4	755.8	F	751.2	F	-4.6
16	Pacific Street/Rocklin Road	Signal	C	129.7	F	129.9	F	0.2	104.9	F	105.9	F	1.0
17	Granite Drive/Rocklin Road	Signal	C	37.1	D	37.7	D	0.6	43.9	D	45.7	D	1.8
18	I-80 WB ramps/Rocklin Road	Signal	D	36.3	D	36.3	D	0.0	57.7	E	57.7	E	0.0
19	I-80 EB ramps/Rocklin Road	Signal	D	66.3	E	66.3	E	0.0	45.8	D	45.8	D	0.0
20	Aguilar Road/Rocklin Road	Signal	C	19.5	B	19.6	B	0.1	13.8	B	13.8	B	0.0
21	Sierra College Boulevard/driveway south of Brace Road	TWSC	C	1.2	A	1.2	A	0.0	23.5	C	24.5	C	1.1
22	Granite Drive/Dominguez Road	Signal	C	36.7	D	36.7	D	0.0	54.4	D	55.3	E	0.9
23	El Don Drive/Rocklin Road	Signal	C	33.2	C	33.3	C	0.1	59.6	E	59.6	E	0.0
24	Sierra College Boulevard/Project Driveway	Signal	C	ERR¹	F	17.7	B	-	6299.3	F	31.7	C	-6197.6

Table 4-15. Cumulative Conditions—Long-Term Traffic Conditions, Weekday A.M. and P.M. Peak Hours– Project Driveway Access Option 1A

ID	Intersection	Traffic Control Type	LOS Operating Goal	Weekday A.M.					Weekday P.M.				
				Cumulative Long-Term		Plus Project		Change in Delay (sec)	Cumulative Long-Term		Plus Project		Change in Delay (sec)
				Delay (sec)	LOS	Delay (sec)	LOS		Delay (sec)	LOS	Delay (sec)	LOS	
25	Brace Road/Project Driveway	TWSC	DNE	0.0	A	-	DNE	DNE	13.9	B	-		
26	Sierra College Blvd/SR-193	Signal	D	46.6	D	47.1	D	0.5	133.1	F	135.5	F	2.4
27	Sierra College Blvd/ English Colony Way	Signal	C	15.8	B	16.0	B	0.2	57.5	E	59.0	E	1.5
28	Sierra College Blvd/ Delmar Avenue2	Signal	C	14.5	B	14.6	B	0.1	8.0	A	8.6	A	0.6
29	Taylor Rd/English Colony Way	Signal	C	40.7	D	41.1	D	0.4	30.1	C	30.2	C	0.1
30	Taylor Rd/Penryn Road (North)	TWSC	C	23.3	C	23.4	C	0.1	10.6	B	10.7	B	0.1
31	Taylor Rd/Penryn Road (South)	Signal	C	19.1	B	19.2	B	0.1	22.6	C	22.8	C	0.2
32	Taylor Rd/Del Oro High School North Lot1	TWSC	C	765.0	F	765.0	F	0.0	14.7	B	15.0	C	0.3
33	Taylor Rd/Del Oro High School Drop-Off1	TWSC	C	1584.5	F	1610.3	F	25.8	15.8	C	16.1	C	0.3
34	Taylor Rd/Del Oro High School South Lot1	TWSC	C	187.1	F	187.2	F	0.1	17.3	C	17.6	C	0.3
35	Taylor Rd/Rippey Road	TWSC	C	25.9	D	26.2	D	0.3	11.2	B	11.3	B	0.1
36	Taylor Rd/ Webb Street	TWSC	C	4103.8	F	4103.8	F	0.0	21.0	C	21.9	C	0.9
37	Brace Road/Project Driveway East	TWSC	C	DNE		10.9	B	-	DNE		14.6	B	-

Notes:

DNE = intersection does not exist under no project conditions; EB = eastbound; I-80= Interstate 80; ID = identification number of study intersection; LOS = level of service; sec = seconds; TWSC = two-way stop control—delay reported reflects the critical movement; WB = westbound

Boldface type indicates intersections performing below acceptable LOS.

Source: Kittelson & Associates 2019

Table 4-16. Cumulative Conditions—Long-Term Traffic Condition, Weekend Midday Peak— Project Driveway Access Option 1A

ID	Intersection	Traffic Control Type	LOS Operating Goal	Cumulative Long-Term		Plus Project		Change in Delay (sec)
				Delay (sec)	LOS	Delay (sec)	LOS	
1	Taylor Rd/King Rd	Signal	D	29.5	C	32.9	C	3.4
2	Taylor Rd/Horseshoe Bar Rd	Signal	D	24.7	C	27.2	C	2.5
3	Horseshoe Bar Rd/I-80 Westbound Ramp	Signal	D	14.6	B	14.6	B	0.0
4	Horseshoe Bar Rd/I-80 Eastbound Ramp ¹	TWSC	D	621.0	F	621.0	F	0.0
5	Barton Rd/Brace Rd1	TWSC	C	43.1	E	48.4	E	5.3
6	Sierra College Blvd/Taylor Rd	Signal	C	33.2	C	43.4	D	10.2
7	Sierra College Blvd/Brace Rd	Signal	D	20.3	C	20.1	C	-0.2
8	Sierra College Blvd/Granite Dr	Signal	C	28.3	C	33.9	C	5.6
9	Sierra College Blvd/I-80 WB Ramps	Signal	E	42.2	D	62.2	E	20.0
10	Sierra College Blvd/I-80 EB Ramps	Signal	E	36.4	D	39.0	D	2.6
11	Sierra College Blvd/Schriber Way	Signal	C	16.0	B	16.1	B	0.1
12	Sierra College Blvd/Bass Pro Dr-Dominguez Rd	Signal	C	74.0	E	79.2	E	5.2
13	Sierra College Blvd/Stadium Dwy	Signal	C	7.4	A	7.7	A	0.3
14	Sierra College Blvd/Rocklin Rd	Signal	C	50.9	D	54.2	D	3.3
15	Pacific St/Dominguez Rd-Delmar Ave	Signal	C	56.4	E	60.4	E	4.0
16	Pacific St/Rocklin Rd	Signal	C	35.3	D	36.8	D	1.5
17	Granite Dr/Rocklin Rd	Signal	C	35.3	D	39.5	D	4.2
18	I-80 Westbound Ramps/Rocklin Rd	Signal	D	23.2	C	23.2	C	0.0
19	I-80 Eastbound Ramps/Rocklin Rd	Signal	D	18.8	B	18.8	B	0.0
20	Aguilar Rd/Rocklin Rd	Signal	C	11.1	B	11.2	B	0.1
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	C	0.1	A	0.1	A	0.0
22	Granite Dr/Dominguez Rd	Signal	C	73.9	E	76.9	E	3.0
23	El Don Dr/Rocklin Rd	Signal	C	12.6	B	12.9	B	0.3
24	Sierra College Boulevard/Project Driveway	Signal	C	898.5	F	29.8	C	-868.7
25	Brace Road/Project Driveway	TWSC	C		DNE	12.0	B	-
26	Sierra College Blvd/SR-193	Signal	D	186.1	F	192.6	F	6.5
27	Sierra College Blvd/English Colony Way	Signal	C	18.9	B	19.7	B	0.8
28	Sierra College Blvd/Delmar Avenue ²	Signal	C	3.3	A	3.4	A	0.1
29	Taylor Rd/English Colony Way	Signal	C	48.8	D	50.0	D	1.2
30	Taylor Rd/Penryn Road (North)	TWSC	C	11.3	B	11.4	B	0.1
31	Taylor Rd/Penryn Road (South)	Signal	C	17.1	B	17.0	B	-0.1
32	Taylor Rd/Del Oro High School North Lot	TWSC	C	20.7	C	22.1	C	1.4
33	Taylor Rd/Del Oro High School Drop-Off ¹	TWSC	C	29.5	D	32.6	D	3.1
34	Taylor Rd/Del Oro High School South Lot	TWSC	C	20.8	C	21.8	C	1.0
35	Taylor Rd/Rippey Road	TWSC	C	11.2	B	11.5	B	0.3
36	Taylor Rd/Webb Street	TWSC	C	435.6	F	721.9	F	286.3
37	Brace Road/Project Driveway East	TWSC	C		DNE	12.9	B	-

Notes: DNE = intersection does not exist under no project conditions; EB = eastbound; I-80 = Interstate 80; ID = identification number of study intersection; LOS = level of service; sec = seconds; TWSC = two-way stop control—the delay reported reflects the critical movement; WB = westbound

Boldface type indicates intersections performing below acceptable LOS.

