

3.5 CULTURAL RESOURCES

This section analyzes the potential impacts of projected development under the General Plan Update with respect to cultural resources. Cultural resources include districts, sites, buildings, structures, or objects generally older than 50 years and considered to be important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. This section also includes a discussion of tribal cultural resources pursuant to Public Resources Code Sections 21074, 21080.3.1, 21080.3.2, and 21082.3.

Comments were received on the Draft EIR related to historic structures and resources, evaluation of resources, and consultation with Native American Tribes. These concerns are addressed, as appropriate, in the following discussion.

3.5.1 Environmental Setting

Cultural resources include prehistoric resources, historic resources, Native American resources, and paleontological resources. Prehistoric resources represent the remains of human occupation prior to European settlement. Historic resources represent remains after European settlement and may be part of a “built environment,” including man-made structures used for habitation, work, recreation, education and religious worship. Native American resources include ethnographic elements pertaining to Native American issues and values. Paleontological resources include fossils, pollen, and spores that provide evidence of prehistoric ecology and evolution.

PREHISTORIC AND HISTORICAL BACKGROUND

The County’s indigenous peoples, the Central Sierra Me-Wuks, arrived between 2,000 and 600 years ago. Year-round Me-Wuk villages were usually located on ridges near a major spring or drainage confluence below the heavy snow line (about 3,500–4,000 feet in elevation). Summer brought movement into higher elevations where seasonal camps were established convenient to summer gathering and hunting. Tuolumne County’s lower elevations were known as an area used intensely for gathering. There were numerous temporary camps that existed for hunting, fishing, and gathering locales throughout the County. It is estimated that there were 35 pre-1848 villages in the County. This number of villages indicates that the County was a significant residential and resource procurement area for the Central Sierra Me-Wuk.

Few pre-1848 accounts of historic excursions into Tuolumne County have survived. Gabriel Moraga and his fellow explorers are the earliest known non-Indians to venture into what became Tuolumne County. Little information remains about any historic settlements or other resources from this era, or remains of any settlements of the early Sonoran miners. Historic activity began intensely soon after the widely publicized 1848 discovery of gold. This discovery forever changed the face of Tuolumne County’s physical and cultural landscape.

Non-Indian intrusions into the Central Sierra Me-Wuk territory probably occurred sporadically prior to the Gold Rush of 1848. By the Gold Rush period, valley tribes had been seriously reduced in numbers and the foothills were affected by movement of surviving Indian refugees into their areas. Former traditions were completely disrupted and settlement patterns were altered due to high mortality and the encroachment of white settlers on the land. Villages were abandoned or moved because of the decreased number of residents or because of forced removal by non-Indians. During the post-Gold Rush period, villages contracted and consolidated.

It is believed that gold was discovered in Tuolumne County in 1848 by Benjamin F. Wood and his party in Jamestown. However, there is conflicting information stating that gold was discovered on Mormon Creek near Tuttletown by a group of Mormons before the arrival of Mr. Wood in the County. Miners invaded the

area, developed water systems, and constructed settlements in the rich mining areas. The most visible remnants of the County's past are found in its Gold Rush Era buildings and artifacts dating from 1848 (Tuolumne County 2013). In the early 1850s, Columbia, known as "The Gem of the Southern Mines," was established as a "tent and shanty" town. What started as home to a handful of miners, grew into a community of several thousand with more than 500 buildings and over 150 businesses serving Columbia and nearby mining camps. The County has identified the townsite at Columbia State Historic Park as an outstanding historic resource that demonstrates life during the California Gold Rush.

When the easily mined gold gave out, Jamestown remained a trade and supply depot for mining higher in the foothills, with a prime location on the roads from the Central Valley. Due to the depletion of gold fields and six major fires between 1854 and 1866, Columbia's population dwindled from more than 10,000 to less than 500. By the mid-1860s the placer gold deposits were exhausted, and the technology for extracting deep veins of gold was not yet well-developed. The mining industry leveled off in Tuolumne County, and many mining families moved to other settlements outside the County. During this time, between the years 1860 and 1870, the County's population decreased by nearly 50 percent.

From the late 1880s to World War I, advancements in mining technology and an infusion of foreign capital produced a second Gold Rush in Tuolumne County. Renewed mining efforts allowed for the influx of settlers into Sonora and Jamestown. Other locations within the booming towns were reopened with investment capital and large modern stamp mills were erected. Mining was once again a profitable venture in Tuolumne County and its supporting industries developed closely behind. A large increase of assessed valuation allowed the County to construct new public services and generally stimulate County services. Businesses and commerce prospered, agriculture became a major local industry, many homes were built to house the increased population, and whole communities were established or enlarged.

The timber industry emerged in response to a need for timbers to support the hard rock mines, to build stamp mills and to construct buildings in the mining camps. By 1900, the industry developed into a major industrial base in the County. It provided the momentum for growth and development of the Sierra, Sugar Pine, West Side and Cherry Valley railways. The industry also created hundreds of jobs for loggers and other professions closely intertwined with the timber industry. The agriculture industry was also initially created to support the mining operations and its workforce. Railroads for logging, freight and passenger services created more economic opportunities and made it possible for the expansion of the agriculture industry. The Sierra Railroad was constructed in 1897 and hauled machinery and supplies to the mines, ore, lumber, a variety of agricultural products, passengers and merchandise for stores and businesses.

The driving force of tourism in the County was the construction of the railroads from Stockton to Milton in 1871. The railroad greatly increased tourism by reducing traveling time while increasing traveling comfort. The influx of tourism was seasonal and after the completion of the Sierra Railway, many locations in the County became destinations for vacationers. As the demand for tourist facilities increased, recreational home subdivisions began to be developed in the hills east of Sonora in the 1920s. There was not a great demand for full public services until the 1980s when the trend began for the conversion of these vacation homes into year-round residences.

By World War I, most of the mines in Tuolumne County were once again inactive and many people moved to work in war-related industries in the San Francisco Bay Area. The arrival of automobiles and truck transportation shifted the balance of imports and exports in the agriculture industry. Many agricultural products and manufactured items were imported instead of being produced locally. The Great Depression, which began in 1929, hindered the productivity of local industry including agriculture and timber. Due to the increased price of gold and low operating costs during the Depression, a small mining boom occurred again during the mid to late 1930s. However, the start of World War II effectively put an end to any major reopening. All mines were then ordered closed in 1942 by the federal government, and thus ended the historic presence of mining operations in the County.

Table 3.5-1 presents historical resources in Tuolumne County. Included in the table are sites listed on the National Register of Historic Places (NRHP) and the Tuolumne County Register of Cultural Resources and

designated as California State Historic Landmarks. Due to the sensitivity of many prehistoric, ethnohistoric, and historic archaeological sites, the resources listed in the following table include only those that are available for access by the general public. In Tuolumne County, there are 19 NRHP listings, 12 listings on the County Register, and 20 California Historical Landmarks. In honor of its historic resources, the federal government has named Tuolumne County a Preserve America Community, which recognizes the County's efforts to protect and celebrate its heritage, use historic assets for economic development and community revitalization, and encourage people to experience and appreciate local historic resources.

Table 3.5-1 Tuolumne County Historical Resources

Location	Resource Name	NRHP	State Landmark	TC Register
Big Oak Flat	Big Oak Flat		X	
Big Oak Flat	Gamble Building	X		
Chinese Camp	Chinese Camp		X	
Chinese Camp area	Jacksonville		X	
Chinese Camp area	Montezuma		X	
Chinese Camp	Wells Fargo Express Company Building		X	
Columbia	1925 Craftsman Bungalow and 1940 Garage			X
Columbia	Columbia State Historic Park		X	
Columbia area	Parrotts Ferry		X	
Columbia area	Sawmill Flat		X	
Columbia area	Shaw's Flat		X	
Columbia area	Springfield		X	
Dardenelle	Baker Highway Maintenance Station	X		
East Sonora	Belli Ranch House			X
East Sonora	Sullivan Creek Park (Elsey's Pool)			X
Groveland area	Second Garrote		X	
Groveland	Groveland		X	
Groveland	Groveland Hotel	X		
Groveland	Hotel Charlotte	X		
Groveland	Watts & Tannahill Company Store	X		
Jamestown	Emporium	X		
Jamestown	Jamestown		X	
Jamestown	Jamestown Community Hall (Old Justice Court)			X
Jamestown	Ramirez-Preston Building			X
Long Barn	Quail Site	X		
Pinecrest area	Leighton Encampment	X		
Sonora	Tuolumne County Courthouse	X		
Sonora	Tuolumne County Jail	X		
Soulsbyville	Gessford Home			X
Soulsbyville	Soulsbyville		X	
Strawberry	Chinaman Mortar Site	X		
Strawberry	Cooper Cabin	X		

Table 3.5-1 Tuolumne County Historical Resources

Location	Resource Name	NRHP	State Landmark	TC Register
Strawberry	Old Strawberry Road Bridge			X
Strawberry	Stanislaus Branch, California Forest and Range Experiment Station	X		
Sugar Pine	Sonora-Mono Road		X	
Tuolumne area	Cherokee		X	
Tuolumne	Dungan House			X
Tuolumne	Niagara Camp	X		
Tuolumne	Summersville (Tuolumne)		X	
Tuolumne	Superintendent's House			X
Tuolumne	Veterans Memorial Hall			X
Tuolumne	West Side Memorial Park			X
Tuttletown	Ewert/Aguire/Jackson Property (Tuttletown Stage Stop)			X
Tuttletown area	Mark Twain Cabin		X	
Tuttletown	Tuttletown		X	
Yosemite National Park	Frog Creek Cabin	X		
Yosemite National Park	Glen Aulin High Sierra Camp	X		
Yosemite National Park	Lake Vernon Snow Survey Shelter	X		
Yosemite National Park	Sachse Spring Snow Survey Shelter	X		
Yosemite	Great Sierra Wagon Road	X		

Notes: NRHP = National Register of Historic Places; TC Register = Tuolumne County Register of Cultural Resources.

Sources: National Park Service 2018; California Office of Historic Preservation 2018; Tuolumne County Register of Cultural Resources 2010.

PALEONTOLOGICAL BACKGROUND

Significant nonrenewable vertebrate and invertebrate fossils and unique geologic units have been documented throughout California. The fossil yielding potential of a particular area is highly dependent on the geologic age and origin of the underlying rocks (refer to geologic timescale in Table 3.5-2). Paleontological potential refers to the likelihood that a rock unit will yield a unique or significant paleontological resource. All sedimentary rocks, some volcanic rocks, and some low-grade metamorphic rocks have potential to yield significant paleontological resources. Depending on location, the paleontological potential of subsurface materials generally increases with depth beneath the surface, as well as with proximity to known fossiliferous deposits.

Pleistocene or older (older than 11,000 years) continental sedimentary deposits are considered as having a high paleontological potential while Holocene-age deposits (less than 10,000 years old) are generally considered to have a low paleontological potential because they are geologically immature and are unlikely to have fossilized the remains of organisms. Metamorphic and igneous rocks have a low paleontological potential, either because they formed beneath the surface of the earth (such as granite), or because they have been altered under high heat and pressures, chaotically mixed or severely fractured. Generally, the processes that form igneous and metamorphic rocks are too destructive to preserve identifiable fossil remains.

Table 3.5-2 Divisions of Geologic Time

Era	Period	Time in Millions of Years Ago (approximately)	Epoch
Cenozoic	Quaternary	< 0.01	Holocene
		2.6	Pleistocene
	Tertiary	5.3	Pliocene
		23	Miocene
		34	Oligocene
		56	Eocene
		65	Paleocene
Mesozoic	Cretaceous	145	–
	Jurassic	200	–
	Triassic	251	–
Paleozoic	Permian	299	–
	Carboniferous	359	–
	Devonian	416	–
	Silurian	444	–
	Ordovician	488	–
	Cambrian	542	–
Precambrian		2,500	–

Source: U.S. Geological Survey 2010

Tuolumne County is located primarily within the Sierra Nevada geomorphic province, with an extremely small portion (less than 10 percent) of the western boundary creeping into the Great Valley province. Based on geologic mapping, the majority of the County, especially in the Sierra Nevada Mountains, is underlain by granitic and volcanic rocks which are generally not fossil-bearing (Ludington et al. 2007). Paleozoic marine rocks occur in the western portion of the County and may contain fossils of marine invertebrates. A pocket of Plio-Pleistocene and Pliocene loose consolidated deposits also occurs along State Route 108 southwest of Jamestown and northwest of Chinese Camp. This area may contain evidence of Pleistocene-era large mammals. Records of paleontological finds maintained by the University of California Museum of Paleontology state that there are 72 localities at which fossil remains have been found in Tuolumne County. These occur primarily in the Mehrten geologic formations (UCMP 2018).

3.5.2 Regulatory Setting

FEDERAL

Section 106 of the National Historic Preservation Act

Federal protection of resources is legislated by (1) the National Historic Preservation Act of 1966 as amended by 16 U.S. Code 470, (2) the Archaeological Resource Protection Act of 1979, and (3) the Advisory Council on Historical Preservation. These laws and organizations maintain processes for determination of the effects on historical properties eligible for listing in the NRHP.

Section 106 of the National Historic Preservation Act and accompanying regulations (36 Code of Federal Regulations [CFR] Part 800) constitute the main federal regulatory framework guiding cultural resources investigations and require consideration of effects on properties that are listed in or may be eligible for listing in the NRHP.

National Register of Historic Places

The NRHP is the nation's master inventory of known historic resources. It is administered by the National Park Service and includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, and cultural districts that are considered significant at the national, state, or local level.

The formal criteria (36 CFR 60.4) for determining NRHP eligibility are as follows:

1. The property is at least 50 years old (however, properties under 50 years of age that are of exceptional importance or are contributors to a district can also be included in the NRHP);
2. It retains integrity of location, design, setting, materials, workmanship, feeling, and associations; and
3. It possesses at least one of the following criteria:
 - A. Association with events that have made a significant contribution to the broad patterns of history (events).
 - B. Association with the lives of persons significant in the past (persons).
 - C. Distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant, distinguishable entity whose components may lack individual distinction (architecture).
 - D. Has yielded, or may be likely to yield, information important to prehistory or history (information potential).

Listing in the NRHP does not entail specific protection or assistance for a property but it does guarantee recognition in planning for federal or federally-assisted projects, eligibility for federal tax benefits, and qualification for federal historic preservation assistance. Additionally, project effects on properties listed in the NRHP must be evaluated under CEQA.

STATE

California Register of Historical Resources

The California Register of Historical Resources (CRHR) is an authoritative guide in California used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate which properties are to be protected, to the extent prudent and feasible, from substantial adverse change (Public Resources Code Section 5024.1). A resource is eligible for listing on the CRHR if it meets any of the following criteria for listing (Section 5024.1(c)):

- A. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- B. It is associated with the lives of persons important in our past;
- C. It embodies the distinctive work of an important creative individual, or possesses high artistic values; or
- D. It has yielded, or may be likely to yield, information important in prehistory or history.

The CRHR may also include properties listed in “local registers” of historic properties. A “local register of historic resources” is broadly defined in Public Resources Code Section 5020.1(k) as “a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution.” Local registers of historic properties come in two forms: (1) surveys of historic resources conducted by a local agency in accordance with Office of Historic Preservation procedures and standards, adopted by the local agency and maintained as current; and (2) landmarks designated under local ordinances or resolutions (Public Resources Code Sections 5024.1, 21084.1; State CEQA Guidelines Section 15064.5).

By definition, the CRHR also includes all “properties formally determined eligible for, or listed in, the [NRHP],” and certain specified State Historical Landmarks. The majority of formal determinations of NRHP eligibility occur when properties are evaluated by the State Office of Historic Preservation in connection with federal environmental review procedures (Section 106 of the National Historic Preservation Act of 1966). Formal determinations of eligibility also occur when properties are nominated to the NRHP, but are not listed due to owner objection. The minimum age criterion for the NRHP and the CRHR is 50 years. Properties less than 50 years old may be eligible for listing on the NRHP if they can be regarded as “exceptional,” as defined by the NRHP procedures, or in terms of the CRHR, if “it can be demonstrated that sufficient time has passed to understand its historical importance.”

California Environmental Quality Act

CEQA requires public agencies to consider the effects of their actions on “historical resources,” “unique archaeological resources,” and “tribal cultural resources.” Pursuant to Public Resources Code Section 21084.1, a “project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” “Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired” (CEQA Guidelines, Section 15064.5, subd. (b)(1)).

Pursuant to Public Resources Code Section 21084.2, a “project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.” Public Resources Code Section 21083.2 requires agencies to determine whether projects would have effects on unique archaeological resources.

Historical Resources

“Historical resource” is a term with a defined statutory meaning (Public Resources Code Section 21084.1; determining significant impacts to historical and archaeological resources is described in the State CEQA Guidelines, Sections 15064.5[a] and [b]).

Under State CEQA Guidelines Section 15064.5(a), historical resources include the following:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR (Public Resources Code Section 5024.1).
2. A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency’s determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be historically significant if the resource meets the criteria for listing in the CRHR (Public Resources Code Section 5024.1).

4. The fact that a resource is not listed in or determined to be eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to Section 5020.1[k] of the Public Resources Code), or identified in a historical resources survey (meeting the criteria in Section 5024.1[g] of the Public Resources Code) does not preclude a lead agency from determining that the resource may be a historical resource as defined in Public Resources Code Sections 5020.1(j) or 5024.1.