¹ An impact is significant in situations when the intersection is already operating at unacceptable LOS and the Project adds trips to the intersection exceeding 5% of the total traffic already at the intersection. At these locations, the project does not contribute 5% or more of the volumes.

Source: Kittelson & Associates 2019

The proposed project would contribute to an impact at the study locations listed above, by increasing delay or dropping the LOS to below acceptable levels. The proposed project's contribution to traffic volumes at these locations would be **cumulatively considerable** and mitigation is needed to improve the operating conditions.

Project Driveway Access Options 1B & 1C

Project Driveway Access Options 1B and 1C would affect Cumulative Short Term plus Project traffic volumes at study intersections 7, 8, 21, 24, 25, and 37 due to the driveway routing. All other study intersections would have the same Cumulative Short Term plus Project traffic volumes under Project Driveway Access Options 1B and 1C as they would under Project Driveway Access Option 1A. Figures 30 and 31 of the transportation impact analysis (Kittelson & Associates 2019) show the Cumulative Long-Term future without and plus Project traffic volumes for Project Driveway Access Option 1B & 1C during the weekday a.m. and p.m. peak hours and during the weekend midday peak hour, respectively. To determine the impact of proposed project traffic on the baseline roadway network, the project analysis assumed that study intersection signal timings would be unchanged from those under no project conditions.

Table 4-17 shows the baseline Cumulative Long Term and Plus Project delays and LOS for these affected study intersections during the weekday AM and PM peak hours. Table 4-18 shows the baseline Cumulative Long Term and Plus Project delays and LOS for the study intersections during the weekend midday peak hour. As shown in the two tables, none of the six affected study intersections affected by site trip routing to the Project driveways are significantly impacted by the proposed Project for Project Driveway Access Options 1B and 1C.

Table 4-17. Cumulative Long Term Plus Project - Intersection LOS Analysis, Weekday AM/PM Peak Hour – Project Driveway Access Options 1B & 1C

ID	Intersection	Traffic Control Type	Weekday AM					Weekday PM				
			Long Term		Plus Project		Change in Delay (sec)	Long Term		Plus Project		Change in Delay (sec)
			Delay (sec)	LOS	Delay (sec)	LOS		Delay (sec)	LOS	Delay (sec)	LOS	
Driveway Option 1B												
7	Sierra College Blvd/Brace Rd	Signal	12.9	B	48.0	D	35.1	137.4	F	87.9	F	-49.5
8	Sierra College Blvd/Granite Dr	Signal	36.4	D	38.8	D	2.4	68.5	E	55.3	E	-13.2
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	1.2	A	1.2	A	0.0	23.5	C	24.6	C	1.1
24	Sierra College Blvd/Project Driveway	Signal	ERR¹	F	17.4	B	-	6299.3	F	31.3	C	-6,198.0
25	Brace Road/Project Driveway	TWSC	DNE		0.0	A	-	DNE		13.9	B	-
37	Brace Road/Project Driveway East	TWSC	DNE					DNE				
Driveway Option 1C												
7	Sierra College Blvd/Brace Rd	Signal	12.9	B	17.1	B	4.2	137.4	F	76.5	F	-60.9
8	Sierra College Blvd/Granite Dr	Signal	36.4	D	38.8	D	2.4	68.5	E	55.3	E	-13.2
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	1.2	A	1.2	A	0.0	23.5	C	24.5	C	1.0
24	Sierra College Blvd/Project Driveway	Signal	ERR¹	F	17.3	B	-	6299.3	F	30.6	C	-6,225.7
25	Brace Road/Project Driveway	TWSC	DNE		0.0	A	-	DNE		13.9	B	-
37	Brace Road/Project Driveway East	TWSC	DNE		10.9	B	-	DNE		14.6	B	-

Notes:

AWSC: All-way stop control – The average intersection delay is reported.

TWSC: Two-way stop control - delay reported reflects the critical movement.

DNE: Intersection does not exist under no Project conditions.

Boldface type indicates intersections performing below acceptable LOS. Refer to Table 1 for applicable operating standards.

¹ Due to the high volumes, HCM2010 was unable to report approach delay

Source: Kittelson & Associates, Inc. 2019

Table 4-18. Cumulative Long Term Plus Project - Intersection LOS Analysis, Weekend Midday Peak Hour – Project Driveway Access Options 1B & 1C

ID	Intersection	Traffic Control Type	Long Term		Plus Project		Change in Delay (sec)
			Delay (sec)	LOS	Delay (sec)	LOS	
Driveway Option 1B							
7	Sierra College Blvd/Brace Rd	Signal	20.3	C	29.4	C	9.1
8	Sierra College Blvd/Granite Dr	Signal	28.3	C	29.5	C	1.2
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.1	A	0.1	A	0.0
24	Sierra College Boulevard/Project Driveway	Signal	898.5	F	29.6	C	-868.9
25	Brace Road/Project Driveway	TWSC	DNE		12.0	B	-
37	Brace Road/Project Driveway East	TWSC	DNE		DNE		-
Driveway Option 1C							
7	Sierra College Blvd/Brace Rd	Signal	20.3	C	19.8	B	-0.5
8	Sierra College Blvd/Granite Dr	Signal	28.3	C	29.5	C	1.2
21	Sierra College Blvd/Dwy South of Brace Rd	TWSC	0.1	A	0.1	A	0.0
24	Sierra College Boulevard/Project Driveway	Signal	898.5	F	28.3	C	-870.2
25	Brace Road/Project Driveway	TWSC	DNE		12.0	B	-
37	Brace Road/Project Driveway East	TWSC	DNE		12.9	B	-

Notes:

AWSC: All-way stop control – The average intersection delay is reported.

TWSC: Two-way stop control - The delay reported reflects the critical movement.

DNE: Intersection does not exist under no Project conditions.

Boldface type indicates intersections performing below acceptable LOS. Refer to Table 1 for applicable operating standards.

Source: Kittelson & Associates, Inc. 2019

The proposed project would contribute to an impact at the study locations listed above, by increasing delay or dropping the LOS to below acceptable levels. The proposed project’s contribution to traffic volumes at these locations would be **cumulatively considerable** and mitigation is needed to improve the operating conditions. The following mitigation measures were evaluated to reduce the Project impacts to less than cumulatively considerable levels. Initial evaluation of potential timing and phasing mitigation measures were not sufficient to address impacts. Geometric mitigation measures such as second through lanes and dual left turn lanes would be required to reduce impacts to less than cumulatively considerable levels.

Table 4-19 presents the intersection mitigation measures under Cumulative Long Term plus Project Conditions.