Unique Archaeological Resources

CEQA also requires lead agencies to consider whether projects will affect unique archaeological resources. Public Resources Code Section 21083.2, subdivision (g), states that unique archaeological resource means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Section 21083.2 also includes direction on how to mitigate impacts to archaeological resources. For example, subdivision (c) states:

To the extent that unique archaeological resources are not preserved in place or not left in an undisturbed state, mitigation measures shall be required as provided in this subdivision. The project applicant shall provide a guarantee to the lead agency to pay one-half the estimated cost of mitigating the significant effects of the project on unique archaeological resources. In determining payment, the lead agency shall give due consideration to the in-kind value of project design or expenditures that are intended to permit any or all archaeological resources or California Native American culturally significant sites to be preserved in place or left in an undisturbed state. When a final decision is made to carry out or approve the project, the lead agency shall, if necessary, reduce the specified mitigation measures to those which can be funded with the money guaranteed by the project applicant plus the money voluntarily guaranteed by any other person or persons for those mitigation purposes. In order to allow time for interested persons to provide the funding guarantee referred to in this subdivision, a final decision to carry out or approve a project shall not occur sooner than 60 days after completion of the recommended special environmental impact report required by this section.

Section 21083.2, subdivisions (d)–(f) provide additional guidance.

Tribal Cultural Resources

CEQA also requires lead agencies to consider whether projects will affect tribal cultural resources. Public Resources Code Section 21074 states the following:

- a) “Tribal cultural resources” are either of the following:
 - 1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
 - A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
 - B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

- 2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
- b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
- c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a “nonunique archaeological resource” as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural, and Sacred Sites Act (Public Resources Code Section 5097.9 et seq.) applies to both state and private lands. The act requires that upon discovery of human remains, construction or excavation activity cease and the County coroner be notified. If the remains are of a Native American, the coroner must notify the Native American Heritage Commission (NAHC), which notifies and has the authority to designate the Most Likely Descendant of the deceased. The act stipulates the procedures the descendants may follow for treating or disposing of the remains and associated grave goods.

Health and Safety Code Sections 7052 and 7050.5

Health and Safety Code Section 7052 states that the disturbance of Native American cemeteries is a felony. Health and Safety Code Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If determined to be Native American, the coroner must contact the NAHC.

Public Resources Code Section 5097.98

Public Resources Code Section 5097.98 specifies the procedures to be followed in the event of the unexpected discovery of human remains on nonfederal land. The disposition of Native American remains falls within the jurisdiction of the NAHC. Public Resources Code Section 5097.5(e) requires that the procedures set forth in Section 5097.9 be followed if human remains that are determined to be Native American are recovered as a result of an action brought pursuant to Section 5097.5.

Public Resources Code Section 5097.5(a) states the following regarding unlawful excavation:

A person shall not knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands.

A violation of Public Resources Code Section 5097.5 is a misdemeanor.

Assembly Bill 52

Assembly Bill (AB) 52, signed by Governor Edmund G. Brown Jr. in September of 2014, establishes a new class of resources under CEQA: “tribal cultural resources”. AB 52, as provided in Public Resources Code Sections 21080.3.1, 21080.3.2, and 21082.3, requires that lead agencies undertaking CEQA review must, upon written request of a California Native American Tribe, begin consultation once the lead agency determines that the application for the project is complete, prior to the issuance of a Notice of Preparation of an EIR or Notice of Intent to adopt a negative declaration or mitigated negative declaration. AB 52 also requires revision to CEQA Appendix G, the environmental checklist. This revision creates a new category for tribal cultural resources.

Senate Bill 18

Senate Bill (SB) 18 requires that, before the adoption or amendment of a city or county general plan or specific plan, the city or county shall consult with California Native American tribes that are on the contact list maintained by the NAHC. SB 18 applies to the project because it involves a general plan amendment, which is the trigger for SB 18 compliance; however, SB 18 compliance is not a CEQA requirement and, therefore, is not discussed further.

LOCAL

Tuolumne County General Plan

The 1996 General Plan provides a framework for addressing issues related to cultural resources. As the proposed project would update the 1996 General Plan, this document will be discussed in the context of the update within the impact analysis. The Cultural Resources Element contains goals and policies related to cultural resources. Specific General Plan Update policies related to cultural resources are identified below under Section 3.5.3, "Impact Analysis."

Tuolumne County Register of Cultural Resources

Since the Tuolumne County Board of Supervisors adopted requirements for the County Register of Cultural Resources in July 1992, it has designated 17 properties on this register. The 12 properties that occur in the unincorporated County are listed in Table 3.5-1. Pursuant to Implementation Program 9.C.e in the County's Cultural Resources Management Element, the County Register of Cultural Resources applies to all properties contained within cultural resources inventories which have been or are assigned an NRHP designation of 1 (listed on the NRHP), 2 (determined eligible for listing by formal process involving federal agencies), 3 (appears to be eligible for listing in the judgment of the person completing the form), 4 (might become eligible for listing), or 5 (ineligible for listing, but of local interest and eligible for the Tuolumne County Register of Cultural Resources). Inclusion on the register qualifies properties to use the State Historical Building Code, to enter into a Mills Act Contract for qualifying rehabilitations and maintenance, and for alternative development standards.

3.5.3 Impact Analysis

METHODS OF ANALYSIS

The impact analysis considers the known cultural resource environmental setting in the plan area, the potential for previously undocumented resources, including human remains, and physical effects (i.e., disturbance, material alteration, demolition) to known and previously undocumented resources that could result from projected development under the General Plan Update. Because the specific locations of some cultural resources are not mapped, and the exact extent of ground disturbance associated with projected development under the General Plan Update is unknown at this time, it is not possible to assess impacts to specific cultural resources. Accordingly, neither project-specific reviews nor field studies are feasible or necessary for this program Recirculated Draft EIR. The analysis is also informed by the provisions and requirements of federal, state, and local laws and regulations that apply to cultural resources.

THRESHOLDS OF SIGNIFICANCE

The significance of a cultural resource, and subsequently the significance of any impacts, is determined by whether or not that resource can increase our knowledge of the past. The determining factors are site content and degree of preservation. Where the significance of a site is unknown, it is presumed to be significant for the purposes of this Recirculated Draft EIR. A finding of archaeological significance follows the criteria established in the State CEQA Guidelines.

According to Appendix G of the CEQA Guidelines, projected development under the General Plan Update would have significant impacts on cultural resources if the project would:

- ▲ cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;
- ▲ cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5;
- ▲ directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;
- ▲ disturb any human remains, including those interred outside of dedicated cemeteries; or
- ▲ cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074. (AB 52, 2014.)

According to the CEQA Guidelines Section 15126.4(b)(3) public agencies should, whenever feasible, seek to avoid damaging effects on any historical resource of an archaeological nature. The following factors shall be considered for a project involving such an archaeological site:

- ▲ Preservation in place (avoidance) is the preferred manner of mitigating impacts to archaeological sites. Preservation in place maintains the relationship between artifacts and the archaeological context. Preservation may also avoid conflict with religious or cultural values of groups associated with the site.
- ▲ Preservation in place may be accomplished by, but is not limited to, the following:
 - planning construction to avoid archaeological sites;
 - incorporating sites within parks, greenspace, or other open space;
 - covering the archaeological sites with a layer of chemically stable soil before building tennis courts, parking lots, or similar facilities on the site; or
 - deeding the site into a permanent conservation easement.
- ▲ When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provision for adequately recovering the scientifically consequential information from and about the historical resource, shall be prepared and adopted prior to any excavation being undertaken. Such studies shall be deposited with the California Historical Resources Regional Information Center. Archaeological sites known to contain human remains shall be treated in accordance with the provisions of Section 7050.5 Health and Safety Code. If an artifact must be removed during project excavation or testing, curation may be an appropriate mitigation.
- ▲ Data recovery shall not be required for a historical resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the archaeological or historical resource, provided that the determination is documented and that the studies are deposited with the California Historical Resources Regional Information Center.

(CEQA Guidelines, § 15126.4, subds. (b)(3)(A)–(D).)

If projected development under the General Plan Update causes substantial adverse change in the significance of a historical resource or archaeological resource, implementation of the General Plan Update would have a significant effect on the environment. Section 15064.5 of CEQA pertains to the determination of the significance of impacts to archaeological and historic resources. Section 15126.4 of CEQA provides guidelines for administering to archaeological resources that may be adversely affected by development.

Achieving CEQA compliance with regard to treatment of impacts to significant cultural resources requires that a mitigation plan be developed for the resource(s). Preservation in place is the preferred manner of mitigating impacts to significant archaeological resources.

Direct impacts may occur by:

- ▲ physically damaging, destroying, or altering all or part of the resource;
- ▲ altering characteristics of the surrounding environment that contribute to the resource's significance;
- ▲ neglecting the resource to the extent that it deteriorates or is destroyed. Indirect impacts primarily result from the effects of project-induced population growth. Such growth can result in increased construction as well as increased recreational activities that can disturb or destroy cultural resources; or
- ▲ incidentally discovering cultural resources without proper notification.

Direct impacts can be assessed by identifying the types and locations of projected development under the General Plan Update, determining the exact locations of cultural resources, assessing the potential significance of the resources that may be affected, and determining the appropriate mitigation.

Indirect impacts primarily result from the effects of population growth facilitated under the General Plan Update. Such growth can result in increased construction, as well as increased recreational activities that can disturb or destroy cultural resources. Indirect impacts differ from direct impacts in that they are not always as obvious or immediate as construction-related direct impacts and could include impacts that occur away from the areas of proposed development.

GENERAL PLAN UPDATE POLICIES

The following policies and implementation programs from the General Plan Update are applicable to the evaluation of effects related cultural resources:

Cultural Resources Element

- ▲ **Policy 13.A.1:** Initiate, adopt, and promote the availability of monetary and other incentive programs to encourage the retention, reuse and restoration of historic structures.
 - **Implementation Program 13.A.a:** Continue to implement the Mills Act in Tuolumne County and update Resolution 171-92 to reflect legislative changes to the Mills Act when necessary to provide reductions in property taxes through historic preservation. The Mills Act program will aid in encouraging the adaptive reuse of historic structures for business enterprises.
 - **Implementation Program 13.A.b:** Prepare a list of properties in Tuolumne County, as local community cultural resource inventories are completed, which could benefit from the 1986 Tax Reform Act and notify and assist property owners with information for taking advantage of this Act which provides Federal income tax credit for income producing properties on or eligible for the National Register of Historic Places.
 - **Implementation Program 13.A.c:** Identify an existing and/or support formation of an agency to accept resource donations for tax deductions or tax credits. The agency should carry an IRS 501(c)(3) designation and should be able to accept facade easement dedications, acquire property as gifts, implement restoration projects, raise funds for restoration through donations, and operate fund-raising projects. The agency should, to the extent feasible, be a multi-purpose organization which could receive both cultural and natural resource dedications.

- **Implementation Program 13.A.d:** Support implementation of the Marks Historical Rehabilitation Act in Tuolumne County. Health and Safety Code Sections 37600 et seq authorize Tuolumne County and other local agencies to issue bonds for the rehabilitation of historic properties.
- **Implementation Program 13.A.e:** Upon completion of each cultural resources inventory pursuant to Policy 13.C.1, provide each participating parcel owner with a copy of his or her property evaluation. For those properties determined potentially eligible for listing in the National Register, provide a listing of incentive programs available for the property upon listing the property on the National Register or Tuolumne County Register of Cultural Resources.
- ▲ **Policy 13.B.1:** Adopt flexible and consistent environmental review procedures for new development entitlements including provisions for monitoring and enforcement.
 - **Implementation Program 13.B.a:** Require a cultural resource assessment for discretionary development projects based on criteria established in Title 14 of the Tuolumne County Ordinance Code. The assessment shall be prepared by a qualified professional before construction activities begin. The assessment would include preparing archaeological and historical survey reports and conducting a paleontological record search using an appropriate database, such as the University of California, Museum of Paleontology. Archaeological and historical sites and materials shall be evaluated and recorded on standard DPR 523-series forms in accordance with National Register and California Register criteria. The evaluation report shall be completed by a qualified archaeologist, architectural historian, or historical architect who meets the Secretary of the Interior's Professional Qualifications for Archaeology and Historic Preservation, as appropriate, and submitted to Tuolumne County.
 - **Implementation Program 13.B.b:** Require that discretionary development projects are designed to avoid potential impacts to significant cultural resources whenever possible. Determinations of impacts, significance, and mitigation shall be made by qualified archaeological, historical, or paleontological consultants (in coordination with culturally-affiliated tribes), depending on the type of resource in question.
 - **Implementation Program 13.B.c:** Require that cultural resource studies be conducted by qualified professionals with experience appropriate to the study being conducted. Continue to require specific standards for performing cultural resource investigations and contents of reports in compliance with State and Federal standards including the Secretary of the Interior's Standards and Guidelines for Identification, Evaluation, Documentation, Registration, Historical Documentation, Architectural and Engineering Documentation, and Archaeological Documentation. Require submission of results of these investigations to the Central California Information Center per State guidelines.
 - **Implementation Program 13.B.d** – Require a paleontological investigation for discretionary development projects proposed in an area underlain by geologic formations that have the potential to contain paleontological resources. In such cases, the project proponent shall, in coordination with the Community Resources Agency, hire a qualified paleontologist approved by the County to perform an investigation consisting of:
 - A walk-over site survey;
 - A review of publications and reports on the geology or paleontology of the area;
 - Analysis of all available soils information; and
 - Evaluation of the relationship of the project site to known or potential fossil-producing areas identified in available records.

The paleontologist shall submit to the County a written report describing findings and making recommendations to minimize impacts on any identified resources. This report shall be considered as part of the CEQA review process and, if appropriate, its recommendations shall be included as mitigation measures and conditions of approval for the project. Provision shall be made for the deposit of scientifically valuable paleontological materials which are removed from the site with responsible public or private institutions. Amend Title 14 of the Tuolumne County Ordinance Code to incorporate this program to protect paleontological resources.

- **Implementation Program 13.B.e:** Include, for projects with conditions of approval related to management of cultural resources, a requirement for preconstruction meetings with project contractors, the developer or his representative, Native American representatives, the project's qualified cultural resources professional, the Community Resources Agency and other agencies responsible for overseeing the construction phase of a development project as part of written procedures for conducting cultural resources investigations in Tuolumne County as required in Implementation Programs 13.B.a through 13.B.d. Further, continue to require, as part of the County Ordinance Code, the existing requirement for stopping work and evaluating a resource pursuant to CEQA when a cultural resource is identified during the construction phase of a project.
- **Implementation Program 13.B.f:** Continue to condition discretionary entitlements for any new development which requires review under CEQA and which has the potential to impact subsurface cultural resources to require such development to comply with the provisions of Sections 21083.2 and 21084.1 of CEQA. Also require that if subsurface cultural resources are discovered during the construction process, construction shall cease until a qualified professional as defined in Title 14 of the Tuolumne County Ordinance Code has evaluated the site. If the resource is determined to be a unique archaeological resource, then the provisions of mitigation for impacts to archaeological resources contained in Section 21083.2 of CEQA shall be implemented. Construction work may continue on other parts of the construction site while archaeological evaluation and mitigation are being implemented.
- **Implementation Program 13.B.g:** Continue to utilize written procedures for establishing when to conduct cultural resources reviews based on guidelines in Figure 13.A, 13.B, and Table 13.1; listing available resources to be consulted for existing cultural resources information and including a list of advisory agencies to be notified during the CEQA consultation process including, at a minimum, the Tuolumne Band of Me-Wuk Indians, the Chicken Ranch Band of the Me-Wuk Indians, the Tuolumne County Historical Society Landmarks Committee, the Tuolumne Southern County Historical Society, the Tuolumne Heritage Committee and the Central California Information Center.
- **Implementation Program 13.B.h:** The County shall coordinate with the Tuolumne Band of Me-Wuk Indians, the Chicken Ranch Band of the Me-Wuk Indians, and other culturally-affiliated tribes through AB 52 and SB 18, as applicable, to encourage the preservation, protection, and mitigation for impacts to cultural sites.
- **Implementation Program 13.B.i:** Continue to implement the County Ordinance Code to provide both criminal and civil penalty procedures and/or a penalty fee with mandatory monetary penalties for noncompliance with management standards and practices and for anticipatory demolition.
- ▲ **Policy 13.B.2:** Assist in retaining the special character of historic districts and promote compatible development within historic districts by reducing, adapting and/or modifying some development standards within historic districts.
- **Implementation Program 13.B.j:** Maintain the current provisions for waiving fees for requests to zone to H and HDP and for waiving fees for Mills Act applications. Consider expanding the fee waiver provisions to include waiving development permit fees for site review, site development, and conditional use permits for work done on Tuolumne County Register and National Register structures that is consistent with the Secretary of the Interior's Standards for Treatment of Historic Properties

With Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings. Reduce or waive building fees for structures using the State Historical Building Code.