Table 4-19. Cumulative Long Term plus Project – Mitigation Measures

ID	Intersection	Project Option(s) Requiring Mitigation	Jurisdiction	Impact Type	Current Traffic Control	Mitigation Measure	Specific Actions Recommended	Effects of Mitigation
1	Taylor Road& King Road	Options 1A, 1B, 1C	Loomis	Queue	Signal	TR MM 1: Modify signal timing	Optimize cycle length and splits.	Assigns green time to the highest demand movements allowing more vehicles to travel through the intersection
2	Taylor Road& Horseshoe Bar Road	Options 1A, 1B, 1C	Loomis	Queue	Signal	TR MM 1: Modify signal timing	Optimize cycle length and splits.	Assigns green time to the highest demand movements allowing more vehicles to travel through the intersection
6	Sierra College Boulevard & Taylor Rd	Options 1A, 1B, 1C	Loomis	LOS/ Queue	Signal	TR MM 1: Modify signal timing TR MM 3: Modify signal phasing TR MM 7: Add storage to turn pockets	Provide eastbound right turn overlap phasing and optimize cycle length and splits. Modify median to provide additional storage for northbound and westbound left turn lanes (Project to provide fair-share funding for modification to be implemented with the Town's Sierra College Boulevard roadway widening project between Taylor Road and Brace Road)	Provides right turn with green arrow allowing more vehicles to travel through the intersection. Creates longer turn pockets to hold more vehicles.
7	Sierra College Boulevard & Brace Road	Option 1B	Loomis	Queue	Signal	TR MM 1: Modify signal timing TR MM 4: Restripe Intersection	Restripe the westbound right lane to a shared westbound left-right lane. Optimize cycle length and splits.	Provides additional left turn lane, allowing more vehicles to turn left during each signal phase
8	Sierra College Boulevard & Granite Drive	Option 1A	Rocklin	LOS/ Queue	Signal	TR MM 2: Provide signal coordination TR MM 4: Restripe Intersection	Restripe northbound right turn lane to a shared through-right lane. Restripe eastbound right turn to shared through-right lane, restripe eastbound through lane to second left turn lane. Coordinate signal timing with I-80 ramps.	Provides additional through lane, allowing more vehicles to travel through the intersection. Provides additional left turn lane, allowing more vehicles to turn left during each signal phase
8	Sierra College Boulevard & Granite Drive	Options 1B, 1C	Rocklin	Queue	Signal	TR MM 2: Provide signal coordination TR MM 4: Restripe Intersection	Restripe westbound through lane to left turn and restripe westbound right turn lane to a shared through-right lane. Provide eastbound right turn overlap phasing. Optimize cycle length and splits. Coordinate signal timing with I-80 ramps.	Provides additional left turn lane, allowing more vehicles to turn left during each signal phase
9	Sierra College Boulevard & I-80 WB Ramps	Option 1A	Caltrans	Queue	Signal	TR MM 1: Modify signal timing TR MM 5: Add exclusive turn lanes.	Provide an additional northbound left turn lane. Optimize coordinated cycle lengths.*	Provides additional left turn lane, allowing more vehicles to turn left during each signal phase
9	Sierra College Boulevard & I-80 WB Ramps	Option 1B, 1C	Caltrans	Queue	Signal	TR MM 1: Modify signal timing; TR MM 5: Add exclusive turn lanes.	Provide an additional northbound left turn lane. Optimize coordinated cycle lengths.	Provides additional left turn lane, allowing more vehicles to turn left during each signal phase

Table 4-19. Cumulative Long Term plus Project – Mitigation Measures

ID	Intersection	Project Option(s) Requiring Mitigation	Jurisdiction	Impact Type	Current Traffic Control	Mitigation Measure	Specific Actions Recommended	Effects of Mitigation
12	Sierra College Boulevard/ Bass Pro Dr- Dominguez Road	Options 1B, 1C	Rocklin	LOS	Signal	TR MM 1: Modify signal timing	Optimize cycle length and splits.	Assigns green time to the highest demand movements allowing more vehicles to travel through the intersection
17	Granite Drive & Rocklin Road	Options 1A, 1B, 1C	Rocklin	Queue	Signal	TR MM 1: Modify signal timing	Optimize cycle length and splits.	Assigns green time to the highest demand movements allowing more vehicles to travel through the intersection
24	Sierra College Boulevard & Project Dwy	Options 1A	Loomis	Queue	Signal	TR MM 2: Provide signal coordination	Coordinate signal timing with Granite Drive and I-80 ramps.	Provides better progression through corridor
24	Sierra College Boulevard & Project Dwy	Options 1B, 1C	Loomis	Queue	Signal	TR MM 7: Add storage to turn pockets	Modify median to provide additional storage for southbound left turn lane (Project to implement with Sierra College Boulevard roadway widening along Project frontage).	Creates longer turn pockets to hold more vehicles
26	Sierra College Boulevard & SR-193	Option 1A	Placer	LOS	Signal	TR MM 1: Modify signal timing TR MM 5: Add exclusive turn lanes	Provide an additional northbound left turn lane and optimize cycle lengths and splits.	Provides additional left turn lane, allowing more vehicles to turn left during each signal phase
36	Taylor Road & Webb Street	Options 1A, 1B, 1C	Loomis	LOS	TWSC	TR MM 4: Restripe Intersection	Eliminate 3 parking spaces on the north side of Webb Street and provide a 50-foot westbound right turn pocket.	Provides right turn lane, allowing these vehicles to move through intersection without waiting behind left/through vehicles

Notes: * Though the mitigation measure improves the intersection operation to less than significant levels, the mitigation measures are outside of the lead agency jurisdiction's ability to determine feasibility and implement.

Queuing analysis results at intersection impacted by changes at Sierra College Boulevard & Granite Drive intersection to the north that impact coordinated traffic signal timing and thus impact queuing.

Source: Kittelson & Associates, Inc. 2019

Significance after Mitigation

The proposed mitigation measures were applied to the study intersections to evaluate LOS and queuing effects. Table 4-20 presents the LOS results in comparison to no Project conditions. The mitigation measures would reduce the LOS impacts to less than cumulatively considerable levels at some of the impacted locations; however, significant and unavoidable impacts remain, as shown. Some impacts are deemed to be **significant and unavoidable** impacts because the respective intersections are located beyond the Town of Loomis (lead agency) jurisdiction.

Table 4-20. Cumulative Long Term - Intersection LOS Analysis, Mitigation Results

ID	Intersection	Jurisdiction	Scenario	Long Term		Mitigated		Change in Delay (sec)	Impact with mitigation?
				Delay (sec)	LOS	Delay (sec)	LOS		
Project Driveway Access Option 1A									
6	Sierra College Boulevard & Taylor Rd	Loomis	MD	33.2	C	35.0	C	1.8	Less than significant
8	Sierra College Boulevard & Granite Drive	Rocklin	PM	68.5	E	57.8	E	-10.7	Significant unavoidable*
12	Sierra College Boulevard/ Bass Pro Dr- Dominguez Road	Rocklin	MD	74.0	E	76.5	E	2.5	Significant unavoidable*
26	Sierra College Boulevard & SR-193	Placer	MD	186.1	F	71.1	E	-115.0	Significant unavoidable*
36	Taylor Road & Webb Street	Loomis	MD	435.6	F	428.9	F	-6.7	Less than significant
Project Driveway Access Option 1B									
6	Sierra College Boulevard & Taylor Rd	Loomis	MD	33.2	C	Same results as Option 1A			
12	Sierra College Boulevard/ Bass Pro Dr- Dominguez Road	Rocklin	MD	74.0	E	Same results as Option 1A			
26	Sierra College Boulevard & SR-193	Placer	MD	186.1	F	Same results as Option 1A			
36	Taylor Road & Webb Street	Loomis	MD	435.6	F	Same results as Option 1A			
Project Driveway Access Option 1C									
6	Sierra College Boulevard & Taylor Rd	Loomis	MD	33.2	C	Same results as Option 1A			
12	Sierra College Boulevard/ Bass Pro Dr- Dominguez Road	Rocklin	MD	74.0	E	Same results as Option 1A			
26	Sierra College Boulevard & SR-193	Placer	MD	186.1	F	Same results as Option 1A			
36	Taylor Road & Webb Street	Loomis	MD	435.6	F	Same results as Option 1A			

Notes: I-80 = Interstate 80; ID = identification number of study intersection; LOS = level of service; sec = seconds.

* Though the mitigation measure improves the intersection operation to less than significant levels, the mitigation measures are outside of the lead agency jurisdiction's ability to determine feasibility and implement.

Source: Kittelson & Associates 2019

IMPACT 4.3-11: Cumulative Impacts of Long-Term plus Project I-80 Mainline Operations. Adding project-generated traffic to cumulative long-term traffic would not cause the LOS on the I-80 mainline in the study area to degrade below acceptable levels of service except for I-80 east and west of Sierra College Boulevard during the p.m. peak hour. These two freeway segments operate at LOS E in the future without project condition. However, because the baseline measure of effectiveness (MOE) of LOS E is maintained in the future with project condition, the project's contribution under the long term plus project condition is not cumulatively considerable. The impact would be **less than cumulatively considerable**.

Cumulative long-term traffic volumes for the weekday a.m. and p.m. peak hours were added to the project-generated traffic to arrive at the Long-Term Cumulative plus Project traffic volumes. Appendix E of the transportation impact analysis (Kittelson & Associates 2019) includes the freeway mainline LOS worksheets. Tables 4-21 through 4-23 outline mainline volume, density, and associated LOS for the study segments in the Cumulative Long-Term and Cumulative Long-Term plus Project conditions. As shown, all study segments would operate at acceptable LOS D or better with project traffic for all Project Driveway Access Options considered except for I-80 east of Sierra College Boulevard and I-80 west of Sierra College Boulevard. However, Caltrans' baseline measure of effectiveness (MOE) of LOS E is maintained, so the project contribution to the freeway mainline would not significantly affect operating conditions in the cumulative long term plus project condition. Therefore, the impact on the freeway mainline under Cumulative Long-Term plus Project conditions would be **less than cumulatively considerable**.

Table 4-21. Cumulative Long-Term—I-80 Mainline LOS Analysis, Weekday A.M. Peak Hour

ID	Segment	Direction	Long Term			Long Term Plus Project			Change in Density
			Volume	Density*	LOS	Volume	Density*	LOS	
1	I-80 east of Sierra College Boulevard	EB	4,780	30.09	D	4,802	31.1	D	0.2
		WB	4,700	30.7	D	4,723	30.9	D	0.2
2	I-80 west of Sierra College Boulevard	EB	5,000	33.0	D	5,007	33.1	D	0.1
		WB	4,290	27.1	D	4,267	27.2	D	0.1

Notes:

EB = eastbound; I-80 = Interstate 80; ID = identification number of study segment; LOS = level of service; WB = westbound * Density means passenger cars per mile per lane.

Source: Kittelson & Associates 2019

Table 4-22. Cumulative Long-Term—I-80 Mainline LOS Analysis, Weekday P.M. Peak Hour

ID	Segment	Direction	Long Term			Long Term Plus Project			Change in Density
			Volume	Density*	LOS	Volume	Density*	LOS	
1	I-80 east of Sierra College Boulevard	EB	5,060	30.9	D	5,131	31.5	D	0.6
		WB	5,440	35.8	E	5,507	36.6	E	0.8
2	I-80 west of Sierra College Boulevard	EB	4,440	26.1	D	4,459	26.2	D	0.1
		WB	5,50	37.1	E	5,570	37.3	E	0.2

Notes:

EB = eastbound; I-80 = Interstate 80; ID = identification number of study segment; LOS = level of service; WB = westbound

* Density means passenger cars per mile per lane.

Source: Kittelson & Associates, Inc. 2019

Table 4-23. Cumulative Long-Term—I-80 Mainline LOS Analysis, Weekend Midday Peak Hour

ID	Segment	Direction	Long Term			Long Term Plus Project			Change in Density
			Volume	Density*	LOS	Volume	Density*	LOS	
1	I-80 east of Sierra College Boulevard	EB	5,340	32.4	D	5,470	33.7	D	1.3
		WB	5,030	28.9	D	5,167	30.0	D	1.1
2	I-80 west of Sierra College Boulevard	EB	5,350	32.5	D	5,389	32.9	D	0.4
		WB	5,050	29.0	D	5,088	29.3	D	0.3

Notes:

EB = eastbound; I-80 = Interstate 80; ID = identification number of study segment; LOS = level of service; WB = westbound

* Density means passenger cars per mile per lane.

Source: Kittelson & Associates 2019

IMPACT 4.3-12: Potential for Creation of Substantial Traffic-Related Hazards under Cumulative Short-Term plus Project Conditions. *The proposed Costco Wholesale warehouse trips would increase queues at study area intersections in the cumulative short-term condition, resulting in the potential for conflicting movements to cause a hazardous traffic condition. Improvements needed in the cumulative short-term plus project condition would include re-phasing and optimization of cycle length at study area intersections. The impact would be **cumulatively considerable**.*

Appendix C of the transportation impact analysis (Kittelson & Associates 2019) includes the queuing worksheets for the weekday a.m., p.m., and weekend midday peak hours.

Project Driveway Access Option 1A

As shown, forecast Cumulative Short-Term plus Project 95th percentile queues are projected to extend beyond the available storage lengths at the following intersections.

- Taylor Road & King Road (AM, PM, and MD)
- Taylor Road & Horseshoe Bar Road (AM, PM, and MD)
- Horseshoe Bar Road & I-80 Westbound Ramp (AM, PM, and MD)
- Sierra College Boulevard & Taylor Road (AM, PM, and MD)
- Sierra College Boulevard & Brace Road (PM and MD)
- Sierra College Boulevard & Granite Drive (AM, PM, and MD)
- Sierra College Boulevard & I-80 WB Ramps (AM, PM and MD)
- Sierra College Boulevard & I-80 EB Ramps (PM and MD)
- Sierra College Boulevard & Schriber Way (AM, PM, and MD)
- Sierra College Boulevard & Rocklin Road (AM, PM, and MD)
- Pacific Street & Rocklin Road (AM, PM, and MD)
- Granite Drive & Rocklin Road (AM, PM, and MD)
- I-80 Westbound Ramps & Rocklin Road (PM and MD)
- I-80 Eastbound Ramps & Rocklin Road (AM, PM, and MD)
- Aguilar Road & Rocklin Road (AM)
- El Don Drive & Rocklin Road (AM)
- Sierra College Boulevard & Project Driveway (MD)
- Sierra College Boulevard & SR-193 (MD)
- Taylor Road & English Colony Way (AM and MD)
- Taylor Road & Del Oro High School Drop Off (AM)
- Taylor Road & Del Oro High School South Lot (AM)

In addition, the queues reported at the above locations would affect operations at the upstream locations, as shown:

- The northbound through at Sierra College Boulevard & Taylor Road would affect operations at Sierra College Boulevard & Brace Road (PM)
- The northbound left-turn at Sierra College Boulevard & Granite Drive would affect operations at Sierra College Boulevard & I-80 WB Ramps (PM and MD)
- The northbound through at Sierra College Boulevard & Granite Drive would affect operations at Sierra College Boulevard & I-80 WB Ramps (PM and MD)
- The southbound through at Sierra College Boulevard & I-80 WB Ramps would affect operations at Sierra College Boulevard & Granite Drive (AM, PM and MD)
- The southbound through at Sierra College Boulevard & Schriber Way would affect operations at Sierra College Boulevard & I-80 EB Ramps (AM, PM, and MD)
- The westbound left at I-80 Westbound Ramps & Rocklin Road would affect operations at I-80 Eastbound Ramps & Rocklin Road (PM)
- The westbound through at I-80 Eastbound Ramps & Rocklin Road would affect operations at Aguilar Road & Rocklin Road (AM and PM)

- The eastbound through at Aguilar Road & Rocklin Road would affect operations at I-80 Eastbound Ramps & Rocklin Road (AM)

A significant impact occurs under Cumulative Short-Term plus Project conditions at the following intersections:

- Taylor Road & Horseshoe Bar Road (MD)
- Sierra College Boulevard & Taylor Road (PM and MD)
- Sierra College Boulevard & Granite Drive (AM, PM, and MD)
- Sierra College Boulevard & I-80 WB Ramps (AM, PM, and MD)
- Granite Drive & Rocklin Road (MD)
- Sierra College Boulevard & Project Driveway (MD)
- Sierra College Boulevard & SR-193 (MD)

Please note that the queues at some study intersections may be lower when compared to existing conditions due to signal timing optimization and/or recirculation of traffic due to the addition of approved/pending projects.