- **Implementation Program 13.B.k:** Continue to provide for reduced and/or modified development standards on land zoned H and HDP or for buildings or structures classified as Priority 1, 2 or 3 in Table 13.2 and 13.3 in any zoning district.
- **Implementation Program 13.B.l:** Continue to protect cultural resource features important to the context or setting of cultural resources such as mature trees and vegetation, retaining walls, and fences when considering development projects within H and HDP zoning districts.
- **Implementation Program 13.B.m:** Continue to implement Title 14 so that buildings on the Tuolumne County Register of Cultural Resources shall be deemed “qualifying structures,” eligible to use the State Historical Building Code pursuant to Section 18955 of the Health and Safety Code.
- **Implementation Program 13.B.n:** Continue to provide for well, septic, building, and other ministerial permits to become discretionary for the purposes of CEQA when a significant cultural resource may be impacted.
- **Implementation Program 13.B.o:** Continue to utilize the classification system and corresponding development standards contained in Figure 13.D: Priority Classification System for Historic Buildings and Structures into the County Ordinance Code.
- **Implementation Program 13.B.p:** Continue to require the Secretary of the Interior’s Standards for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings as a guide for evaluating development proposals involving cultural resources, such as restoration, alteration of, and, additions to existing historic structures.
- **Implementation Program 13.B.q:** Continue to require approval of a new development plan and issuance of required grading and/or building permits and review by the Historic Preservation Review Commission or documentation of an imminent safety hazard (as defined by the Health and Safety Code) prior to issuance of a demolition permit in the H and HDP zoning districts. The Historic Preservation Review Commission shall also review all demolition permits for buildings 50 years of age or older in any zoning district or a cultural resource study shall be required prior to approval of a demolition permit.
- **Implementation Program 13.B.r:** Review and recommend amendments to existing design guidelines which affect historic structures for consistency between local design guidelines and the Secretary of the Interior’s Standards for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings and consider preparing a design guide for new development in undesignated historic districts.
- **Implementation Program 13.B.s:** Continue to streamline the development application review process by eliminating review by the Historic Preservation Review Commission for projects and alterations that have been listed as acceptable to that Commission and are consistent with the Secretary of the Interior’s Standards for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings and grant authority to the Community Resources Agency Director to approve such projects in-house without additional review from the Tuolumne County Historic Preservation Review Commission. The project list should include these projects where consistent with the Secretary of the Interior’s Standards for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings:
 - Color schemes acceptable for repainting (including acceptable trim combinations);

- Maintenance projects involving replacement with like materials and like colors; and
 - Replacement of doors or windows with doors or windows of the same size and of similar appearance.
- **Implementation Program 13.B.t:** Section 106 projects include activities involving direct or indirect Federal assistance or involvement either monetarily or through issuance of Federal permits at various stages of the activity. Housing and Urban Development (HUD) monies, which include Community Development Block Grants, are subject to this consultation. The Historic Preservation Review Commission will identify and contact Federal agencies involved in Section 106 projects related to rehabilitation and restoration of housing units in Tuolumne County and request the opportunity to comment on these projects during the Section 106 consultation process. This request will exclude projects on Federal lands and all projects on private lands not related to housing.
- ▲ **Policy 13.C.1:** Survey, record, inventory, maintain and regularly update databases and archives of historic, architectural, and archeological resources for informational purposes.
- **Implementation Program 13.C.a:** Continue to implement the County Ordinance Code to enable the County to pursue its preservation policies through implementation of the programs described herein.
- **Implementation Program 13.C.b:** Complete the Twain Harte inventory and supplement existing inventories of Columbia State Historic Park, Groveland, Big Oak Flat, Chinese Camp, Jamestown, Soulsbyville, Tuolumne, and Railtown 1897 State Park with inventories of the following community, thematic and miscellaneous inventories. Note: Parcel owner notification shall be required to inventory all private properties. Property owner's consent shall be required prior to entry upon the property. This requirement is specified in the Cultural Resources Ordinance.

Communities

- High Country: Strawberry communities and including a 500 foot wide corridor on either side of Highway 108, measured from the centerline of the highway, between the two communities
- Jamestown Supplement: Areas not included in previous inventories.
- Columbia supplement: Areas not included in previous studies.
- Groveland/Big Oak Flat Supplement: Areas not included in previous studies.
- Confidence
- Shaw's Flat
- Standard
- East Sonora
- Other communities as may be recommended as appropriate to the Board of Supervisors by the Tuolumne County Historic Preservation Review Commission
- Update existing inventories

Thematic Inventories

- Transportation and Communications (Early Routes and Roads, Railroads, Communication)

- Gold Mining
- Water Development
- Ethnicity and Social Systems
- Agriculture
- Industry, Commerce and Tourism including logging, limestone and marble quarrying and non-gold mining
- Recreational residences (including second and retirement homes)
- Other themes as may be recommended as appropriate to the Board of Supervisors by the Tuolumne County Historic Preservation Review Commission.

Other

- County-owned properties including bridges, buildings, old roadways
- Property under the jurisdiction of the City and County of San Francisco

Inventory standards shall be as established by the State Office of Historic Preservation. This requirement and these procedures are included in the County Ordinance Code.

- **Implementation Program 13.C.c:** Upon completion of each cultural resource inventory, create a list of properties within Tuolumne County eligible for nomination to the National Register of Historic Places and provide written notice to property owners of these historic properties advising them of the benefits of the National Register program and of local incentives available for their properties.
- **Implementation Program 13.C.d:** Add to the Tuolumne County Register of Cultural Resources, by resolution, all properties contained within existing and future cultural resources inventories which have been or are assigned a National Register designation of 1 (listed on the National Register), 2 (determined eligible for listing by formal process involving Federal agencies), 3 (appears to be eligible for listing in the judgment of the person completing the form), 4 (might become eligible for listing) or 5 (ineligible for listing, but of local interest and eligible for the Tuolumne County Register of Cultural Resources). The resolution shall specify that inclusion on the Register qualifies properties to use the State Historical Building Code, to enter into a Mills Act Contract for qualifying rehabilitations and maintenance, and for alternative development standards. Individual property owners shall be notified of the Resolution prior to public hearing and those submitting written notifications to withhold properties from the Register shall be honored.
- **Implementation Program 13.C.e:** Maintain, expand and update the existing GIS cultural resources database to include all areas inventoried within the County, all individual parcels known to include cultural resources and regions and parcels with a high potential for containing cultural resources based on natural landscape, historic maps, and oral histories.
- **Implementation Program 13.C.f:** In consultation with the Tuolumne County Historical Society, Tuolumne County Historian, Tuolumne County Museum Board of Governors and Tuolumne County Historic Preservation Review Commission, locate and designate a repository for cultural resources documents, maps, surveys, photos, and other information and provide staffing to organize, maintain, make accessible and update information received at this archive.
- ▲ **Policy 13.C.3:** Identify historic districts and structures.

- **Implementation Program 13.C.i:** Upon completion and distribution of completed cultural resources inventories, identify potential historic districts. Schedule public hearings to gauge community interest in forming historic districts. When community support is forthcoming for a proposal, pursue HDP (historic district) zoning. This procedure is included in the County Ordinance Code.
- **Implementation Program 13.C.j:** Continue to require parcel owner consent prior to zoning property to the H zoning district and require consent of a simple majority of property owners within a proposed HDP zoning district prior to zoning the property to HDP. The determination of a majority of the property owners for zoning to HDP shall be based upon each parcel having one vote.
- **Implementation Program 13.C.k:** Designate corridors, or portions of corridors, which:
 1. are examples of historic trade, water distribution or transportation routes, conveyance systems or trails, or
 2. are lined with visible cultural resources, or
 3. pass through historic or design review districts, or
 4. are representative of a major period in Tuolumne County or California history.

Designation of Heritage Corridors shall only be approved by the Board of Supervisors after consent of the owners of a minimum of 51% of the property area and 51% of the property owners included within a proposed Heritage Corridor. The determination of the consent of the property owners for the formation of Heritage Corridors shall be based upon each parcel having one vote. In conjunction with the designation of a Heritage Corridor, a cultural resources conservation program for the area within the proposed corridor shall be formulated as a cooperative effort by the owners of the property within the corridor and the County and adopted by the Board of Supervisors.

- ▲ **Policy 13.F.1:** Promote good cultural resources management practices by demonstrating proper stewardship of the County's cultural resources.
 - **Implementation Program 13.F.a:** Retain the Tuolumne County Historic Preservation Review Commission as an advisory agency to review County projects with the potential to impact cultural resources.
 - **Implementation Program 13.F.b:** Enlist the Tuolumne County Historic Preservation Review Commission to prepare applications for listing all eligible County-owned properties to the National, California and Tuolumne County Registers.
 - **Implementation Program 13.F.c:** Enlist the Tuolumne County Historic Preservation Review Commission to inventory all County-owned properties in excess of 45 years old.
 - **Implementation Program 13.F.d:** Formulate best preservation practice standards in consultation with the Tuolumne County Historic Preservation Review Commission and implement them in storing all County owned property that is in excess of 45 years of age and has been deemed significant by the Historic Preservation Review Commission.
 - **Implementation Program 13.F.e:** Use the Secretary of the Interior Standards and Guidelines for Historic Preservation Projects and the State Historical Building Code in maintaining or restoring County owned buildings that are in excess of 45 years of age.

PROJECT IMPACTS

This section presents a programmatic-level analysis of potential impacts to cultural resources from projected development under the General Plan Update. Evaluation of environmental impacts associated with the General Plan Update considers the development that would be facilitated by the General Plan Update, in

accordance with goals, policies, and implementation programs, to accommodate projected growth in the County. It should be noted that the County's population is projected to grow by 0.6 percent annually over the planning horizon (2040). As discussed in detail in Chapter 2, "Project Description," and the introduction to Chapter 3, this is a relatively low amount of growth.

Impact 3.5-1: Change in the Significance of a Historical or Unique Archaeological Resource

Projected development under the General Plan Update could adversely affect historical or unique archaeological resources. The General Plan Update includes policies to protect resources, however, avoidance of these historical or unique archaeological resources may not be possible. Impacts would be **potentially significant**.

Projected development under the General Plan Update could occur in areas of cultural resource sensitivity, such as the communities of Columbia, Groveland, Jamestown, and Tuolumne for known historical resources, and along waterways, alluvial flats, and inland valleys for unique archaeological resources. Projected development under the General Plan Update could be located on properties that contain known or unknown archaeological resources and grading and excavation activities during construction could disturb unique archaeological resources.

Projected development under the General Plan Update also could have direct or indirect adverse effects on known historical resources – including 17 NRHP listings and 20 California Historical Landmarks. Designated historical resources occur in the communities of Columbia, Groveland, Jamestown, and Tuolumne, where development on infill and underutilized sites may occur under the General Plan Update. Projected development under the General Plan Update also could have direct or indirect adverse effects on structures that have not been evaluated for NRHP or CRHR eligibility. Damage to or destruction of a building or structure that is a designated historic resource, or is eligible for listing as a historic resource, could result in the change in its historical significance.

General Plan Update policies and existing regulations pertaining to the protection of cultural resources would reduce impacts to such resources. The Cultural Resources Element includes the following policies and implementation programs, described in full above, intended to address potential impacts to historical and archaeological resources.

Policy 13.B.1 protects archaeological resources by requiring environmental review procedures for new development entitlements. This Policy is supported by a series of implementation programs, which require specific actions be taken to fulfill the Policy, including completion of surveys and assessments prior to construction activities, as well as monitoring requirements, and protection measures. Specifically, Implementation Program 13.B.a requires that cultural resource assessments be prepared by a qualified professional before construction activities begin. Implementation Program 13.B.b requires that discretionary development projects are designed to avoid potential impacts to significant cultural resources whenever possible. Implementation Program 13.B.e requires preconstruction meetings with project contractors, Native American representatives, and the project's qualified cultural resources professional. The implementation program also calls for stopping work and evaluating a resource pursuant to CEQA when a cultural resource is identified during the construction phase of a project. Additionally, Implementation Program 13.B.f contains additional requirements related to cultural finds during construction, such as hiring a qualified professional as defined in Title 14 of the Tuolumne County Ordinance Code to evaluate the site.

Policy 13.B.2 addresses the retention of the special character of historic districts by reducing, adapting and/or modifying some development standards within historic districts. This Policy is supported by several implementation programs that protect historic structures. Specifically, Implementation Program 13.B.p requires the use of the Secretary of the Interior's Standards as a guide for evaluating development proposals involving cultural resources, such as restoration, alteration of, and, additions to existing historic structures. Implementation Program 13.B.q requires review by the Historic Preservation Review Commission prior to issuance of a demolition permit in the H and HDP zoning districts.

While the General Plan Update policies and implementation programs are aimed at protecting resources, as noted under Implementation Program 13.B.b, it may not be feasible to design a development project such that it avoids significant historical or unique archaeological resources. As previously discussed, preservation in place is the preferred manner of mitigating impacts to significant archaeological resources. Additionally, State CEQA Guidelines Section 15126.4(b)(2) notes that in some circumstances, documentation of a historical resource will not mitigate the effects of demolition of that resource to a less-than-significant level because the historic resources would no longer exist. Therefore, impacts associated with projected development under the General Plan Update would be **potentially significant**.

Mitigation Measures

The General Plan Update includes implementation programs requiring cultural resources surveys to be prepared by qualified professionals for all discretionary projects and that the reports would be prepared in compliance with State and Federal standards including the Secretary of the Interior's Standards and Guidelines for Identification, Evaluation, Documentation, Registration, Historical Documentation, Architectural and Engineering Documentation, and Archaeological Documentation. Proposed Implementation Program 13.B.3 would require that determinations of impacts, significance, and mitigation be made by qualified archaeological or historical consultants and that discretionary development projects be designed to avoid potential impacts to significant cultural resources whenever possible. However, avoidance may not always be feasible. No further mitigation is available other than to deny a project if historical or unique archaeological resources would be affected. As discussed in Chapter 6, "Alternatives," this EIR analyzes a Historic Structure Preservation Alternative. Under that alternative, policy provisions would be included that would prohibit, with some exceptions, demolition or substantial alteration of a significant historic structure.

Significance after Mitigation

Policies and implementation programs identified in the General Plan Update would reduce impacts to historic and archaeological resources to the extent feasible because actions would be taken to record, evaluate, avoid, or otherwise treat the resource appropriately, in accordance with pertinent laws and regulations. However, avoidance of these historical or unique archaeological resources may not always be feasible, and recordation of a significant historic resource does not constitute adequate mitigation for a substantial adverse change to that resource. Therefore, because the potential for permanent loss of a known cultural resource or its integrity cannot be precluded, the project's impacts would be **significant and unavoidable**.

Impact 3.5-2: Change in the Significance of Paleontological Resources

Projected development under the General Plan Update could have the potential to destroy, directly or indirectly, a unique paleontological resource. The General Plan Update includes policies to protect previously unknown resources. Implementation of these policies and protection programs would reduce potential impacts to a **less-than-significant** level.

Based on geologic mapping, the majority of the County is not considered sensitive for paleontological resources. Paleozoic marine rocks occur in the western portion of the County and may contain fossils of marine invertebrates. A pocket of Plio-Pleistocene and Pliocene loose consolidated deposits also occurs along State Route 108 to southwest of Jamestown and northwest of Chinese Camp. This area may contain evidence of Pleistocene-era large mammals. Projects involving excavation, grading, or soil removal in previously undisturbed areas have the greatest likelihood to encounter these resources. The degree and extent of impacts would depend upon subsequent project-specific locations, and as such, project-specific analysis would be required to determine the precise area of impact and the importance of any paleontological or geologic resource identified within a proposed project area.

As discussed under Impact 3.5-1, the General Plan Update proposes policies and implementation programs to address potential impacts to cultural resources. In addition to the policies and implementation programs described under Impact 3.5-1, Implementation Program 13.B.d requires a paleontological investigation be completed by a qualified paleontologist for discretionary development projects proposed in an area

underlain by geologic formations that have the potential to contain paleontological resources. The implementation program also requires that the paleontologist submit a written report describing findings and its recommendations be included as mitigation measures and conditions of approval for the project. Under the implementation program, provision would be made for the deposit of scientifically valuable paleontological materials which are removed from the site with responsible public or private institutions.

These General Plan Update policies and implementation programs would reduce impacts of projected development under the General Plan Update to paleontological resources because professionally accepted and legally compliant procedures for the survey, discovery, and recordation of paleontological resources would be implemented. Impacts would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.5-3: Accidental Discovery of Human Remains

Previously undiscovered human remains could be discovered when soils are disturbed during construction of cultivation and processing sites for projected development under the General Plan Update. Compliance with Health and Safety Code Sections 7050.5 and 7052 and Public Resources Code Section 5097 would make this impact **less than significant**.

The location of grave sites and Native American remains can occur outside of dedicated cemeteries or burial sites. Ground-disturbing construction activities could uncover previously unknown human remains, which could be archaeologically or culturally significant. Projected development under the General Plan Update could include residential, commercial, professional/office, public schools, and public parks. These activities would result in soil disturbance; therefore, the potential exists for previously undiscovered human remains to be discovered.

California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in Health and Safety Code Sections 7050.5 and 7052 and Public Resources Code Section 5097.98.

If human remains are discovered during any construction activities, potentially damaging ground-disturbing activities in the area of the remains shall be halted immediately, and the project applicant shall notify the Tuolumne County coroner and the NAHC immediately, according to Public Resources Code Section 5097.98 and the Health and Safety Code. If the remains are determined by the NAHC to be Native American, the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. Following the coroner's findings, the archaeologist, the NAHC-designated Most Likely Descendant, and the landowner, shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in Public Resources Code Section 5097.98.

Compliance with Health and Safety Code Sections 7050.5 and 7052 and Public Resources Code Section 5097.98 would provide an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered. Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.5-4: Change in the Significance of a Tribal Cultural Resource

No tribes that are culturally affiliated with Tuolumne County have formally requested notification under AB 52. Therefore, there is no trigger for consultation, and consequently no resources have been identified as tribal cultural resources as described under AB 52. However, recognizing the timeframe of General Plan Update, there is a potential that tribes may request consultation in the future and that tribal cultural resources could be identified during the implementation period of the General Plan. Therefore, although no resources have been identified that meet the criteria for a tribal cultural resource under Public Resources Code Section 21074, because tribes may request notification in the future, it is too speculative to determine the potential for impacts at this time.

The County of Tuolumne regularly coordinates informally with Native American Tribes, including Buena Vista Rancheria, Chicken Ranch Rancheria of Me-Wuk, and the Tuolumne Band of Me-Wuk during the processing of discretionary entitlements. The General Plan Update proposes Implementation Program 13.B.g, which establishes procedures to conduct cultural resources reviews and includes a list of advisory agencies to be notified during the CEQA consultation process including, the Tuolumne Band of Me-Wuk Indians and the Chicken Ranch Band of the Me-Wuk Indians.

Under Public Resources Code Section 21080.3.1, a lead agency shall begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if the California Native American tribe requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe. No tribes that are traditionally or culturally affiliated with Tuolumne County, including Buena Vista Rancheria, Chicken Ranch Rancheria of Me-Wuk, or the Tuolumne Band of Me-Wuk, have requested to be informed of proposed projects; therefore, there is no trigger to begin consultation under AB 52, resulting in no resources identified as tribal cultural resources. (It should also be noted that no tribes responded to the County's consultation request pursuant to SB 18.) However, there is always the potential that tribes could request consultation in the future. At such time the County would consult with tribes regarding individual projects in compliance with AB 52. Therefore, while no resources have been identified that meet the criteria for a tribal cultural resource under Public Resources Code Section 21074, tribes may request notification within the 2040 planning horizon, and, through the consultation process, tribal cultural resources could be identified if any exist in the County. Pursuant to Public Resources Code Section 21074, as part of its determination of the significance of a potential tribal cultural resource, the County must consider the significance of such a resource to the individual tribe, which would require coordination with the tribe. Because no tribes have requested notification and no potential tribal cultural resources have been identified, it is too speculative at this time to determine the potential for impacts to tribal cultural resources to be identified in the 2040 planning horizon.