Project Driveway Access Options 1B & 1C

Project Driveway Access Options 1B and 1C would affect operations of study intersections 7, 8, 21, 24, 25, and 37 due to driveway trip routing. All other study intersections would operate the same under Project Driveway Access Options 1B and 1C as they would under Project Driveway Access Option 1A. One or more 95th percentile queues would extend beyond the available storage lengths at the following intersections (for those intersections affected by the driveway options) under Cumulative Short-Term plus Project conditions:

- Sierra College Boulevard & Brace Road (PM and MD)²
- Sierra College Boulevard & Granite Drive (AM, PM, and MD)

In addition, the queues reported at the above locations would affect operations at the upstream locations, as shown:

- The northbound through at Sierra College Boulevard & Taylor Road would affect operations at Sierra College Boulevard & Brace Road (PM)
- The northbound left-turn at Sierra College Boulevard & Granite Drive would affect operations at Sierra College Boulevard & I-80 WB Ramps (PM and MD)
- The northbound through at Sierra College Boulevard & Granite Drive would affect operations at Sierra College Boulevard & I-80 WB Ramps (PM and MD)
- The southbound through at Sierra College Boulevard & I-80 WB Ramps would affect operations at Sierra College Boulevard & Granite Drive (AM, PM and MD)

In addition to the locations impacted by Project Driveway Access Option 1A, the Project contributes 5% of the total traffic for the movement), an intersection queue significant impact occurs at the following affected study area intersections:

- Sierra College Boulevard & Brace Road (PM and MD)
- Sierra College Boulevard & Granite Drive (AM, PM, and MD)

Mitigation measures were identified in Table 65 of the transportation impact analysis (Kittelson & Associates 2019). Table 4-24 outlines the queueing results. The mitigation measures would reduce the LOS and queue impacts to less than significant levels at some of the impacted locations; however, **significant and unavoidable** impacts remain, as shown. Some impacts are deemed to be significant and unavoidable impacts because the respective intersections are located beyond the Town of Loomis (lead agency) jurisdiction.

² Weekday PM and Weekend Midday peak hour impacted for Project Driveway Access Option 1B only.

Table 4-24. Cumulative Short-Term plus Project—Intersection Queuing Analysis, Signal Coordination Mitigation Results

ID	Intersection	Jurisdiction	Peak Hour	Movement	Storage (feet)	No Project Queue (feet)	Mitigated Queue (feet)	Impact with mitigation?
Project Driveway Access Option 1A								
2	Taylor Road & Horseshoe Bar Road	Loomis	MD	NBT	400	449	475	Significant unavoidable ¹
				SBT	380	367	423	Significant unavoidable ¹
6	Sierra College Boulevard & Taylor Rd	Loomis	PM	NBL	210	218	217	Less than significant ²
			MD	NBL	210	206	254	Less than significant ²
				WBL	215	269	290	Less than significant ²
8	Sierra College Boulevard & Granite Drive	Rocklin	AM	SBT	495	474	282	Significant unavoidable*
				NBT	370	618	417	Significant unavoidable*
			PM	SBT	495	817	806	Significant unavoidable*
				NBT	370	432	326	Significant unavoidable*
			MD	SBT	495	655	537	Significant unavoidable*
				EBL	185	236	234	Significant unavoidable*
9	Sierra College Boulevard & I-80 Westbound Ramps	Caltrans	AM	SBT	370	428	167	Significant unavoidable* ³
			PM	SBT	370	868	749	Significant unavoidable* ³
			MD	SBT	370	782	781	Significant unavoidable* ³
17	Granite Drive & Rocklin Road	Rocklin	MD	EBL	225	353	351	Significant unavoidable*
24	Sierra College Boulevard & Project Driveway	Loomis	MD	SBL	190	-	181	Less than significant
26	Sierra College Boulevard & SR-193	Placer	MD	NBR	40	43	30	Significant unavoidable*
Project Driveway Access Option 1B								
2	Taylor Road & Horseshoe Bar Road	Loomis	MD	NBT	400	Same results as Option 1A		
				SBT	380	Same results as Option 1A		
6	Sierra College Boulevard & Taylor Rd	Loomis	PM	NBL	210	Same results as Option 1A		
			MD	NBL	210	Same results as Option 1A		
				WBL	215	Same results as Option 1A		
7	Sierra College Boulevard & Brace Road	Loomis	PM	SBL	170	148	148	Less than significant
			MD	WBL	100	140	100	Less than significant
8	Sierra College Boulevard & Granite Drive	Rocklin	AM	SBT	495	474	358	Significant unavoidable*
				WBL	160	216	101	Significant unavoidable*
			PM	NBT	370	618	217	Significant unavoidable*

Table 4-24. Cumulative Short-Term plus Project—Intersection Queuing Analysis, Signal Coordination Mitigation Results

ID	Intersection	Jurisdiction	Peak Hour	Movement	Storage (feet)	No Project Queue (feet)	Mitigated Queue (feet)	Impact with mitigation?	
				SBT	495	817	578	Significant unavoidable*	
				WBL	160	163	102	Significant unavoidable*	
				NBT	370	432	259	Significant unavoidable*	
				MD	SBT	495	655	576	Significant unavoidable*
				EBL	185	236	228	Significant unavoidable*	
				WBL	160	199	115	Significant unavoidable*	
				AM	SBT	370	428	143	Significant unavoidable* ³
9	Sierra College Boulevard & I-80 Westbound Ramps	Caltrans	PM	SBT	370	868	832	Significant unavoidable* ³	
			MD	SBT	370	782	782	Significant unavoidable* ³	
17	Granite Drive & Rocklin Road	Rocklin	MD	EBL	225	Same results as Option 1A			
Project Driveway Access Option 1C									
2	Taylor Road & Horseshoe Bar Road	Loomis	MD	NBT	400	Same results as Option 1A			
				SBT	380	Same results as Option 1A			
6	Sierra College Boulevard & Taylor Rd	Loomis	MD	PM	NBL	210	Same results as Option 1A		
				NBL	210	Same results as Option 1A			
				WBL	215	Same results as Option 1A			
8	Sierra College Boulevard & Granite Drive	Rocklin	AM	SBT	495	Same results as Option 1B			
				WBL	160	Same results as Option 1B			
				NBT	370	Same results as Option 1B			
			PM	SBT	495	Same results as Option 1B			
				WBL	160	Same results as Option 1B			
				NBT	370	Same results as Option 1B			
			MD	SBT	495	Same results as Option 1B			
				EBL	185	Same results as Option 1B			
				WBL	160	Same results as Option 1B			
9	Sierra College Boulevard & I-80 Westbound Ramps	Caltrans		AM	SBT	370	Same results as Option 1B		
				PM	SBT	370	Same results as Option 1B		
				MD	SBT	370	Same results as Option 1B		
17	Granite Drive & Rocklin Road	Rocklin	MD	EBL	225	Same results as Option 1A			

Notes: NB: northbound, SB: southbound, EB: eastbound, WD: westbound, L: left turn lane, T: through lane, R: right turn lane

*Though the mitigation measure improves the intersection operation to less than significant levels, the mitigation measures are outside of the lead agency jurisdiction's ability to determine feasibility and implement.