Mitigation Measures

No mitigation is required at this time.

3.6 ENERGY

This section was prepared pursuant to State CEQA Guidelines Section 15126 and Appendix F of the State CEQA Guidelines, which requires that EIRs include a discussion of the potential energy impacts of projects, with emphasis on considering whether implementing the project would result in inefficient, wasteful, and unnecessary consumption of energy. This section discusses the energy impacts of projected development under the General Plan Update. The capacity of existing and proposed infrastructure to serve the County is evaluated in Section 3.17, “Utilities and Service Systems.”

Energy related to projected development under the General Plan Update would include energy directly consumed for space heating and cooling, and electricity- and gas-powered equipment (including industrial equipment), and interior and exterior lighting of buildings (residential and nonresidential) in the plan area. Indirect energy consumption would be associated with the generation of electricity at power plants and the energy used for the treatment of water. Transportation-related energy consumption includes the use of fuels and electricity to power cars, trucks, and public transportation. Energy would also be consumed by equipment and vehicles used during construction of projected development under the General Plan Update.

3.6.1 Environmental Setting

PHYSICAL SETTING

Energy Facilities and Services in the Plan Area

Electric service in Tuolumne County is provided by Pacific Gas and Electric Company (PG&E). There is no natural gas consumption in Tuolumne County; however, there is propane consumption.

Energy Types and Sources

California relies on a regional power system composed of a diverse mix of natural gas, petroleum, renewable, hydroelectric, and nuclear generation resources. Natural gas provides one third of the electricity used in California, coming from both California-based power plants, as well as Pacific Northwest- and Southwest-based power plants outside the state. After natural gas generation, electricity in California is mostly generated by renewables (29 percent), large hydroelectric (15 percent), and nuclear (9 percent) (CEC 2018a). The contribution of in- and out-of-state power plants depends on the precipitation that occurred in the previous year, the corresponding amount of hydroelectric power that is available, and other factors. PG&E is the primary electricity supplier in Tuolumne County. As of 2016, PG&E was powered by 33 percent renewables (CPUC 2018).

Alternative Fuels

A variety of alternative fuels are used to reduce demand for petroleum-based fuel. The use of these fuels is encouraged through various statewide regulations and plans (e.g., Low Carbon Fuel Standard, Assembly Bill [AB] 32 Scoping Plan). Conventional gasoline and diesel may be replaced (depending on the capability of the vehicle) with many transportation fuels, including:

- ▲ biodiesel,
- ▲ electricity,
- ▲ ethanol (E-10 and E-85),
- ▲ hydrogen,
- ▲ natural gas (methane in the form of compressed and liquefied natural gas),
- ▲ propane,
- ▲ renewable diesel (including biomass-to-liquid),
- ▲ synthetic fuels, and
- ▲ gas-to-liquid and coal-to-liquid fuels.

California has a growing number of alternative fuel vehicles through the joint efforts of the California Energy Commission (CEC), California Air Resources Board (CARB), local air districts, federal government, transit agencies, utilities, and other public and private entities. As of June 2018, Tuolumne County contained nine alternative fueling stations (AFDC 2018).

COMMERCIAL AND RESIDENTIAL ENERGY USE

Homes built between 2000 and 2015 used 14 percent less energy per square foot than homes built in the 1980s, and 40 percent less energy per square foot than homes built before 1950. However, the increase size of newer homes has offset these efficiency improvements. Primary energy consumption in the residential sector total 21 quadrillion Btu in 2009 (the latest year the U.S. Energy Information Administration's [EIA's] *Residential Energy Consumption Survey* was completed), equal to 54 percent of consumption in the buildings sector and 22 percent of total primary energy consumption in the U.S. Energy consumption increased 24 percent from 1990 to 2009. However, because of projected improvements in building and appliance efficiency, the EIA 2017 Annual Energy Outlook forecast a 5-percent increase in energy consumption from 2016 to 2040 (EIA 2017).

In aggregate, commercial buildings consumed 46 percent of building energy consumption and approximately 19 percent of U.S. energy consumption. In comparison, the residential sector consumed approximately 22 percent of U.S. energy consumption (EIA 2012).

ENERGY USE FOR TRANSPORTATION

On-road vehicles use about 90 percent of the petroleum consumed in California. Based on the most recently available information, in 2008, the California Department of Transportation (Caltrans) projected 41.5 million gallons of gasoline and diesel would be consumed in Tuolumne County in 2015, an increase of approximately 4.7 million gallons of fuel from the projected 2010 levels (Caltrans 2008).

ENERGY USE AND CLIMATE CHANGE

Scientists and climatologists have produced evidence that the burning of fossil fuels by vehicles, power plants, industrial facilities, residences, and commercial facilities has led to an increase of the earth's temperature. For an analysis of greenhouse gas (GHG) production and the General Plan Update's impacts on climate change, refer to Section 3.8, "Global Climate Change."

3.6.2 Regulatory Setting

Federal and state agencies regulate energy consumption through various policies, standards, and programs. At the local level, individual cities and counties establish policies in their general plans and climate action plans related to the energy efficiency of new development and land use planning and to the use of renewable energy sources.

Energy conservation is embodied in many federal, state, and local statutes and policies. At the federal level, energy standards apply to numerous products (e.g., the U.S. Environmental Protection Agency's [EPA's] EnergyStar™ program) and transportation (e.g., fuel efficiency standards). At the state level, Title 24 of the California Code of Regulations sets forth energy standards for buildings. Further, the state provides rebates/tax credits for installation of renewable energy systems, and offers the Flex Your Power program, which promotes conservation in multiple areas.

FEDERAL

Energy Policy and Conservation Act, and CAFE Standards

The Energy Policy and Conservation Act of 1975 established nationwide fuel economy standards to conserve oil. Pursuant to this Act, the National Highway Traffic and Safety Administration, part of the U.S. Department of Transportation, is responsible for revising existing fuel economy standards and establishing new vehicle economy standards.

The Corporate Average Fuel Economy (CAFE) program was established to determine vehicle manufacturer compliance with the government's fuel economy standards. Compliance with CAFE standards is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the EPA calculates a CAFE value for each manufacturer based on the city and highway fuel economy test results and vehicle sales. The CAFE values are a weighted harmonic average of the EPA city and highway fuel economy test results. Based on information generated under the CAFE program, the U.S. Department of Transportation is authorized to assess penalties for noncompliance. Under the Energy Independence and Security Act of 2007 (described below), the CAFE standards were revised for the first time in 30 years.

Energy Policy Act (1992 and 2005) and Energy Independence and Security Act of 2007

The Energy Policy Act of 1992 was passed to reduce the country's dependence on foreign petroleum and improve air quality. The act includes several parts intended to build an inventory of alternative fuel vehicles in large, centrally fueled fleets in metropolitan areas. The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

The Energy Independence and Security Act of 2007 increased the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel annually by 2022, which represents a nearly five-fold increase over current levels and reduces U.S. demand for oil by setting a national fuel economy standard of 35 miles per gallon by 2020—an increase in fuel economy standards of 40 percent. By addressing renewable fuels and CAFE standards, the Energy Independence and Security Act of 2007 will build on progress made by the Energy Policy Act of 2005 in setting out a comprehensive national energy strategy for the 21st century.

STATE

State of California Energy Plan

CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current plan is the 1997 California Energy Plan. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies strategies such as aiding public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs, and encouraging urban design that reduces vehicle miles traveled (VMT) and accommodates pedestrian and bicycle access.

Senate Bill 1078: California Renewables Portfolio Standard Program

Senate Bill (SB) 1078 (Chapter 516, Statutes of 2002) establishes a renewables portfolio standard (RPS) for electricity supply. The RPS originally required retail sellers of electricity, including investor-owned utilities and community choice aggregators to provide 20 percent of their supply from renewable sources by 2017, but SB 1078 moved that date forward to require compliance by 2010, although the state did not meet the target. In addition, electricity providers subject to the RPS must increase their renewable share by at least 1 percent

each year. As of 2016, the state sourced 34.8 percent of its electricity from certified renewable sources (CPUC 2018). The outcome of this legislation will affect regional transportation powered by electricity.

SB X1-2 of 2011 set a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. The state met the 2016 target and is on track to meet the 2020 target.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. This act also requires doubling of the energy efficiency savings in electricity and natural gas for retail customers through energy efficiency and conservation by December 31, 2030.

Assembly Bill 1007: State Alternative Fuels Plan

AB 1007 (Chapter 371, Statutes of 2005) required CEC to prepare a state plan to increase the use of alternative fuels in California. CEC prepared the State Alternative Fuels Plan in partnership with CARB and in consultation with other state, federal, and local agencies. The plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes the costs to California and maximizes the economic benefits of in-state production. It assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuel use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Executive Order S-06-06

Executive Order (EO) S-06-06, signed on April 25, 2006, establishes targets for the use and production of biofuels and biopower, and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The EO establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050. The EO also calls for the state to meet a target for use of biomass electricity. The 2011 Bioenergy Action Plan identifies barriers and recommends actions to address them so that the state can meet its clean energy, waste reduction, and climate protection goals. The 2012 Bioenergy Action Plan updates the 2011 plan and provides a more detailed action plan to achieve the following goals:

- ▲ increase environmentally and economically sustainable energy production from organic waste;
- ▲ encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications;
- ▲ create jobs and stimulate economic development, especially in rural regions of the state; and
- ▲ reduce fire danger, improve air and water quality, and reduce waste.

As of 2015, 3.2 percent of the total electricity system power in California was derived from biomass.

Senate Bill 375

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a Sustainable Communities Strategy or Alternative Planning Strategy, showing prescribed land use allocation in each MPO's Regional Transportation Plan. CARB, in consultation with the MPOs, is to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in their respective regions for 2020 and 2035. Implementation of SB 375 will have the co-benefit of reducing

California's dependency of fossil fuels and making land use development and transportation systems more energy efficient.

The Tuolumne County Transportation Council (TCTC) serves as the federally designated rural transportation agency and the state-designated regional transportation planning agency for Tuolumne County. While the TCTC is required to prepare a Regional Transportation Plan, it is not required to prepare a Sustainable Communities Strategy, as it is not a federally designated MPO. However, the TCTC's *2016 Final Regional Transportation Plan* includes an optional Rural Sustainable Strategies chapter to help Tuolumne County comply with AB 32 and to reduce GHG emissions.

California Green Building Standards

California Code of Regulations, Title 24, Part 6, is California's Energy Efficiency Standards for Residential and Non-Residential Buildings. Title 24 Part 6 was established by CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy-efficiency standards for residential and nonresidential buildings. In 2013, CEC updated Title 24 standards with more stringent requirements, effective July 1, 2014. All buildings for which an application for a building permit is submitted on or after July 1, 2014, must follow the 2013 standards. Energy-efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The *CEC Impact Analysis for California's 2013 Building Energy Efficiency Standards* estimates that the 2013 standards are 23.3 percent more efficient than the previous 2008 standards for residential construction and 21.8 percent more efficient for nonresidential construction. In 2016, CEC updated Title 24 standards again, effective January 1, 2017. CEC estimates that the 2016 standards are 28 percent more efficient than 2013 standards for residential construction (CEC n.d.) and are approximately 5 percent more efficient for nonresidential construction (CEC 2015).

The 2019 Title 24 Part 6 Building Energy Efficiency Standards were adopted by the CEC on May 9, 2018 and will take effect on January 1, 2020. The standards are designed to move the state closer to its zero net energy goals for new residential development. It does so by requiring all new residences to install enough renewable energy to offset all the site electricity needs of each residential unit (California Code of Regulations, Title 24, Part 6, Section 150.1(c)14). CEC estimates that the combination of mandatory on-site renewable energy and prescriptively required energy efficiency features will result in new residential construction that uses 53 percent less energy than the 2016 standards. Nonresidential buildings are anticipated to reduce energy consumption by 30 percent compared to the 2016 standards primarily through prescriptive requirements for high-efficacy lighting (CEC 2018b). The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary in response to local climatologic, geologic, or topographic conditions, provided that these standards are demonstrated to be cost effective and exceed the energy performance required by Title 24 Part 6.

Assembly Bill 32, Climate Change Scoping Plan and Update

In December 2008, CARB adopted its Climate Change Scoping Plan, which contains the main strategies California will implement to achieve reduction of approximately 118 million metric tons of carbon dioxide-equivalent (MMTCO_{2e}) emissions, or approximately 21.7 percent from the state's projected 2020 emission level of 545 MMTCO_{2e} under a business-as-usual scenario (this is a reduction of 47 MMTCO_{2e}, or almost 10 percent, from 2008 emissions). In May 2014, CARB released and has since adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching AB 32 goals and evaluate progress that has been made between 2000 and 2012 (CARB 2014:4-5). According to the update, California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond 2020 (CARB 2014:ES-2). The update also reports the trends in GHG emissions from various emissions sectors (e.g., transportation, building energy, agriculture).

After releasing multiple versions of proposed updates in 2017, CARB adopted the final version titled *California's 2017 Climate Change Scoping Plan* (2017 Scoping Plan), which lays out the framework for achieving the 2030 reductions as established in more recent legislation (discussed below). The 2017

Scoping Plan identifies the GHG reductions needed by each emissions sector to achieve a statewide emissions level that is 40 percent below 1990 levels before 2030.

The measures identified in the 2017 Scoping Plan will have the co-benefit of reducing California's dependency on fossil fuels and making land use development and transportation systems more energy efficient. More details about the statewide GHG reduction goals and scoping plan measures are provided in the regulatory setting of Section 3.8, "Global Climate Change."

Executive Order B-30-15

On April 20, 2015, Governor Edmund G. Brown Jr. signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's EO aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union which adopted the same target in October 2014. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, discussed above). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming to below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the state's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050. Achievement of these goals will have the co-benefit of reducing California's dependency of fossil fuels and making land use development and transportation systems more energy efficient.

Advanced Clean Cars Program

In January 2012, CARB approved the Advanced Clean Cars program which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into a single package of standards for vehicle model years 2017 through 2025. The new rules strengthen the GHG standard for 2017 models and beyond. This will be achieved through existing technologies, the use of stronger and lighter materials, and more efficient drivetrains and engines. The program's zero-emission vehicle regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025. The program also includes a clean fuels outlet regulation designed to support the commercialization of zero-emission hydrogen fuel cell vehicles planned by vehicle manufacturers by 2015 by requiring increased numbers of hydrogen fueling stations throughout the state. The number of stations will grow as vehicle manufacturers sell more fuel cell vehicles. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions than the statewide fleet in 2016 (CARB 2016).

LOCAL

Tuolumne County General Plan

The 1996 General Plan provides a framework for addressing issues related to energy efficiency (Tuolumne County 1996). As the proposed project would update the 1996 General Plan, this document will be discussed in the context of the update within the impact analysis. The Community Development and Design, Housing, Transportation, Economic Development, Water, Air Quality, and Climate Change Elements contain goals and policies that would reduce energy consumption. Specific General Plan Update policies related to energy are identified below under Section 3.6.3, "Impact Analysis."

3.6.3 Impact Analysis

METHODS OF ANALYSIS

Levels of construction- and operation-related energy consumption by projected development under the General Plan Update were estimated, including the number of megawatt-hours of electricity, therms of natural gas, gallons of gasoline, and gallons of diesel fuel. Modeling was based on project-specific information, including the total square footage of nonresidential land uses and the number of new residential units to be built as part of the General Plan Update. The estimated buildout of the land uses included in the General Plan Update would occur between 2019 and 2040. For the purposes of modeling, it was assumed that projected development would occur incrementally over this time period, with construction activity occurring in equal annual increments (approximately 5 percent annually). See Table 2-6 in Chapter 2, “Project Description,” for a full list of new land uses. The buildout of the General Plan Update in 2040 assumes all new land uses are operational and energy consumption was quantified for all new development.

Energy consumption estimates were calculated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 computer program, CARB’s Emission Factor 2017 model (EMFAC2017), and the Tuolumne County Regional Blueprint Greenhouse Gas Study. CalEEMod was used to determine energy consumption associated with construction, building energy, and area sources (e.g., fireplaces, architectural coatings). Where specific information about the land uses that would be developed under the General Plan Update was not known, CalEEMod default values based on location were used. Because there is no natural gas consumption in Tuolumne County, the CalEEMod default natural gas consumption was converted to propane use. EMFAC2017 was used to determine fuel consumption associated with construction commute and haul trips and operational mobile sources. The Tuolumne County Regional Blueprint Greenhouse Gas Study was used to derive fuel wood and heating oil consumption using a per capita comparison between the 2010 baseline and the net increase in County population (including the City of Sonora) for the projected development under the General Plan Update through 2040. The impact analysis summarizes the levels of energy consumption for each year of construction and for the first year of operation at 2040 buildout. It also summarizes the gasoline and diesel consumption estimated for construction and operational mobile trips in the County.

THRESHOLDS OF SIGNIFICANCE

The following significance criteria is based on CEQA Guidelines Appendix F (Energy Conservation), under which the General Plan Update would have a potentially significant adverse impact if it would:

- ▲ result in wasteful, inefficient, or unnecessary consumption of energy.

However, neither CEQA nor the CEQA Guidelines establish thresholds that define wasteful, inefficient, or unnecessary use. Therefore, this section includes a qualitative discussion of the potential for the project to result in the unnecessary, inefficient, or wasteful consumption of energy.

GENERAL PLAN UPDATE POLICIES

The following policies and implementation programs from the General Plan Update are specifically relevant to energy consumption within the plan area:

Community Development and Design Element

- ▲ **Policy 1.D.1:** Encourage pedestrian oriented development to reduce the use of motor vehicles.
 - **Implementation Program 1.D.b:** Work with transit providers and developers to encourage construction of affordable housing developments that use transit-oriented and pedestrian-oriented design principles.

- **Implementation Program 1.D.c:** Encourage building site designs that cater to transit riders, pedestrians and cyclists, as well as those arriving by car.
- ▲ **Policy 1.D.2:** Promote neighborhood commercial development that provides retail stores and service businesses within walking distance of residential areas.
 - **Implementation Program 1.D.e:** Designate land for neighborhood commercial development within walking distance of residential areas to encourage alternative methods of transportation and eliminate the dependence on automobile transportation.
 - **Implementation Program 1.D.f:** Encourage new commercial centers to be designed to facilitate pedestrian circulation within and between commercial sites and nearby residential areas.
 - **Implementation Program 1.D.g:** Promote development within identified communities that meets a walkability standard of a quarter- to half-mile for access to daily retail needs, schools, transit stops and recreational facilities.
- ▲ **Policy 1.D.3:** Encourage urban residential development projects in identified communities to be located within a quarter mile of a transit stop.
 - **Implementation Program 1.D.h:** Designate areas for new higher-density residential uses and appropriate support services within walking distance of public transportation facilities.
 - **Implementation Program 1.D.i:** Designate areas for new mixed-use, high and medium density residential development and appropriate support services within walking distance of public transportation facilities.
- ▲ **Policy 1.D.4:** Encourage transit oriented development by providing planning tools, such as design guidelines, and incentives, such as a streamlined permitting process, increased densities or reduced on-site parking requirements.
 - **Implementation Program 1.D.j:** Provide incentives to encourage high and medium density residential development projects located within a quarter mile of a transit stop. Incentives could include a streamlined permitting process, increased densities or reduced on-site parking requirements.
 - **Implementation Program 1.D.k:** Provide incentives, such as reduced parking requirements and permit streamlining, and remove zoning and other barriers to mixed-use and higher intensity development at transit nodes and along transit corridors.
- ▲ **Policy 1.D.5:** Promote the provision of multi-modal access to activity centers such as public facilities, commercial centers and corridors, employment centers, transit stops, schools, parks, recreation areas, and tourist attractions.
- ▲ **Policy 1.D.6:** Promote a balance between commercial, industrial, recreational, residential and mixed-use land uses in identified communities to optimize the potential for the use of alternative modes of transportation.
 - **Implementation Program 1.D.l:** Designate land for integrated mixed-use areas including residential, retail, office, recreational, open space and public uses to facilitate travel by transit, bicycle or foot, as well as automobile.
 - **Implementation Program 1.D.n:** Designate land within identified communities for mixed use in areas that are close to public transportation routes, commercial centers and community facilities, such as parks. Consider allowing additional commercial facilities in the Mixed Use (M-U) zoning district of the Tuolumne County Ordinance Code. Provide incentives to encourage the creation of mixed use

development. Incentives could include a streamlined permitting process, density bonuses, or reduced parking requirements. Promote flexibility in the application of parking standards to support mixed-use and transit-oriented development.

Housing Element

- ▲ **Policy 2.F.1:** Promote land use patterns that encourage energy efficiency. Promote higher density residential development where existing public services are available.
 - **Implementation Program 2.F.a:** Encourage new development that includes energy efficient land use. This may include compact urban form, access to public transit, water efficient landscaping and other energy efficient measures.
- ▲ **Policy 2.F.2:** Promote green design in residential construction and rehabilitation.
 - **Implementation Program 2.F.b:** (1) Encourage safe sustainability practices through the collection of rainwater and the use of grey water systems in order to reduce the impact on the environment, promote water conservation and improve the longevity of septic systems. Post information on the County website concerning grey water and rainwater design and permit procedures. (2) Continue to enforce the most current California Green Building Standards Code and California Energy Code as adopted by the California Building Standards Commission.
 - **Implementation Program 2.F.c:** Provide information to the public on the County website regarding the efficient use of energy in the home and ways to improve the energy efficiency of new construction. Topics may include energy saving techniques, xeriscaping, green retrofitting and the availability of low-interest energy loan programs.
- ▲ **Policy 2.F.3:** Investigate programs and funding sources for solar panels, green retrofitting of existing housing, weatherization and energy conservation improvements in apartments and homes and make this information available to the public.
 - **Implementation Program 2.F.d:** Encourage the use of solar energy, green building components and accessibility features in the County's First Time Homebuyer and Owner Occupied Rehabilitation Programs. Look for additional funding sources to cover the cost of green upgrades in rental and owner-occupied housing.
 - **Implementation Program 2.F.e:** Evaluate the feasibility of offering incentives such as streamlined and expedited processing of development applications to property owners to encourage weatherization upgrades to existing buildings such as window retrofits, the use of solar systems and upgrades to insulation. Weatherizing and retrofitting existing buildings should be done in a manner that is compatible with the character of the building.

Transportation Element

- ▲ **Policy 4.B.1:** Develop a modern transportation system that incorporates alternative transportation modes into the system design.
 - **Implementation Program 4.B.b:** Plan for a balanced multimodal transportation network that meets the needs of all users of roads, including bicyclists, pedestrians, and transit users. Incorporate bicycle, pedestrian and transit improvements when designing roadway improvements where appropriate. Support the efforts of the TCTC to develop an Active Transportation Plan for Tuolumne County, the State Route 49 Complete Streets and State Route 49 Congested Corridor Plan.

- **Implementation Program 4.B.c:** Provide multi-modal access to activity centers such as public facilities, commercial centers and corridors, employment centers, transit stops, schools, parks, recreation areas, and tourist attractions.
- **Implementation Program 4.B.d:** Promote walking and bicycling through education and outreach programs and activities such as commute campaigns, classes that teach cycling skills, and providing route maps.
- ▲ **Policy 4.B.4:** Encourage the use of alternative modes of transportation by incorporating public transit, bicycle and pedestrian modes in County transportation planning and by requiring new development to provide adequate pedestrian and bikeway facilities at suitable locations.
 - **Implementation Program 4.B.i:** Require, where appropriate and warranted, new development to contribute to, or construct, bicycle and pedestrian facilities. New development zoned R-1, R-2, R-3, C-O, C-1, C-2, C-K and M-U occurring within a two mile radius of a school, shopping center, life enrichment facility or work concentration area and located along a major or minor collector or arterial shall be targeted for providing bicycle and pedestrian facilities within the new development. If existing conditions prohibit development from constructing warranted facilities, such developments should set aside sufficient room along the project frontage and pay in-lieu fees to construct bicycle and pedestrian facilities.
 - **Implementation Program 4.B.m:** Where appropriate, require new development outside of identified communities to provide and stripe minimum four-foot wide shoulders within the development to accommodate pedestrians unless average lot sizes are greater than two acres.
 - **Implementation Program 4.B.n:** Encourage a continuous and interconnected pedestrian friendly system of paths that lead to transit stops, by encouraging all new residential and commercial development to include a pedestrian circulation system that is connected to existing (and where possible, planned) transit stops.
 - **Implementation Program 4.B.o:** Require, where appropriate, new commercial, high density residential and recreational development to provide and maintain bicycle storage facilities.
 - **Implementation Program 4.B.p:** Provide and plan for pedestrian access routes to designated transit corridors in new development.
 - **Implementation Program 4.B.q:** Consider an impact fee program whereby all development would contribute towards the construction of pedestrian facilities to reduce vehicle miles traveled consistent with the California Environmental Quality Act.
 - **Implementation Program 4.B.r:** Require local roads serving new development to include, where feasible, bicycle and pedestrian infrastructure that links to existing bicycle and pedestrian facilities.
 - **Implementation Program 4.B.s:** Require, where appropriate and warranted, dedication of right-of-way for and/or construction of bicycle and pedestrian facilities along routes identified in the priority and non-priority lists contained in the Non-Motorized Element of the County of Tuolumne Regional Transportation Plan.
- ▲ **Policy 4.B.5:** Maintain and expand, where possible and appropriate, the system of non-motorized connections that link neighborhoods to larger roadways, activity centers and nodes, businesses, community services, parks and recreational facilities, and transit stops and stations.
 - **Implementation Program 4.B.t:** Require all new community plans to include a bicycle and pedestrian routes plan. These bicycle and pedestrian route plans should illustrate an integrated connection to the existing bicycle, roadway and pedestrian network outside of the community, either through

- **Implementation Program 6.E.l:** Support biomass energy facilities as an alternative to traditional forms of energy.
- **Implementation Program 6.E.m:** Plan development so as not to preclude the future utilization of significant energy producing minerals or water resources necessary for hydroelectric facilities.
- **Implementation Program 6.E.n:** Actively participate and be engaged in State and Federal water policy and Federal Energy Regulatory Commission relicensing of hydroelectric projects in the County.
- **Implementation Program 6.E.o:** Encourage land uses which maximize the efficient use of energy and facilitate the use of renewable energy resources in order to reduce dependence on imported and non-renewable energy supplies.
- **Implementation Program 6.E.p:** Expedite all permits under the County's jurisdiction which are necessary for the development of energy generating facilities using renewable resources and enterprises which are engaged in other types of energy conservation programs, such as biomass co-generation facilities, businesses which utilize recycled products and materials, and recycling facilities.

Water Supply Element

- ▲ **Policy 14.B.1:** Support water districts in establishing conservation standards to reduce demand for water.
 - **Implementation Program 14.B.a:** Support the efforts, such as funding applications and inter-agency coordination, of water agencies and districts to prevent the depletion of water resources and promote the conservation and reuse of water.
- ▲ **Policy 14.B.2:** Increase water conservation efforts to maximize water use efficiency within Tuolumne County through conservation, recycling and education.
 - **Implementation Program 14.B.b:** Encourage water reuse programs in new development to conserve raw or potable water supplies consistent with State Water Resources Control Board guidelines through the application review process.
 - **Implementation Program 14.B.c:** Support the efforts of water purveyors to rehabilitate water delivery systems to reduce lost water and increase the efficient use and availability of water.
 - **Implementation Program 14.B.d:** Encourage water reuse/recycling through the treatment and distribution of treated wastewater by working with new development to identify ways to incorporate reuse/recycling into projects.
 - **Implementation Program 14.B.e:** Ensure the conservation of water through the implementation of the Tuolumne County Landscaping Requirements, Chapter 15.28 of the Tuolumne County Ordinance Code, which provide for the use of xeriscape landscaping plants and materials to conserve water, the use of water conserving irrigation systems for landscaping, and the use of reclaimed or reused water for irrigation.
 - **Implementation Program 14.B.n:** Utilize water-efficient plumbing fixtures and irrigation systems on publicly owned property.
 - **Implementation Program 14.B.o:** Support development of new technology to improve efficient use of water.

- **Implementation Program 14.B.p:** Encourage plumbing retrofits to be installed in existing buildings to reduce water use by working with water purveyors to inform their customers about the permit process to facilitate such retrofits.

Air Quality Element

- ▲ **Policy 15.B.1:** Create a land use pattern that will encourage people to walk, bicycle or use public transit for a significant number of their daily trips.
 - **Implementation Program 15.B.a:** Encourage pedestrian oriented development to reduce the use of motor vehicles.
 - **Implementation Program 15.B.b:** Establish an incentive program to encourage transit-oriented development, including, where appropriate, exempting such projects from traffic impact mitigation fees.
 - **Implementation Program 15.B.c:** Support the development of high density housing, commercial and offices along high priority transit routes.
 - **Implementation Program 15.B.d:** Work with Caltrans, transit providers, and property owners to identify park-and-ride sites with convenient access to public transit.
 - **Implementation Program 15.B.e:** Seek funding for park-and-ride facilities and develop, or support the development of such facilities, within the identified communities, and permit park-and-ride facilities in commercial and industrial zoning districts.
 - **Implementation Program 15.B.f:** Create additional, and improve existing, car-sharing and ride-sharing programs and promote them within the region.
 - **Implementation Program 15.B.g:** Work with Caltrans and other agencies to establish transportation demand management programs, such as park-and-ride facilities, transit incentives and telecommute centers.
- ▲ **Policy 15.B.2:** Develop a modern transportation system that incorporates alternative transportation modes into the system design.
- ▲ **Policy 15.C.1:** Require development to reduce criteria and toxic air pollutant emissions from the use of wood burning appliances, through low emission technology, and maximize the use of energy conservation and clean or renewable energy sources.

Climate Change Element

- ▲ **Policy 18.A.1:** Prepare a Climate Action Plan (CAP), or similar GHG emission reduction plan, that establishes a GHG reduction target consistent with the Senate Bill (SB) 32 goal to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030. The CAP shall identify specific measures to reduce countywide emissions consistent with the established target and will also include adaptation strategies for the County to appropriately adjust to the environmental effects of climate change. Many of the measures in the CAP will overlap with and help implement goals, policies, and implementation programs identified in this General Plan.
 - **Implementation Program 18.A.a:** Include specific GHG emissions reduction measures in the CAP. Examples include, but are not limited to, the following:
 - Incentivize energy efficiency improvements in existing buildings;

- Require energy audits for major additions to or alterations of existing buildings;
- Require compliance with CALGreen Tier 1 Green Building standards and Tier 1 Building Energy Efficiency Standards for eligible alterations or additions to existing buildings;
- Require compliance with CALGreen Tier 1 Green Building standards and Tier 1 standards for all new construction, and phase in Zero Net Energy (ZNE) standards for new construction;
- Require new or replacement residential water heating systems to be electrically powered and/or alternatively fueled systems;
- Expand current renewable energy and green energy incentives and update local ordinances;
- Develop a program to offset project GHG emissions by retrofitting existing income-qualified homes and buildings;
- Support waste-to-energy programs at landfills;
- Increase availability and accessibility of transit information;
- Support alternatives to private vehicle travel for visitors, such as shuttles;
- Increase the supply of electric vehicle charging stations;
- Promote telecommuting at office-based businesses;
- Encourage expansion of composting programs;
- Establish a waste diversion goal that exceeds the State's 2020 75 percent target;
- Promote alternatives to open burning of biomass;
- Convert all stationary diesel or gas-powered irrigation pumps to electric pumps;
- Require Tier 4 equipment for all construction activity and forestry/mining operations by 2030;
- Adopt a new water conservation ordinance for commercial and residential land uses limiting outdoor watering;
- Expedite and/or reduce permit fees associated with water conservation installations in existing facilities;
- Require water audits for large new commercial or industrial projects and significant expansions of existing facilities;
- Establish targets and enhanced programs for oak woodland and coniferous forest preservation and mandatory replanting;
- Refine protection guidelines for existing riparian lands to establish a no-net-loss goal;
- Develop a program to require repurposing of usable lumber from trees removed due to land conversion to avoid wood burning;
- Promote the sale and consumption of locally-grown foods and/or products; and

- Establish and local carbon offset program.
- **Implementation Program 18.A.b:** Include specific adaptation strategies in the CAP. Examples include, but are not limited to the following:
 - Identify critical infrastructure vulnerable to extreme heat events;
 - Develop outreach programs for outdoor workers to prevent heat-related illness;
 - Educate residents on heat-related illness prevention;
 - Encourage installation of cool roof technologies and rooftop gardens;
 - Explore options to incorporate cool pavement technology;
 - Improve parking lot shading and landscaping;
 - Establish an Excessive Heat Emergency Response Plan;
 - Identify locations that are newly at risk or at higher risk for wildland fire hazard;
 - Identify critical infrastructure vulnerable to wildland fire;
 - Evaluate vulnerabilities of water supply systems and networks;
 - Consider innovative options to meet future water demand;
 - Promote use of rainwater catchment and storage systems;
 - Collaborate with agencies to identify future water supplies and explore alternative supply sources; and
 - Pursue grant funding for water resource planning projects.
- ▲ **Policy 18.A.3:** Continue to implement the policies and strategies identified in the *2016 Final Regional Transportation Plan*, including the Rural Sustainable Strategies.
- ▲ **Policy 18.A.5:** Promote energy efficiency and alternative energy while reducing energy demand.
 - **Implementation Program 18.A.j:** Facilitate voluntary energy efficient retrofits in existing structures by connecting home and business-owners with technical and financial assistance, such as Federal, State, and utility rebates, and tax credits, through the County's or Tuolumne County Transportation Council's website.
 - **Implementation Program 18.A.k:** Work with PG&E and other electric utility providers to encourage local businesses and public agencies to install energy conserving technologies, such as occupancy sensors, and implement energy conserving policies, such as "lights out at night."
 - **Implementation Program 18.A.m:** Reduce the energy demand of public facilities and conserve electricity through the following: a) retrofitting County owned or operated street, traffic signal, and other outdoor lights with energy efficient light emitting diode (LED) lamps; b) retrofitting heating and cooling systems to optimize efficiency, such as replacing HVAC systems; and c) replacing old appliances and technologies with Energy Star® products. Obtain funding for and install renewable energy technologies on public property.