¹ The proposed mitigation does not reduce queues to No Project Conditions and additional geometric improvements are not feasible due to site constraints.

² Less than significant with 254 feet of storage provided for NBL and 290 feet of storage provided for WBL as mitigation measure.

³ Note queuing analysis results at intersection impacted by changes at Sierra College Boulevard & Granite Drive intersection to the north that impact coordinated traffic signal timing and thus impact queuing.

Source: Kittelson & Associates, Inc. 2019

IMPACT 4.3-13: Potential for Creation of Substantial Traffic-Related Hazards under Cumulative Long-Term plus Project Conditions. *The proposed Costco Wholesale warehouse trips would increase queues at study area intersections, resulting in a potential for conflicting movements to cause a hazardous traffic condition, and would result in the need for re-phasing and optimization of the cycle length at study area intersections. This cumulative impact would be **cumulatively considerable**.*

Appendix C of the transportation impact analysis (Kittelson & Associates 2019) also includes the queuing worksheets Cumulative Long-Term plus Project Conditions for the weekday a.m., p.m. and weekend midday peak hours.

Project Driveway Access Option 1A

As shown, Cumulative Long-Term plus Project forecast 95th percentile queues are projected to extend beyond the available storage lengths at the following intersections under cumulative Long-Term plus Project Conditions.

- Taylor Road & King Road (AM, PM, and MD)
- Taylor Road & Horseshoe Bar Road (AM, PM, and MD)
- Horseshoe Bar Road & I-80 Westbound Ramp (AM, PM, and MD)
- Horseshoe Bar Road & I-80 Eastbound Ramp (PM and MD)
- Sierra College Boulevard & Taylor Road (AM, PM, and MD)
- Sierra College Boulevard & Brace Road (AM, PM, and MD)
- Sierra College Boulevard & Granite Drive (AM, PM, and MD)
- Sierra College Boulevard & I-80 WB Ramps (AM, PM, and MD)
- Sierra College Boulevard & I-80 EB Ramps (AM, PM, and MD)
- Sierra College Boulevard & Schriber Way (AM, PM, and MD)
- Sierra College Boulevard & Bass Pro Drive/Dominguez Road (AM, PM, and MD)
- Sierra College Boulevard & Stadium Dwy (AM and PM)
- Sierra College Boulevard & Rocklin Road (AM, PM, and MD)
- Pacific Street & Dominguez Road/Delmar Avenue (AM and PM)
- Pacific Street & Rocklin Road (AM, PM, and MD)
- Granite Drive & Rocklin Road (AM, PM, and MD)
- I-80 Westbound Ramps & Rocklin Road (AM, PM, and MD)
- I-80 Eastbound Ramps & Rocklin Road (AM and PM)
- Aguilar Road & Rocklin Road (AM)
- Granite Drive & Dominguez Road (AM, PM, and MD)
- El Don Drive & Rocklin Road (AM and PM)
- Sierra College Boulevard & Project Driveway (AM, PM, and MD)
- Sierra College Boulevard & SR-193 (AM, PM, and MD)
- Sierra College Boulevard & English Colony Way (AM, PM, and MD)
- Sierra College Boulevard & Delmar Avenue (AM)
- Taylor Road & English Colony Way (AM, PM, and MD)
- Taylor Road & Penryn Road (south) (AM, PM, and MD)
- Taylor Road & Del Oro High School North Lot (AM)
- Taylor Road & Del Oro High School Drop Off (AM)
- Taylor Road & Del Oro High School South Lot (AM)

In addition, the queues reported at the above locations would affect operations at the upstream locations, as shown:

- The westbound through at Horseshoe Bar Road & I-80 Eastbound Ramp would back up to the I-80 Eastbound mainline (PM and MD)
- The northbound through at Sierra College Boulevard & Taylor Road would affect operations at Sierra College Boulevard & Brace Road (PM)

- The southbound left-turn at Sierra College Boulevard & Brace Road would affect operations at Sierra College Boulevard & Taylor Road (PM)
- The northbound left-turn at Sierra College Boulevard & Granite Drive would affect operations at Sierra College Boulevard & I-80 WB Ramps (AM)
- The northbound through at Sierra College Boulevard & Granite Drive would affect operations at Sierra College Boulevard & I-80 WB Ramps (PM)
- The southbound through at Sierra College Boulevard & I-80 WB Ramps would affect operations at Sierra College Boulevard & Granite Drive (AM, PM, and MD)
- The southbound through at Sierra College Boulevard & Schriber Way would affect operations at Sierra College Boulevard & I-80 EB Ramps (AM and PM)
- The southbound through at Sierra College Boulevard & Bass Pro Drive/Dominguez Road would affect operations at Sierra College Boulevard & Schriber Way (AM and PM)
- The westbound left-turn at I-80 Westbound Ramps & Rocklin Road would affect operations at I-80 Eastbound Ramps & Rocklin Road (PM)
- The westbound through at I-80 Eastbound Ramps & Rocklin Road would affect operations at Aguilar Road & Rocklin Road (PM)
- The northbound through at Sierra College Boulevard & Project Driveway would affect operations at Sierra College Boulevard & Granite Drive (PM).

Based on the intersection queuing significant impact criteria presented in Section 2 (Project traffic causes queue overflow or if queues overflow under no Project, the Project contributes 5% of the total traffic for the movement), an intersection queue **cumulatively considerable** impact occurs at the following intersections under Cumulative Long-Term plus Project conditions:

- Taylor Road & King Road (MD)
- Taylor Road & Horseshoe Bar Road (MD)
- Sierra College Boulevard & Taylor Road (PM and MD)
- Sierra College Boulevard & Granite Drive (AM, PM, and MD)
- Sierra College Boulevard & I-80 WB Ramps (AM, PM, and MD)
- Granite Drive & Rocklin Road (MD)
- Sierra College Boulevard & Project Driveway (MD):

Project Driveway Access Options 1B & 1C

Options 1B and 1C would affect operations of study intersections 7, 8, 21, 24, 25, and 37 due to rerouting of trips at project driveways. Appendix C of the transportation impact analysis provides the summary table for the weekday AM, PM and weekend midday peak hours. Appendix G of the transportation impact analysis includes the Project contribution tables. One or more 95th percentile queues would extend beyond the available storage lengths at the following intersections under Cumulative Long-Term plus Project conditions:

- Sierra College Boulevard & Brace Road (AM, PM, and MD)
- Sierra College Boulevard & Granite Drive (AM, PM, and MD)
- Sierra College Boulevard & Project Driveway (AM, PM, and MD)

In addition, the queues reported at the above locations would affect operations at the upstream locations as shown:

- The northbound through at Sierra College Boulevard & Taylor Road would affect operations at Sierra College Boulevard & Brace Road (PM)
- The southbound left-turn at Sierra College Boulevard & Brace Road would affect operations at Sierra College Boulevard & Taylor Road (PM)
- The northbound left-turn at Sierra College Boulevard & Granite Drive would affect operations at Sierra College Boulevard & I-80 WB Ramps (AM)
- The northbound through at Sierra College Boulevard & Granite Drive would affect operations at Sierra College Boulevard & I-80 WB Ramps (PM)

- The northbound through at Sierra College Boulevard & Project Driveway would affect operations at Sierra College Boulevard & Granite Drive (PM)

Based on the intersection queuing significant impact criteria presented in Section 2 (Project traffic causes queue overflow or if queues overflow under no Project, the Project contributes 5% of the total traffic for the movement), an intersection queue significant impact occurs at the following intersections:

- Taylor Road & King Road (MD)
- Taylor Road & Horseshoe Bar Road (MD)
- Sierra College Boulevard & Brace Road (PM³ and MD)
- Sierra College Boulevard & Granite Drive (AM, PM, and MD)
- Sierra College Boulevard & I-80 WB Ramps (AM, PM, and MD)
- Granite Drive & Rocklin Road (MD)
- Sierra College Boulevard & Project Driveway (MD)

Therefore, the proposed Costco Wholesale warehouse trips would cause a **cumulatively considerable** impact because increased delay would cause a queuing impact at the above intersections. Please note that the queues at some study intersections may be lower than under existing conditions because of signal timing optimization and/or recirculation of traffic with the addition of approved/pending projects. Table 68 of the transportation impact analysis (Kittelsohn & Associates 2019), presents the intersection mitigation measures under Cumulative Long Term plus Project Conditions.