- **Implementation Program 18.A.n:** Work with PG&E and other electric utility providers to educate residents and businesses about Smart Meters, how to monitor electricity use, and the potential benefits associated with Smart Meters.
- **Implementation Program 18.A.o:** Work with PG&E and other electric utility providers to promote the use of financial incentives, such as Federal/State/utility rebate and, tax credits, for the voluntary installation of “cool roofs” on existing structures, such as Energy Star® roof products, that have a high solar and thermal reflectance.
- **Implementation Program 18.A.p:** Encourage the use of electric lawnmowers and leaf blowers over those powered by gasoline.
- **Implementation Program 18.A.q:** Encourage the incorporation of energy conservation into the design of residential and commercial buildings; such as Tier 1 and Tier 2 of the Green Building Code.
- **Implementation Program 18.A.r:** Encourage the use of deciduous landscape trees near new development to provide shade during the hot summer months and allow solar warming during the cold winter months.
- **Implementation Program 18.A.s:** Support the use of alternative energy vehicles by encouraging new development to install electric charging stations for passenger vehicles, in particular at high use and density areas.
- **Implementation Program 18.A.t:** Support development of electric charging stations for passenger vehicles, in particular near transit stop locations and high use parking areas.
- ▲ **Policy 18.A.6:** Encourage the use of solar power and other innovative energy sources as alternative to more traditional forms of energy.
 - **Implementation Program 18.A.u:** Promote Federal, State, and utility incentives, such as rebates, vouchers, and tax credits, and consider participating in a Property Assessed Clean Energy (PACE) program under AB 811 to provide property owners financing for solar photovoltaic systems.
 - **Implementation Program 18.A.v:** Assist landowners wishing to utilize solar power and other alternatives by offering information on the requirements for their use in building codes.
 - **Implementation Program 18.A.w:** Promote Federal, State, and utility financial incentives, such as rebates, vouchers and tax credits, to facilitate the installation of solar water heaters in homes.
- ▲ **Policy 18.A.7:** Encourage reduced consumption of fossil fuel energy by promoting alternative transportation methods and encouraging pedestrian oriented development to reduce the use of motor vehicles.

PROJECT IMPACTS

This section presents a programmatic-level analysis of potential impacts associated with energy from projected development under the General Plan Update. Evaluation of environmental impacts associated with the General Plan Update considers the development that would be facilitated by the General Plan Update, in accordance with goals, policies, and implementation programs, to accommodate projected growth in the County. It should be noted that the County’s population (including the City of Sonora) is projected to grow by 0.6 percent annually over the planning horizon (2040). As discussed in detail in Chapter 2, “Project Description,” and the introduction to Chapter 3, this is a relatively low amount of growth.

Impact 3.6-1: Wasteful, Inefficient, or Unnecessary Consumption of Energy during Construction or Operation

Projected development under the General Plan Update would increase electricity and propane consumption. Buildings developed under the General Plan Update would comply with Title 24, Part 6 of the California Building Efficiency Standards. Policies and implementation programs in the General Plan Update address transit-oriented development, improved accessibility for alternative modes of transportation, and increased transit availability that would reduce VMT. Building energy would be reduced through increased use of solar photovoltaics and energy efficiency, as required under the 2019 Title 24 Building Energy Efficiency Standards and as indicated through implementation programs under the General Plan Update. The development and implementation of a climate action plan through Policy 18.A.1 would further reduce both transportation- and building energy-related energy consumption. Construction-related energy consumption would be temporary and not require additional capacity or increase peak or base period demands for electricity or other forms of energy. Thus, energy consumption associated with projected development under the General Plan Update would not result in wasteful, inefficient, or unnecessary consumption of energy. This impact would be **less than significant**.

Appendix F of the State CEQA Guidelines requires the consideration of the energy implications of a project. CEQA requires mitigation measures to reduce “wasteful, inefficient, and unnecessary” energy usage (Public Resources Code Section 21100(b)(3)). Neither the law nor the State CEQA Guidelines establish criteria that define wasteful, inefficient, or unnecessary use. Compliance with the 2016 and 2019 California Building Energy Efficiency Standards and future iterations of the standards would result in energy-efficient buildings. Through the federal CAFE standards and the state’s Low Carbon Fuel Standards, fuel consumption would be reduced as development occurs under the General Plan Update and becomes operational. However, compliance with building codes and vehicle/fuel standards does not adequately address all potential energy impacts during construction and operation.

Construction-Related Energy

Energy would be required to construct, operate, and maintain construction equipment and to produce and transport construction materials associated with the construction of the projected development under the General Plan Update. The one-time energy expenditure required to construct the physical buildings and infrastructure associated with the development would be nonrecoverable. Most energy consumption would result from operation of construction equipment and vehicle trips associated with commutes by construction workers and haul trucks supplying materials.

An estimated total of 305,135,390 gallons of gasoline and 8,814,436 gallons of diesel would be consumed for the projected construction under the General Plan Update within the 2040 planning horizon, as shown in Table 3.6-1 below. The energy needs for this construction would be temporary. Construction contractors are financially motivated to complete construction projects in an efficient manner to meet project schedules and minimize cost. Thus, it would not be typical for fuel to be consumed in a wasteful manner during construction of the projected development under the General Plan. Use of construction equipment and associated energy consumption would be typical of that associated with construction of new residential, commercial, and industrial projects in a rural setting elsewhere in California.

Table 3.6-1 Construction Energy Consumption over the 2040 Planning Horizon

	Gasoline (Gallons)	Diesel (Gallons)
Annual	14,530,257	419,735
Total¹	305,135,390	8,814,436

Notes: Gasoline gallons include on-road gallons from worker trips. Diesel gallons include off-road equipment and on-road gallons from worker and vendor trips.

¹. Total indicates annual construction fuel consumption for the years 2019-2040.

Source: Calculations by Ascent Environmental in 2018, see Appendix C

Transportation Energy

Fuel use estimates were calculated from the combination of fuel consumption rates and fuel mix by vehicle class from CARB's EMFAC2017 model with overall VMT and mode share by vehicle class based on CalEEMod defaults for Tuolumne County. State and federal regulations regarding standards for vehicles in California are designed to reduce wasteful, unnecessary, and inefficient use of energy for transportation. Implementing the General Plan Update would reduce VMT through improved bicycle and pedestrian facilities, transit-oriented development, high density development along transit corridors, and increased transit availability.

The estimated daily VMT for the baseline conditions is 1,829,654, as reported in the 2016 Regional Transportation Plan (TCTC 2017). Additional daily VMT associated with 2040 buildout would be 323,192, an increase of approximately 18 percent over baseline, while population is anticipated to increase by 16 percent (between the baseline year, 2015, and the buildout year, 2040). Annual VMT associated with projected growth under the General Plan Update would be 117,965,080 and would consume 3,289,413 gallons of gasoline and 617,180 gallons of diesel per year (Table 3.6-2). It is important to note that the VMT estimate for the 2040 buildout of the General Plan Update includes pass-by trips for those traveling through the County and the City of Sonora for the growth in VMT between the baseline year of 2015 and the buildout year of 2040. This results in a more conservative estimate in fuel consumption.

Table 3.6-2 Gasoline and Diesel Consumption in 2040

Vehicle Category	Gasoline (gal/year)	Diesel (gal/year)
Passenger Vehicles	2,739,186	32,970
Trucks	521,965	527,812
Buses	28,262	56,398
Total (All Vehicle Types)	3,289,413	617,180

Notes: gal/year = gallons per year.
Source: Calculations by Ascent Environmental in 2018

The General Plan Update includes numerous policies and associated implementation programs that would reduce VMT through land use planning decisions. These policies and implementation programs could result in a decrease in energy consumption through promoting alternative modes of transit and efficiency of land use design (i.e., Policy 1.D.4 through Policy 2.F.1, Policy 15.B.1), which would potentially reduce fossil fuel-based transportation energy by encouraging residents and visitors to bike, walk, or take public transit to travel to destinations; improving bicycle and pedestrian facilities (i.e., Policy 4.B.1 through Policy 4.B.6), which also would reduce gasoline and diesel consumption by reducing the amount residents and visitors drive; seeking funding sources and coordination to improve transit accessibility and efficiency (i.e., Policy 4.C.1 through 4.C.5), which could (if successful) reduce gasoline and diesel consumption from individual autos and reduce fuel consumption from transit through more efficient routes and reduced congestion; and accommodating electric vehicles (i.e., Policy 18.A.5), which would reduce gasoline and diesel consumption while increasing electricity consumption. Electricity in the County is provided by PG&E, which is currently procuring 33 percent of its electricity through renewable resources, as described above in Section 3.6.1, "Environmental Setting." Reducing VMT would translate to a reduction in fossil-fuel consumption.

Building Energy

Operation of residential, commercial, and industrial buildings in the plan area would include typical use of electricity and propane for lighting, space and water heating, appliances, and landscape maintenance activities. Indirect energy use would include wastewater treatment and solid waste removal. Projected development under the General Plan Update would increase electricity and propane consumption in the region relative to existing conditions.

Buildings constructed in the plan area would meet the California Building Efficiency Standards that are in effect at the time of construction. As future development occurs, consistent with the General Plan Update through 2040, individual buildings would be constructed to meet future California Building Energy Efficiency Standards. These standards are updated by the CEC on a triennial code cycle. The next scheduled update to the building energy codes is the 2019 Title 24 Building Energy Efficiency Standards, which will apply to projects that obtain building permits on January 1, 2020, or later. A notable requirement in the 2019 standards is that most low-rise residential construction three stories or fewer will be required to have solar photovoltaic systems, with some exemptions. Future iterations of Title 24 Part 6 standards may continue to require improved building energy efficiency standards that would apply to construction under the General Plan Update. Thus, anticipated building energy associated with the development of the land uses in the General Plan Update would likely decrease because of state requirements for improved efficiency and on-site solar generation. Table 3.6-3 below shows energy consumption associated with 2040 projected development under the General Plan Update.

Table 3.6-3 Operational Energy Consumption

Land Use/Energy Type	Energy Consumption	Units
Single Family Residential		
Electricity	37,950	MWh/year
Propane	574,696	GGE/year
Fuel Wood	257	Tons/year
Heating Oil	70,723	Gallons/year
Multi-Family Residential		
Electricity	3,936	MWh/year
Propane	97,788	GGE/year
Industrial		
Electricity	839	MWh/year
Propane	7,532	GGE/year
Commercial		
Electricity	11,151	MWh/year
Propane	158,018	GGE/year
All Land Uses		
Electricity	53,516	MWh/year
Propane	838,034	GGE/year
Notes:		
MWh/year = megawatt-hours per year; GGE/year = gasoline gallon equivalent per year.		
Source: Calculations by Ascent Environmental in 2018		

The General Plan Update includes numerous policies and implementation programs that would reduce building energy consumption and increase renewable energy usage through enforcement of Green Building Standards and public information (i.e., Policy 2.F.2), which results in reduced propane and electricity consumption; encouragement of installing renewable energy generating facilities (i.e., Policy 2.F.3; Policy 6.E.5; Policy 18.A.6), which would increase the percentage of electricity that is derived from renewable resources and thus reduce fossil fuel-based electricity; development and encouragement of water conservation (i.e., Policy 14.B.1 and 14.B.2), which reduces the electricity demand for water treatment and distribution; development of a wood-burning device replacement program (i.e., Policy 15.C.1), which would

reduce the amount of wood fuel needed for heating and replace that fuel with a more energy-efficient and cleaner resource such as electricity; and other energy efficiency strategies (i.e., Policy 18.A.5).

Conclusion

Projected development under the General Plan Update would result in a temporary increase in fuel consumption. However, it is anticipated that fuel would not typically be consumed in a wasteful manner during construction of individual projects under the General Plan Update, as it is in the interest of construction contractors to meet project schedules and minimize costs through efficient energy use. Through the policies and actions of the General Plan Update, transportation-related energy would be reduced through improved facilities for alternative modes of transportation and transit-oriented development. Fuel consumption associated with vehicle trips generated by projected development under the General Plan Update would not be considered inefficient, wasteful, or unnecessary in comparison to that associated with other, similar rural counties. Building energy would be reduced through improvements in energy efficiency, as expressed in Policies 2.F.3, 6.E.5, and 18.A.6. Further, Policy 18.A.1 requires the County to prepare a climate action plan that would aim to reduce GHG emissions and conserve energy. Specific measures that accompany the climate action plan have not been established, but Implementation Measures 18.A.a and 18.A.b provide example measures and adaptation strategies that would likely result in a reduction in energy-related consumption from buildings and transportation.

The General Plan Update would not result in the wasteful, unnecessary, or inefficient use of energy and this impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

3.7 GEOLOGY

This section describes the geologic, soils, and seismic conditions within Tuolumne County and expected impacts associated with projected development under the General Plan Update. Much of the background setting and analysis was based on information provided in the Tuolumne County Multi-Jurisdiction Hazard Mitigation Plan, which was initially adopted by the Tuolumne County Board of Supervisors on October 19, 2004, and revised in December 2017.

3.7.1 Environmental Setting

PHYSIOGRAPHY

The topography of Tuolumne County displays a wide range of landforms ranging from vertical cliffs to gently undulating plains. Combined with often complex underlying geology that gives rise to a wide range of surficial soil types, native topography can provide a challenging environment for safe development (Tuolumne County 2013).

REGIONAL GEOLOGY

Tuolumne County is located primarily within the Sierra Nevada geomorphic province, with an extremely small portion (less than 10 percent) of the western boundary within the Great Valley province. The Sierra is a tilted fault block nearly 400 miles long. Its east face is a high rugged multiple scarp, contrasting with the gentle western slope that disappears under the sediments of the Great Valley to the west. Deep river canyons are cut into the western slope. Their upper courses, especially in massive granites of the higher Sierra, have been modified by glacial activity, forming such scenic features as Yosemite Valley. The high crest in the Sierra culminates in Mt. Whitney with an elevation of 14,495 feet above sea level near the eastern scarp. The metamorphic bedrock contains gold-bearing veins in the northwest trending Mother Lode. The northern Sierra boundary is marked where bedrock disappears under the Cenozoic volcanic cover of the Cascade Range.

SEISMICITY

California contains a number of significant, active faults, and is highly susceptible to earthquakes, and therefore is predisposed to earthquake hazards. California has addressed these hazards to public safety and property through identification and regulations. Zones of required investigation for possible earthquake faulting, landslides, and liquefaction are delineated and distributed to cities, counties, and state construction agencies to help identify where higher building standards may be necessary for safe development.

Seismic hazards resulting from earthquakes include ground rupture along a fault line, also called surface rupture, ground shaking, liquefaction, subsidence, and mass wasting. Each of these potential hazards is discussed below.

Tuolumne County is located approximately 12 miles east of the Foothills fault system. The Foothills fault system is a complex, braided system of individual fault segments that extends for approximately 200 miles from Mariposa in the south to Lake Almanor in the north. There are two primary fault zones within the Foothills fault system: the Melones fault zone along the east side of the system and the Bear Mountain fault zone on the west. The Melones fault zone is classified as “active” (has demonstrated displacement within the last 100,000 years). The Bear Mountain fault zone is classified as “indeterminable active” (definitive evidence has not been established locally concerning its activity within the last 100,000 years). In addition, there are four “capable” faults (i.e., faults with tectonic displacement within the last 35,000 years which could produce a quake) located within Tuolumne County: Negro Jack Point, Bowie Flat, Rawhide Flat West,

and Rawhide Flat East (Tuolumne County 2018). Geologic hazards in Tuolumne County are primarily associated with potential seismic activity along the Foothills fault zone and associated ground shaking.

Historically, earthquake activity in Tuolumne County has been substantially below the California State average. The potential for ground shaking is discussed in terms of the percent probability of exceeding peak ground acceleration percent in the next 50 years. There is a roughly 28 percent probability that a 5.0 (Moderate) earthquake occurring in the County in the next 50 years. In Tuolumne County, the predicted peak acceleration for the developed portions of the County (i.e., Jamestown, Sonora) does not exceed 20 percent of gravity; for the remainder of the County, the peak ground acceleration is less than 20 percent (Tuolumne County 2018).

A total of four historical earthquake events with recorded magnitudes of 3.5 or greater (Richter Scale) occurred in or near Tuolumne County this past century. These earthquakes did not cause substantial damage due to their occurrence in mountainous and remote areas generally devoid of development or human presence. Tuolumne County’s earthquake history is shown in Table 3.7-1 below.

Table 3.7-1 Tuolumne County Earthquake History 1930-2011

Date	Location	Magnitude (Richter Scale)	Richter Scale Description	Depth (km)	Latitude	Longitude
August 9, 1983	Southeast Tuolumne County, near Tuolumne/Mariposa County line	4	Light	2	37.9	-119.49
August 10, 1975	Southern Mariposa County	4	Light	N/A	37.37	-119.99
June 10, 1965	Eastern Mono County, near Tuolumne/Mono County line	3.5	Minor	N/A	38.2	-119.5
June 25, 1933	Eastern Mono County, near Tuolumne/Mono County line	6.1	Strong	N/A	38.08	-119.33

Source: Tuolumne County 2018

Based on the past history of minimally damaging earthquakes and the fact that Tuolumne County is located within a seismically inactive region, the County’s Multi-Hazard Mitigation Plan rates the probability of an event low. However, given the properties at risk and the cascading effects, the plan indicated that the severity of the effects generated by seismic activity could be high (Tuolumne County 2018).

SOILS AND SOIL HAZARDS

Soil is the unconsolidated mixture of mineral grains and organic material that mantles the land surfaces of the earth. Soils can develop on unconsolidated sediments and weathered bedrock. The characteristics of a given soil type reflect the five major influences on its development: topography, climate, biological activity, parent source material, and time. Bedrock geology, along with agents of weathering such as erosion, soil chemistry, and human activity, all play a part in the soil type. The soils in Tuolumne County are generally shallow regolith veneers (i.e., a thin layer of weathered bedrock, organic accumulations, and glacial deposits) over bedrock.

Expansive Soils

Clays are present in some soils both as a weathering product and as native sediments. Clays have the potential for expansion and contraction when they go through wet/dry cycles. Expansive soils (also known as shrink-swell soils) are soils that contain expansive clays that can absorb significant amounts of water into their crystalline structure. The presence of clay makes the soil prone to large changes in volume in response to changes in water content. The quantity and type of expansive clay minerals affects the potential for the

soil to expand or contract. Wetting can occur naturally in a number of ways, (e.g., absorption from the air, rainfall, groundwater fluctuations, lawn watering and broken water or sewer lines). When an expansive soil becomes wet, water is absorbed, and it increases in volume, and as the soil dries it contracts and decreases in volume. This (often repeated) change in volume can produce enough force and stress on buildings and other structures to damage foundations and walls.

In hillside areas, as expansive soils expand and contract, gradual downslope creep may occur, eventually causing landslides (see below for more information on landslides and other forms of mass wasting). Clay soils also retain water and may act as lubricated slippage planes between other soil/rock strata, also producing landslides, often during earthquakes or by unusually moist conditions. The shrink-swell characteristics of soils can vary widely within short distances, depending on the relative amount and type of clay. Soils with clay content have been mapped throughout the County and may be susceptible to expansion (USDA 1964).