Significance after Mitigation

The proposed mitigation measures shown in Table 68 of the transportation impact analysis (Kittelsohn & Associates 2019), were applied to the study intersections to evaluate queuing effects (Table 4-25). The mitigation measures would reduce the queue impacts to less than cumulatively considerable levels at some of the impacted locations, including Intersections 1, 2, 6, and 24 for Project Driveway Access Option 1A and 1, 2, 6, 7, and 24 for Option 1B, and 1, 2, 6, and 24 for Option 1C (see Table 70 from the transportation impact analysis). However, **significant and unavoidable** impacts remain, as shown. Impacts are deemed to be significant and unavoidable because the respective intersections are located beyond the Town of Loomis (lead agency) jurisdiction.

³ Weekday PM peak hour impacted for Project Driveway Access Option 1B only.

Table 4-22. Cumulative Long-Term plus Project – Mitigation Measures

ID	Intersection	Jurisdiction	Peak Hour	Movement	Storage (feet)	No Project Queue (feet)	Mitigated Queue (feet)	Impact with mitigation?			
Project Driveway Access Option 1A											
1	Taylor Road & King Road	Loomis	MD	WBL	95	110	110	Less than cumulatively considerable			
2	Taylor Road & Horseshoe Bar Road	Loomis	MD	NBT	400	504	494	Less than cumulatively considerable			
6	Sierra College Boulevard & Taylor Rd	Loomis	PM	NBL	210	217	214	Less than cumulatively considerable			
			MD	NBL	210	205	203	Less than cumulatively considerable			
				WBL	215	256	288	Less than cumulatively considerable ¹			
8	Sierra College Boulevard & Granite Drive	Rocklin	AM	NBT	365	285	205	Cumulatively considerable and unavoidable ²			
				SBT	495	586	571	Cumulatively considerable and unavoidable*			
			PM	NBT	365	1078	616	Cumulatively considerable and unavoidable*			
				SBT	495	487	466	Cumulatively considerable and unavoidable ²			
			MD	NBT	365	384	318	Cumulatively considerable and unavoidable*			
				SBT	495	260	416	Cumulatively considerable and unavoidable*			
				EBL	185	301	199	Cumulatively considerable and unavoidable*			
			9	Sierra College Boulevard & I-80 WB Ramps	Caltrans	AM	SBT	370	803	863	Cumulatively considerable and unavoidable ²
						PM	SBT	370	874	750	Cumulatively considerable and unavoidable*
MD	SBT	370				595	166	Cumulatively considerable and unavoidable*			
17	Granite Drive & Rocklin Road	Rocklin	MD	EBL	225	419	395	Cumulatively considerable and unavoidable*			
24	Sierra College Boulevard & Project Driveway	Loomis	PM	SBL	190	-	123	Less than cumulatively considerable			
			MD	SBL	190	-	182	Less than cumulatively considerable			
Project Driveway Access Option 1B											
1	Taylor Road & King Road	Loomis	MD	WBL	95	Same results as Project Driveway Access Option 1A					
2	Taylor Road & Horseshoe Bar Road	Loomis	MD	NBT	400	Same results as Project Driveway Access Option 1A					
6		Loomis	PM	NBL	210	Same results as Project Driveway Access Option 1A					
			MD	NBL	210	Same results as Project Driveway Access Option 1A					

Table 4-22. Cumulative Long-Term plus Project – Mitigation Measures

ID	Intersection	Jurisdiction	Peak Hour	Movement	Storage (feet)	No Project Queue (feet)	Mitigated Queue (feet)	Impact with mitigation?
	Sierra College Boulevard & Taylor Road			WBL	215	Same results as Project Driveway Access Option 1A		
7	Sierra College Boulevard & Brace Road	Loomis	PM	WBL	100	149	149	Less than cumulatively considerable
			MD	SBL	170	264	262	Less than cumulatively considerable
				WBL	100	115	109	Less than cumulatively considerable
8	Sierra College Boulevard & Granite Drive	Rocklin	AM	SBT	495	586	606	Cumulatively considerable and unavoidable ²
				WBL	160	263	135	Cumulatively considerable and unavoidable*
			PM	NBT	365	1078	823	Cumulatively considerable and unavoidable*
				SBT	495	487	694	Cumulatively considerable and unavoidable ²
				WBL	160	162	119	Cumulatively considerable and unavoidable*
			MD	NBT	365	384	384	Cumulatively considerable and unavoidable*
				WBL	160	138	96	Cumulatively considerable and unavoidable*
9	Sierra College Boulevard & I-80 WB Ramps	Caltrans	AM	SBT	370	803	849	Cumulatively considerable and unavoidable ^{2,3}
			PM	SBT	370	874	974	Cumulatively considerable and unavoidable ^{2,3}
			MD	SBT	370	595	712	Cumulatively considerable and unavoidable ^{2,3}
17	Granite Drive & Rocklin Road	Rocklin	MD	EBL	225	Same results as Project Driveway Access Option 1A		
24	Sierra College Boulevard & Project Driveway	Loomis	MD	SBL	190	-	207	Less than cumulatively considerable
Project Driveway Access Option 1C								
1	Taylor Road & King Road	Loomis	MD	WBL	95	Same results as Project Driveway Access Option 1A		
2	Taylor Road & Horseshoe Bar Road	Loomis	MD	NBT	400	Same results as Project Driveway Access Option 1A		
6	Sierra College Boulevard & Taylor Road	Loomis	PM	NBL	210	Same results as Project Driveway Access Option 1A		
			MD	NBL	210	Same results as Project Driveway Access Option 1A		
				WBL	215	Same results as Project Driveway Access Option 1A		
8	Sierra College Boulevard & Granite Drive	Rocklin	AM	SBT	495	Same results as Project Driveway Access Option 1B		
				WBL	160	Same results as Project Driveway Access Option 1B		
			PM	NBT	365	Same results as Project Driveway Access Option 1B		
				SBT	495	Same results as Project Driveway Access Option 1B		
				WBL	160	Same results as Project Driveway Access Option 1B		

Table 4-22. Cumulative Long-Term plus Project – Mitigation Measures

ID	Intersection	Jurisdiction	Peak Hour	Movement	Storage (feet)	No Project Queue (feet)	Mitigated Queue (feet)	Impact with mitigation?
			MD	NBT	365	Same results as Project Driveway Access Option 1B		
				WBL	160	Same results as Project Driveway Access Option 1B		
9	Sierra College Boulevard & I-80 WB Ramps	Caltrans	AM	SBT	370	Same results as Project Driveway Access Option 1B		
			PM	SBT	370	Same results as Project Driveway Access Option 1B		
			MD	SBT	370	Same results as Project Driveway Access Option 1B		
17	Granite Drive & Rocklin Road	Rocklin	MD	EBL	225	Same results as Project Driveway Access Option 1A		
24	Sierra College Boulevard & Project Driveway	Loomis	MD	SBL	190	Same results as Project Driveway Access Option 1A		

NB: northbound, SB: southbound, EB: eastbound, WD: westbound, L: left turn lane, T: through lane, R: right turn lane

*Though the mitigation measure improves the intersection operation to less than significant levels, the mitigation measures are outside of the lead agency jurisdiction's ability to determine feasibility and implement.