Subsidence

Land subsidence is the gradual settling or sinking of an area with very little horizontal motion. It occurs because of changes taking place underground. Subsidence can be induced by both natural and human phenomena. Natural phenomena include subsidence resulting from shifting of tectonic plates and dissolution of limestone resulting in sinkholes. Although there is carbonate rock in the vicinity of Columbia and Sonora, there has been no documented damage associated with subsidence (Tuolumne County 2018). Subsidence related to human activity includes pumping water, oil, or gas from underground reservoirs; collapse of underground mines; drainage of wetlands; and soil compaction. Sinkhole activity from abandoned mining activity has occurred, and could possibly occur again, in the Jamestown and Sonora areas. However, the probability and potential severity of subsidence are considered low (Tuolumne County 2018).

Liquefaction

Liquefaction is the process by which saturated, unconsolidated soil or sand is converted into a quicksand-like suspension during an earthquake. Even well-constructed buildings may “sink” during a major earthquake if foundations are built on areas susceptible to liquefaction (alluvial soils and high-water content). Since liquefaction most likely would occur during or following an earthquake and severe earthquake risk is deemed to be low in the County, the risk and danger of liquefaction and subsidence occurring within the County is also considered to be minimal.

EROSION

Erosion is the process by which soil and rock at the earth’s surface is gradually broken down and transported to a different location. Erosive processes include rainfall, surface runoff, glacial activity, wind abrasion, chemical dissolution, and gravity in the form of mass wasting (described below). Under normal conditions, these erosive processes, together with physical characteristics of the material being eroded, control the rate at which erosion occurs. Development activities can accelerate that rate, causing excessive erosion and a wide variety of detrimental effects on the environment including sedimentation of waterways (see Section 3.10, “Hydrology and Water Quality”), slope instability, ground instability, loss of agricultural productivity through the removal of topsoil, or even desertification.

The potential for erosion increases as a function of slope steepness. Areas within the County where slopes exceed 30 percent are generally considered to have a high potential for erosion. The majority of development in Tuolumne County is not located on such terrain. Erosion problems in developed regions of the County are generally limited to areas where grading has resulted in steep slopes where deposits of fill have not stabilized, or where slope stabilization practices have not been employed following grading activities. Rain and runoff have also produced incidents of excessive erosion on burn scars that have not yet sufficiently revegetated. However, by comparison with other areas of the state, such as the coastal mountains, erosion has proven to be a modest hazard in Tuolumne County.

Mass Wasting and Landslides

Mass wasting refers to the collective group of processes that characterize down slope movement of rock and unconsolidated sediment overlying bedrock. These processes include landslides, slumps, rockfalls, flows, and soil creep. Such events can occur slowly or very suddenly, depending on the mechanisms of movement, and can cause damage or destruction to structures, roads, and utilities, and may even cause injuries or result in death. Many factors contribute to the potential for mass wasting, including geologic conditions as well as the drainage, slope, and vegetation of an area. Human activities, such as mining, road construction, and changes to surface drainage areas can also affect the potential for mass wasting. Landslides and mudflows are often triggered by other natural disasters such as floods, wildfires, and earthquakes.

Within the County, there is a considerable amount of area where the topography can be considered steep to very steep. In the vast majority of this area, the underlying rock formation is very stable, and the soil found on these slopes is shallow and held in place by deep-rooted vegetation. These slopes do not typically fail unless disturbed by grading or development. However, in the western foothills, the underlying rock is serpentine, which is more prone to slope failure. These areas do not typically slide unless disturbed (i.e., roadways in the area of Don Pedro Reservoir). In addition, the steep slopes of the Table Mountain area, as they naturally erode, occasionally shed large boulders and rocks, but major landslides are not common, and there is very little development in the area. Based on these conditions, the Tuolumne County Multi-Hazard Mitigation Plan determined that there is a low probability of landslide in the County. Should landsliding occur, the severity of impacts is expected to be low because the areas most susceptible are located away from identified communities (Tuolumne County 2018).

MINERAL RESOURCES

The California Geological Survey produces mineral land classification studies, which are required by the Surface Mining and Reclamation Act (SMARA), and identify areas with potentially important mineral resources that should be considered in local planning. The California Mineral Land Classification System represents the relationship between knowledge of mineral deposits and their economic characteristics (grade and size). Lands are classified into four main Mineral Resource Zones (MRZs): MRZ-1, areas where geologic information indicates no significant mineral deposits are present; MRZ-2, areas that contain identified mineral resources; MRZ-3, areas of undetermined mineral resource significance; and MRZ-4, areas of unknown mineral resource potential.

Tuolumne County has extensive mining history and resources. Current operating mines in Tuolumne County gather limestone and dolomite and various forms of crushed rock, gravel, and sand products. A number of properties have been classified as MRZs, including the Southern Half of the Bald Mountain/Browns Flat Gold Mining District (MRZ-2b), the Jamestown Mine (MRZ-2a, MRZ-2b, and MRZ-3a), and portions of the Rough and Ready Creek site (MRZ-2a and MRZ-2b). Various properties with precious metals, carbonate rock, and concrete-grade aggregate resources have been classified as MRZ-2a, and MRZ-2b, (California Division of Mines and Geology 1997). In addition, the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources maintains records of the location and details of construction and abandonment of all oil and gas wells. Oil wells were not identified within Tuolumne County using the Division of Oil, Gas & Geothermal Resources Well Finder.

3.7.2 Regulatory Setting

FEDERAL

Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States. To accomplish this, the Act established the National Earthquake Hazards Reduction Program (NEHRP). The mission of NEHRP includes improved

understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and, accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRP agencies include the National Institute of Standards and Technology, National Science Foundation, and U.S. Geological Survey.

STATE

Surface Mining and Reclamation Act of 1975

SMARA (California Public Resources Code Section 2710 et seq.) provides for the classification of non-fuel mineral resources in the state to show where economically significant mineral resources occur or are likely to occur. Classification is carried out under the Mineral Land Classification Project under the direction of the State Geologist. Once lands have been classified, they may be designated by the State Mining and Geology Board as mineral-bearing areas of statewide or regional significance if they are located in areas where urban expansion or other irreversible land uses may occur that could restrict or preclude future mineral extraction. Designation is intended to prevent future land use conflicts and occurs only after consultation with lead agencies and other stakeholders.

The California Department of Conservation Division of Mines and Geology has developed guidelines for the classification and designation of mineral lands into MRZs and retains a list of publications of the SMARA Mineral Land Classification Project dealing with mineral resources in California.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Public Resources Code Section 2621 et seq.) intends to reduce the risk to life and property from surface fault rupture during earthquakes by regulating construction in active fault corridors and prohibiting the location of most types of structures intended for human occupancy across the traces of active faults. The Act defines criteria for identifying active faults, giving legal support to terms such as “active” and “inactive” and establishes a process for reviewing building proposals in Earthquake Fault Zones. Under the Alquist-Priolo Act, faults are zoned and construction along or across these zones is strictly regulated if they are “sufficiently active” and “well-defined.” There are no Alquist-Priolo Earthquake Fault Zones designated in Tuolumne County.

Seismic Hazards Mapping Act

The intention of the Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690–2699.6) is to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including ground shaking, liquefaction, and seismically induced landslides. The act’s provisions are similar in concept to those of the Alquist-Priolo Act. The state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones. There are no Seismic Hazard Zones identified in Tuolumne County.

California Building Code

The California Building Code (CBC) (California Code of Regulations, Title 24, Part 2) is based on the International Building Code. The CBC has been modified from the International Building Code for California conditions with more detailed and/or more stringent regulations. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, while Chapter 18A regulates construction on unstable soils, such as expansive soils and areas subject to liquefaction. Appendix J of the CBC regulates grading activities, including drainage and erosion control.

The CBC contains a provision that provides for a preliminary soil report to be prepared to identify “...the presence of critically expansive soils or other soil problems which, if not corrected, would lead to structural defects” (CBC Chapter 18 Section 1803.1.1.1).

LOCAL

Tuolumne County Ordinance Code

The Tuolumne County Ordinance Code includes requirements pertinent to grading (Chapter 12.20) and on-site wastewater treatment systems (Chapter 13.08).

A soil engineering report is required by Section 12.20.140 that includes data regarding the nature, distribution and strength of existing soils, conclusions and recommendations for grading procedures and design criteria for corrective measures, including buttress fills, when necessary, and opinions and recommendations covering adequacy of sites to be developed by the proposed grading.

Chapter 13.08 of the Tuolumne County Ordinance Code describes requirements for septic tanks that would ensure soil conditions would adequately support such facilities. As part of the code requirements, any new disposal systems or modifications to an existing system require a permit from the County’s Environmental Health Division, which would review the site and location of such systems and confirm that the installation of such a system at that location is feasible and would not result in significant impacts.

Tuolumne County General Plan

The 1996 General Plan provides a framework for addressing issues related to geology in the County. The County’s Safety Element is intended to relate County land use policies to local safety planning and contains policies for determining acceptable levels of public risk imposed by these land uses, as well as policies for mitigating the effects of natural or manmade catastrophes. As the proposed project would update the 1996 General Plan, this document will be discussed in the context of the update within the impact analysis. Specific General Plan Update policies related to geology are identified below under Section 3.7.3, “Impact Analysis.”

Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan

The Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan is based upon risk assessments that identified and evaluated natural and man-made hazards. The future probability of these identified hazards and their impact on each existing community is described. The risk and vulnerability assessments were used to determine mitigation goals and objectives to minimize long-term vulnerabilities to the identified hazards and are the foundation behind the development of a comprehensive range of specific attainable mitigation actions created for each jurisdiction.

An action plan was developed in 2004, updated in 2013, and updated again in 2017. This entails adopting, implementing, assigning responsibility, monitoring, and reviewing this hazard mitigation plan over time to ensure the goals and objectives are being achieved and the plan remains a relevant document.

3.7.3 Impact Analysis

METHODS OF ANALYSIS

The analysis in this section is based on review of existing plans, use of online mapping tools, review of GIS and other maps, and regulatory documents and requirements. The analysis considers the location of proposed land use designation as well as existing state regulations and General Plan Update policies and implementation programs that would protect development projects and residents from geologic hazards.

The General Plan Update is a policy document that would guide development and conservation of land throughout the County. Adoption of the plan would not result in any changes to existing conditions; however,

the policies could allow for or encourage future activities that may result in exposure of people and structures to seismic hazards, mass wasting events, or unstable soil conditions, or produce accelerated erosion and loss of topsoil. Impacts are evaluated based on projected development under the General Plan Update.

THRESHOLDS OF SIGNIFICANCE

The General Plan Update would result in potentially significant impacts if projected development under the General Plan would result in any of the following conditions, which are based upon the environmental checklist in Appendix G of the CEQA Guidelines:

- ▲ expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
 - strong seismic ground shaking;
 - seismic-related ground failure, including liquefaction;
 - landslides;
- ▲ result in substantial soil erosion or the loss of topsoil;
- ▲ be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; or
- ▲ be located on expansive soil, as defined in Table 18-1-A of the CBC (1994), creating substantial risks to life or property.

Issues Not Discussed Further

The following thresholds also appear in Appendix G. But, as explained below, no impact with respect to these issues would occur and these issues are not discussed further in this section.

- ▲ have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water;
- ▲ result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- ▲ result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Although some new development that requires the use of septic tanks or alternative waste water disposal systems could be constructed under the General Plan Update, Chapter 13.08 of the Tuolumne County Ordinance Code describes requirements for septic tanks that would ensure soil conditions would adequately support such facilities. As part of the code requirements, any new disposal systems or modifications to an existing system require a permit from the County's Environmental Health Division, which would review the site and location of such systems and confirm that the installation of such a system at that location is feasible and would not result in significant impacts. Therefore, this issue is not further discussed.

The General Plan Land Use Element designates lands as Mineral Preserve (-MPZ) overlay throughout the County including those lands identified above. The existing General Plan has a Conservation and Open Space Element describing the County's policies for the conservation and development of mineral resources. The General Plan Update would not remove or replace the programs and policies that protect mineral resources in the area. The only change would be the name of the element from "Conservation and Open Space" to "Natural Resources." Therefore, projected development under the General Plan Update would not result in the direct loss of availability of known mineral resources that would be of value to the region and the residents of the state or a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Thus, these issues are not further discussed.

GENERAL PLAN UPDATE POLICIES

The following policies and implementation programs from the General Plan Update are applicable to the evaluation of effects related to geology, soils, and seismicity:

Natural Hazards Element

- ▲ **Policy 17.A.1:** Increase Tuolumne County's capabilities to mitigate the effects of natural hazards.
 - **Implementation Program 17.A.a:** Implement the Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan to protect life, safety, and property by reducing the potential for future damages and economic losses that result from geologic hazards.
- ▲ **Policy 17.A.2:** Enhance existing policies that will reduce the potential damaging effects of hazards without hindering other County goals.
 - **Implementation Program 17.A.b:** Update the County's General Plan and Ordinance Code as new Federal and State laws regarding geologic hazards and requirements are enacted.
- ▲ **Policy 17.A.3:** Protect Tuolumne County's most vulnerable populations, buildings and critical facilities through the implementation of cost-effective and technically feasible mitigation projects.
 - **Implementation Program 17.A.c:** Maximize the use of hazard mitigation grant programs to protect the most vulnerable populations and structures.
- ▲ **Policy 17.A.4:** Protect public health, safety and welfare by increasing the awareness of existing hazards and by fostering both individual and public responsibility in mitigating risks due to those hazards.
 - **Implementation Program 17.A.d:** Increase the level of knowledge and awareness for Tuolumne County residents on the hazards that routinely threaten the area. Educate property owners on the affordable, individual mitigation and preparedness measures that can be taken before the next hazard event.
- ▲ **Policy 17.A.5:** Enhance the County's capability to conduct hazard risk assessments, demonstrate funding needs, and track mitigation activities.
- ▲ **Policy 17.A.6:** Ensure that all new construction is completed in a way most resistant to loss or damage from natural hazards.
 - **Implementation Program 17.A.e:** Through the development review process, ensure that projects located in or near areas that may pose public health and safety hazards are designed to minimize potential impacts on people and property.
 - **Implementation Program 17.A.f:** Locate vital/critical facilities where they are protected from natural hazards, such as fault zones, flooding and inundation areas.

- ▲ **Policy 17.D.1:** Direct development away from areas with known seismic and geologic hazards as required by local, state, and federal codes.
 - **Implementation Program 17.D.a:** Designate areas within 100 feet of capable faults as non-urban, including, but not limited to, Open Space, Agriculture or Parks and Recreation on the General Plan land use diagrams and zone these areas for open space preservation, agriculture, recreation or other non-urban uses. For lands owned by a public agency, the designation of Public is also compatible.
- ▲ **Policy 17.D.2:** Map areas determined to be potentially seismically active or otherwise subject to geologic hazardous and apply restrictions to development within the affected areas.
 - **Implementation Program 17.D.b:** Apply zoning and other land use controls to regulate development in known hazardous areas capable of seismic activity.
 - **Implementation Program 17.D.c:** Require as part of the application review process when a potential hazard exists, a geologic, seismic, and/or geotechnical engineering report to be provided by the applicant.
 - **Implementation Program 17.D.d:** Establish a program for geologic, seismic, and geotechnical engineering reports required for proposed developments to be reviewed by a technically qualified consultant under contract to the County of Tuolumne.
 - **Implementation Program 17.D.e:** Identify the public costs which would be incurred if emergency or remedial actions became necessary in populated areas where seismic hazards exist.
 - **Implementation Program 17.D.f:** Review contingency plans for major disasters and emergencies and update as necessary to verify that the potential for damage and destruction due to earthquakes and geologically induced dam failure with accompanying flooding continues to be addressed.
 - **Implementation Program 17.D.g:** Use the General Plan's Geotechnical Interpretive Maps, which show the approximate boundaries of various hazard and resource zones (such as fault zones, erosive soil areas, limestone deposits, etc.) as a basis for future planning.
 - **Implementation Program 17.D.h:** Update the Geotechnical Interpretive Maps on a periodic basis to reflect new geologic and seismologic information.
 - **Implementation Program 17.D.i:** Increase public awareness of geoseismic hazards, their location, and their severity by making the Geotechnical Interpretive Maps readily available to the public.
- ▲ **Policy 17.D.3:** Incorporate criteria into the design for dams and other important structures possibly affected by capable fault zones that provide an acceptable level of safety.
 - **Implementation Program 17.D.j:** Require developers of dams and critical use and high occupancy structures within 100 feet of capable fault zones to submit plans to the County of Tuolumne demonstrating that the proposed design and construction can accommodate the expected fault offset of the design earthquake and the structure can continue to function. The capable fault zones are defined along presently identified capable faults on the Geotechnical Interpretive Maps.
 - **Implementation Program 17.D.k:** Establish design review procedures that address safety issues for structures proposed for human occupancy which are to be located within 100 feet of a capable fault zone.
 - **Implementation Program 17.D.l:** Apply special requirements to critical use and high occupancy structures proposed within 100 feet of capable fault zones. These requirements should:

- Require special geologic and seismic studies to accurately locate all capable fault traces.
- Establish requirements for existing critical use and high occupancy structures within the capable fault zones and initiate a special building inspection program whose purpose is to locate existing critical-use and high occupancy structures within 100 feet of the capable fault zones and to evaluate the safety of such structures under expected seismic conditions.
- Require necessary training for building inspectors to evaluate the safety (under probable earthquake accelerations) of critical-use and high occupancy structures.
- **Implementation Program 17.D.m:** Consider developing a hazardous structures mitigation program and enforcement regulations for critical use and high occupancy buildings located within 100 feet of a capable fault zone.
- ▲ **Policy 17.D.4:** Ascertain that existing or proposed structures, particularly critical-use and high occupancy structures, can withstand the ground motion of the design earthquake without catastrophic failure or loss of critical services.
 - **Implementation Program 17.D.n:** Review plans for existing and proposed structures to see that they are designed and built in accordance with the California Building Code standards for Seismic Category C or D.
 - **Implementation Program 17.D.o:** Require that critical use and high occupancy structures be designed and built to retain their structural integrity when subjected to probable ground accelerations generated by the design earthquake.
 - **Implementation Program 17.D.p:** Prior to approval of proposed critical use and high occupancy facilities, require that the plans demonstrate that the proposed building can withstand, without collapse, the probable ground acceleration generated by the design earthquake. Require development plans to show that critical facilities, such as utilities and access roads, for critical use and high occupancy structures are adequately designed and constructed to withstand the design earthquake. Also require plans to show that, in the event of the failure of these structures, potential hazards created by the loss of utilities, roads, etc. have been identified and mitigated.
 - **Implementation Program 17.D.q:** Periodically inspect existing critical use and high occupancy buildings within the County to identify and require correction of potential hazards in the event of a major earthquake.
 - **Implementation Program 17.D.r:** Develop a hazardous structures mitigation program and enforcement regulations for critical use and high occupancy buildings. This shall include a database of the identified critical-use and high occupancy buildings existing in the County that do not meet modern standards for earthquake safety, and are, therefore, considered “hazardous.” Descriptions of the buildings shall be included along with possible hazard mitigation measures.
- ▲ **Policy 17.D.5:** Monitor development to see that construction in landslide or unstable slope areas is accomplished safely.
 - **Implementation Program 17.D.s:** Require detailed engineering studies in unstable slope or landslide areas, including, but not limited to those areas delineated on the Geotechnical Interpretive Maps, prior to approval of urban development. The studies should identify the extent of instability or potential for landslides, and recommend design alterations, considerations or other features which could reduce the potential hazards to an acceptable level. The feasible recommendations from the study(s) shall be required as part of the project approval process.