¹ Less than cumulatively considerable with 356 feet of storage provided for WBL as mitigation measure.

² The impact could not be mitigated to less than cumulatively considerable levels. A fourth southbound through lane may be needed to accommodate traffic volumes

³ Note queuing analysis results at intersection impacted by changes at Sierra College Boulevard & Granite Drive intersection to the north that impact coordinated traffic signal timing and thus impact queuing.

⁴ Less than cumulatively considerable with 207 feet of storage provided for SBL.

Source: Kittelson & Associates, Inc. 2019

Impact 4.3-14: Cumulative Decrease in Capacity of Freeway Ramps. *The proposed project would incrementally increase vehicles using the I-80 WB freeway ramp. The impact created by vehicle queuing at the ramp would be less than cumulatively considerable.*

Ramp metering analysis was requested by Caltrans during the scoping process to determine whether queues from the future ramp meter at the I-80 Westbound slip ramp from southbound Sierra College Boulevard would exceed storage and affect operations along the arterial. The following analysis addresses this request.

Cumulative Short-Term plus Project

Table 4-26 shows the calculated queues in feet and the minimum metering rate in vehicles per hour. The generated queues are accommodated within the available 1,200-foot long storage area. The impact is **less than cumulatively considerable**.

Table 4-23. Cumulative Short-Term Conditions, I-80 Westbound Slip Ramp Meter Analysis

Peak Hour	Short Term		Short Term Plus Project	
	Meter Rate (Vehicles/Hour)	Calculated Queue (Feet)	Meter Rate (Vehicles/Hour)	Calculated Queue (Feet)
AM	240	11	240	55
PM	300	134	240	316
MD	300	0	300	86

Source: Kittelson & Associates 2019

Cumulative Long-Term plus Project

Table 4-27 shows the calculated queues in feet and the minimum metering rate in vehicles per hour. The generated queues are accommodated within the available 1,200-foot long storage area under the cumulative long-term condition. The impact is **less than cumulatively considerable**.

Table 4-24. Cumulative Long-Term Conditions, I-80 Westbound Slip Ramp Meter Analysis

Peak Hour	Long Term		Long Term Plus Project	
	Meter Rate (Vehicles/Hour)	Calculated Queue (Feet)	Meter Rate (Vehicles/Hour)	Calculated Queue (Feet)
AM	240	0	240	0
PM	450	473	450	954
Mid	450	134	450	563

Source: Kittelson & Associates 2019

IMPACT 4.3-15: Cumulative Decrease in Performance or Safety of Public Transit, Bicycle, or Pedestrian Facilities. *The proposed project is expected to minimally increase transit ridership in the study area. The project would minimally increase pedestrian and bicycle traffic in the study area off-site. This cumulative impact with respect to conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities would be **less than cumulatively considerable**.*

Cumulative Short-Term plus Project

The proposed Project would provide pedestrian facilities on-site linking with public facilities along the site frontages on Sierra College Boulevard and Brace Road to provide connectivity with existing facilities. Pedestrian crosswalks would be provided at proposed new signalized Costco site access intersection on Sierra College Boulevard. The project would reconstruct the Type II bicycle facility on Sierra College Boulevard northbound along the site frontage, including providing separate northbound right-turn lanes at the proposed signalized project access and at Brace Road. In addition, the project would provide bicycle parking on site for both members and employees.

Due to the nature of products and services provided, the project would minimally increase pedestrian and bicycle traffic in the study area. Sidewalk connections would be provided along the project site frontage with the proposed development along Sierra College Boulevard. The project would not be in conflict with applicable Town pedestrian and bicycle plans for any of the Project Driveway Access Options considered. The Project would have a **less than cumulatively considerable** impact on pedestrian and bicycle facilities.

Due to the nature of products and services provided by the project and limited transit connectivity provided adjacent to the site, the project would minimally increase transit ridership in the study area. The nearest stop is approximately 0.6 mile from the project site for routes with one-hour and two-hour headways. Due to the distance to the stop, relatively long headways, and employee shift times, it is unlikely that a significant number of employee trips would be added to the transit network. The project would not be in conflict with applicable Placer County Transit plans or encroach on any lines or stops. The project would have a **less than cumulatively considerable** impact on transit services and a new transit stop is not warranted at the project site.

Project impacts on traffic flow could affect travel time for transit vehicles. Traffic flow impacts are addressed in the intersection evaluation sections of this study.

Cumulative Long-Term plus Project

The proposed project would provide pedestrian facilities on-site linking with public facilities along the site frontages on Sierra College Boulevard and Brace Road to provide connectivity with existing facilities. The project would reconstruct the Type II bicycle facility on Sierra College Boulevard northbound along the site frontage, including providing separate northbound right-turn lanes at the proposed signalized project access and at Brace Road. In addition, the project would provide bicycle parking on site for both members and employees.

Due to the nature of products and services provided, the project would minimally increase pedestrian and bicycle traffic in the study area. Sidewalk connections would be provided along the project site frontage with the proposed development along Sierra College Boulevard. The project would not be in conflict with applicable Town pedestrian and bicycle plans for any of the Project Driveway Access Options considered. The project would have a **less than cumulatively considerable impact** related to pedestrian and bicycle facilities.

Due to the nature of products and services provided by the Project and limited transit connectivity provided adjacent to the site, the Project would minimally increase transit ridership in the study area. The nearest stop is approximately 0.6 mile from the Project site for routes with one-hour and two-hour headways. Due to the distance to the stop, relatively long headways, and employee shift times, it is unlikely that a significant number of employee trips would be

added to the transit network. The project would not be in conflict with applicable Placer County Transit plans or encroach on any lines or stops. The project would have a **less than cumulatively considerable impact** on transit services and a new transit stop is not warranted at the project site.

Project impacts on traffic flow could affect travel time for transit vehicles. Traffic flow impacts are addressed in the intersection evaluation sections of this study.

4.3.7 Energy

Impact 4.3-16: Cumulative Energy Impacts. *The proposed project would incorporate several processes and design elements specifically selected with the goal of reducing the proposed project's overall energy requirements from construction through operations. The buildings would meet or exceed the energy performance standards found in CCR Title 24, including the Building Energy Efficiency Standards in the California Green Building Standards Code (CCR Title 24, Part 11). The proposed project does not interfere with any applicable renewable energy or energy efficiency plans. The impact is **less than cumulatively considerable**.*

Energy would be consumed through all phases of project construction and operations. Energy-requiring activities range from equipment operation, to building operations and lighting of the parking lot, to transportation during all phases of the proposed project. Similarly, the proposed project would incorporate several processes and design elements specifically selected with the goal of reducing the proposed project's overall energy requirements from construction through operations. In addition, implementing existing air quality regulations (see Section 3.3, "Air Quality") would further reduce fuel consumption during construction and implementing Mitigation Measure GHG-1 would further reduce transportation-related energy requirements during operations. To maximize energy efficiency in all practicable ways relevant to the proposed project, the buildings would also meet or exceed the energy performance standards found in CCR Title 24, including the Building Energy Efficiency Standards in the California Green Building Standards Code (CCR Title 24, Part 11). The project does not interfere with any applicable renewable energy or energy efficiency plans. The impact is **less than cumulatively considerable**.

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