- ▲ **Policy 17.D.6:** Reduce the potential for erosion and sedimentation from earthmoving and construction activities.
 - **Implementation Program 17.D.t:** Apply Chapter 12.20 of the Tuolumne County Ordinance Code, the Grading Ordinance, in order to protect soil stability and natural topography and to prevent soil erosion and creation of unstable slopes. Areas identified as having erosive soils, either by the Geotechnical Interpretive Maps or by other means, shall receive special consideration related to the erosive potential of grading and earthmoving activities.
 - **Implementation Program 17.D.u:** Apply Chapter 12.20 of the Tuolumne County Ordinance Code, the Grading Ordinance, to address the impacts of earth-disturbing development activities on any slope, whether or not it is shown as potentially unstable on the geotechnical maps.

PROJECT IMPACTS

This section presents a programmatic-level analysis of potential impacts associated geology from projected development under the General Plan Update. Evaluation of environmental impacts associated with the General Plan Update considers the development that would be facilitated by the General Plan Update, in accordance with goals, policies, and implementation programs, to accommodate projected growth in the County. It should be noted that the County's population is projected to grow by 0.6 percent annually over the planning horizon (2040). As discussed in detail in Chapter 2, "Project Description," and the introduction to Chapter 3, this is a relatively low amount of growth.

Impact 3.7-1: Exposure of People and Structures to Primary Seismic Hazards

The General Plan Update would result in development subject to future seismic events that could produce ground shaking, fault rupture, and ground failure within Tuolumne County that could damage structures and/or create adverse health and safety effects. However, with implementation of General Plan Update policies and required building codes, impacts would be **less than significant**.

The General Plan Update would promote a mixture of new residential, retail, entertainment, office and commercial uses near identified communities. No new development would occur on or immediately adjacent to known active fault lines, as there are none identified in Tuolumne County. Severe earthquake risk is deemed to be low in the County. Because new structures are required to be designed and built to withstand probable shaking without collapse, the biggest danger associated with a seismic event is the continued use of older structures that are not capable of withstanding earthquake forces.

Damage and injury resulting from geologic hazards can be reduced to acceptable levels through zoning and building permit review procedures and construction standards. New construction conforming to the standards of the CBC would provide adequate protection from seismic events. Dams, schools, and hospitals are more stringently regulated by state and federal agencies for protection against such hazards. New development within the County would be required by law to conform to the CBC. The planning and building division of the County ensures that all new construction complies with current codes and ordinances regarding earthquake safety (Tuolumne County 2018). Proper engineering, including compliance with the CBC, would minimize the risk to life and property. Furthermore, the General Plan Update Natural Hazards Element includes Policies 17.D.1 and 17.D.2 and Implementation Programs 17.D.a through 17.D.c intended to minimize primary hazards associated with ground shaking, fault rupture, and ground failure by identifying areas subject to these hazards or risks and directing development away from high-risk areas.

Adherence to existing regulations would ensure that projected development under the General Plan Update would be able to withstand seismic activity and be sited away from known seismically hazardous areas. The policies and implementation programs in the General Plan Update would further reduce the likelihood of impacts related to ground shaking, ground failure, and fault rupture. Impacts would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.7-2: Increase Risks Associated with Liquefaction of Soils and Land Subsidence

Future seismic events could result in liquefaction of soils in portions of the County. However, because of the nature of the soils, groundwater conditions, and low seismicity in the County, the risk and danger of liquefaction and subsidence occurring within the County is considered to be minimal. With implementation of General Plan Update policies, impacts would be **less than significant**.

Since liquefaction would most likely occur during or following an earthquake and severe earthquake risk is deemed to be low in the County, the risk and danger of liquefaction occurring within the County are also low. Subsidence potential is also known to be minimal throughout Tuolumne County and most likely to occur in areas where substantial underground mining activity has occurred.

Some land use development associated with implementation of the General Plan Update could be located on geologic units or soils that are unstable, or that could become unstable and result in geologic hazards. Areas with underlying materials that include undocumented fills or loose debris could be inadequate to support development. Soils that exhibit expansive properties when exposed to varying moisture content over time could result in damage to foundations, walls, or other improvements. Structures, including residential units and commercial buildings, could be damaged as a result of settlement or differential settlement where structures are underlain by materials of varying engineering characteristics. Construction of new structures in the vicinity of relatively steep slopes could also provide additional loading, causing landslides or slope failure from unstable soils or geologic units. The potential hazards of unstable soil or geologic units would be largely addressed through the integration of geotechnical information in the planning and design process to determine the local soil suitability for specific projects in accordance with standard industry practices and state requirements, such as CBC requirements and CGS Special Publication 117A for liquefaction and landslide hazards in seismic hazard zones. Corrective measures such as structural reinforcement for unstable geologic units and using engineered fill to replace unstable soils would be required for the design of individual future projects.

Furthermore, the General Plan Update Natural Hazards Element includes policies intended to minimize the risks associated with liquefaction and subsidence by identifying areas subject to seismic or geologic hazard risk or activity and directing development away from areas that are subject to those hazards. For example, Implementation Program 17.D.a requires the County to designate areas within 100 feet of capable faults for non-urban uses. The General Plan Update would require, as part of the application review process, a geologic, seismic, and/or geotechnical engineering report to be prepared for proposed development when a potential hazard exists (Implementation Program 17.D.c). These reports would ensure that development is properly engineered to protect against unstable soil or ground conditions.

Hazards associated with unstable soils or geologic units are dependent on site-specific conditions, as well as the specific nature of the individual project proposed. With adherence to grading permit and building code requirements, including seismic design criteria as required by the CBC, Special Publication 117A, and local building code requirements, all improvements and development would be designed to minimize potential risks related to unstable soils and geologic units. Existing regulatory requirements specify mandatory and relatively prescriptive actions that must occur during project development, and would effectively reduce the inherent hazard. The probability and potential severity of subsidence and liquefaction in the County is low and existing regulations adequately address the potential hazards associated with construction in areas susceptible to this activity. Adherence to General Plan Update policies and implementation programs would ensure that any liquefaction or subsidence risks would be identified. Impacts related to liquefaction and subsidence would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.7-3: Impacts from Mass Wasting Events

Landslides have the potential to damage and destroy structures, roadways, and other improvements, as well as deflect or block drainage channels, causing accelerated erosion and more damage. However, with implementation of General Plan Update policies, impacts would be **less than significant**.

Although there is a limited potential for landslides in the western portion of the County, the probability of mass wasting events is low at the County level and the effects of these events are anticipated to be minimal because there are fewer population centers in the western foothills (Tuolumne County 2018). As a result of the General Plan Update, a mixture of new residential, retail, entertainment, office, and commercial uses would be encouraged to be developed near identified communities. Development in areas with unstable slopes may increase risk of landslides, mudslides, or debris flows, which can damage buildings and infrastructure. With the County's low population density, few mass wasting events have affected communities or infrastructure, and populated areas of the County are not generally exposed to these types of hazards. The relatively low growth anticipated through the life of the General Plan (2040) is not anticipated to substantially change these conditions.

The County's building code requires that site-specific investigations be performed for development located in hillside areas. Investigations and practices typically required for hillside development include the following:

- ▲ Conduct thorough geologic/geotechnical studies by qualified geotechnical engineers and engineering geologists.
- ▲ Require both engineering geologists and geotechnical engineers during construction to confirm preliminary findings reported during initial studies.
- ▲ Require certification of the proposed building site stability in relation to the diverse effects of rain and earthquakes prior to the issuance of building permits.
- ▲ Mandate coordination between the civil engineer and the project engineering geologist and geotechnical engineer during construction grading.
- ▲ Require mitigation of on-site hazards caused by grading that may affect adjoining properties, including erosion and slope instability.

The effects of mass wasting activities are generally reduced by the standard development review process. With existing regulations, and given the low potential for landslides, projected development under the General Plan Update is not anticipated to substantially increase the potential for mass wasting events. Further, the policies included in the General Plan Update would require detailed engineering studies in unstable slope or landslide areas before approval of development (Policy 17.D.2 and Implementation Programs 17.D.b through 17.D.i). The studies would specifically identify the extent of instability or potential for landslides and recommend design alterations, considerations, or other features that could reduce the potential hazards to an acceptable level. Study recommendations would be required as part of the project approval process. Development would also be monitored to ensure that construction in landslide or unstable slope areas is accomplished safely (Policy 17.D.5 and Implementation Program 17.D.s). Therefore, projected development under the General Plan Update would not expose people or structures to undue risk from landslides or other slope failures, and impacts would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.7-4: Risks Associated with Placement of Structures On Expansive Soils

The General Plan Update would potentially result in development on expansive soils. Expansive soil conditions could result in foundation and building distress problems and cracking of concrete slabs. However, with implementation of General Plan Update Natural Hazards Element policies and applicable provisions of the Tuolumne County Ordinance Code, impacts relating to soil expansion would be **less than significant**.

Soils that contain high proportions of clay are referred to as expansive soils, due to the high shrink-swell potential of clay. The shrink-swell potential is based primarily on the moisture content of the clay. Soils with a high clay content occur in the County; therefore, development under the General Plan update has the potential to occur on expansive soils. Roads and building foundations built on clay soils may be affected by changes in soil volumes over time as the soils go through wet/dry cycles.

Implementation Program 17.D.c would minimize risk associated with expansive soils because the potential for expansive soils would be identified, and recommendations provided by a qualified consultant to address any expansive soils risk before approval of new developments. In addition, new development under the General Plan Update may also be subject to a soil engineering report if required by the Community Resources Agency under Section 12.20.160 of the Tuolumne County Ordinance Code:

The soil engineering report required by Section 12.20.140 shall include data regarding the nature, distribution and strength of existing soils, conclusions and recommendations for grading procedures and design criteria for corrective measures, including buttress fills, when necessary, and opinions and recommendations covering adequacy of sites to be developed by the proposed grading. Where applicable in the opinion of the qualified professional, the report shall also include a description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and opinion in the adequacy for the use of the sites to be developed by the proposed grading, as affected by geologic factors. Recommendations included in the report and approved by the Department shall be incorporated in the grading or stockpiling plans or specifications.

For developments subject to the CBC, Section 1808.6 of the CBC requires design features for foundations of buildings and structures in areas subject to expansive soils. Section R403.1.7.2 of the California Residential Code also refers to Section 1808.6 of the CBC for foundation design requirements. Furthermore, under Section 66490 of the Subdivision Map Act, a preliminary soils report prepared by a civil engineer registered in California, and based upon adequate test borings, would be required for every subdivision for which a final map is required by such a division. If the preliminary soils report indicates the presence of critically expansive soils or other soil problems that would lead to structural defects, a soils investigation of each lot in the subdivision would be required (Tuolumne County Ordinance Code Section 16.26.020).

Typical measures to treat expansive soils involve removal, proper fill selection, and compaction. Expansion would not be a substantial constraint to development of individual sites provided that adequate soil and foundation studies are performed before construction and that recommendations in any soil engineering reports made by a qualified professional are followed.

Adherence to Sections 12.20.160 and 16.26.020 in the Tuolumne County Ordinance Code and other state regulations would adequately address the potential effects on expansive soils. Policies and implementation programs in the General Plan Update would be generally consistent with these regulations and further decrease the potential for hazards associated with expansive soils, This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.7-5: Risk of Erosion from New or Redevelopment

The General Plan Update would result in development that would require grading and other vegetation removal, which could increase potential for soil erosion, especially in areas with steep slopes. However, compliance with applicable policies of the General Plan Update Natural Hazards Element and applicable provisions of the Tuolumne County Ordinance Code would reduce the potential for substantial erosion. Impacts would be **less than significant**.

Areas in the County with slopes that exceed 30 percent are considered to have a high potential for erosion. However, there are numerous state and local regulations that limit the potential for development to substantially increase erosion. For example, the County requires erosion control permits and Chapter 12.20 of the Tuolumne County Ordinance Code includes the following sections:

- ▲ Section 12.20.150(H). An erosion control plan, showing the type and exact locations of measures to be taken, shall be supplied when determined necessary by the Department.
- ▲ 12.20.330(A). All drainage facilities shall be designed to carry waters to the nearest practicable natural drainage way approved by the Department as a safe place to deposit such waters. Erosion of ground in the area of discharge shall be prevented by installation of non-erosive down drains or other devices.
- ▲ 12.20.340. Interceptor drains shall be installed along the top of all cut slopes where the tributary drainage area above slopes towards the cut and has a drainage path greater than forty feet measured horizontally. The dimensions and slope of interceptor drains shall be approved by the Department. Interceptor drains shall be paved to protect against erosion by paving, concrete, gunite or other approved measures.
- ▲ Section 12.20.350. The faces of cut and fill slopes shall be prepared and maintained to control against erosion. This control may consist of effective planting. The protection of the slopes shall be installed as soon as practicable and before calling for final approval. If, in the opinion of the Department, the protection for the slopes is not subject to erosion due to the erosion-resistant character of the materials, such protection may be omitted.
- ▲ Section 12.20.360. When necessary, check dams, cribbing, rip rap or other devices or methods shall be employed to control erosion and provide safety.

Further, as described in Section 3.10, "Hydrology and Water Quality," the Regional Water Quality Control Board would require a project-specific storm water pollution prevention plan (SWPPP) for each project that disturbs an area 1 acre or more. The SWPPPs would include project-specific best management practices designed to control drainage and erosion. These best management practices would be required as part of each individual project permit and would mitigate potential impacts of soil erosion as a result of construction or grading.

In addition, the General Plan Update includes policies and implementation measures to further reduce erosion potential. Policy 17.D.6 requires the County to reduce the potential for erosion and sedimentation from earthmoving and construction activities. This policy would be supported by Implementation Programs 17.D.t and 17.D.u, which require implementation of County Ordinance Code 12.20 (described above) and require special consideration to be given to areas having erosive soils. Adherence to General Plan Update policies and implementation programs, as well as other state and County regulatory programs would ensure impacts related to unstable slopes and erosion are **less than significant**.

Mitigation Measures

No mitigation is required.

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3.8 GLOBAL CLIMATE CHANGE

This section examines the potential impacts of projected development under the General Plan Update on greenhouse gas (GHG) emissions, the potential for conflicts with GHG reduction planning efforts, and mitigation measures to reduce these impacts. The section also includes a discussion of the relevant environmental and regulatory settings pertaining to climate change and GHG emissions within the plan area. Several comment letters were received on the Draft EIR that raised concerns about global climate change, including concerns about the impact analysis and the potential for a reduction of GHG emissions. These comments are addressed below, as appropriate.

3.8.1 Environmental Setting

CLIMATE CHANGE AND GREENHOUSE GASES

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun; therefore, the earth emits lower frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Human-caused emissions of these GHGs in excess of natural ambient concentrations are found to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcing (IPCC 2014).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas most pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1,000 to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the lifetime of any GHG molecule is dependent on multiple variables and cannot be determined with any certainty, it is understood that more CO₂ is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO₂ emissions, approximately 55 percent is estimated to be sequestered through ocean and land uptake every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO₂ emissions remains stored in the atmosphere (IPCC 2013).

The quantity of GHGs in the atmosphere that ultimately result in climate change is not precisely known but is enormous; no single project alone would measurably contribute to an incremental change in the global average temperature or to global or local climates or to microclimates. Thus, from the standpoint of the California Environmental Quality Act (CEQA), GHG impacts relative to global climate change are inherently cumulative.

Carbon Dioxide

The global carbon cycle is made up of large carbon flows and reservoirs. Billions of tons of carbon in the form of CO₂ are absorbed by oceans and living biomass (i.e., sinks) and are emitted to the atmosphere

annually through natural processes (i.e., sources). When in equilibrium, carbon fluxes among these various reservoirs are roughly balanced (EPA 2012). CO₂ was the first GHG demonstrated to be increasing in atmospheric concentration, with the first conclusive measurements being made in the last half of the 20th century. Concentrations of CO₂ in the atmosphere have risen approximately 40 percent since the industrial revolution. The global atmospheric concentration of CO₂ has increased from a pre-industrial value of about 280 parts per million (ppm) to 391 ppm in 2011 (IPCC 2007, NOAA 2010). The average annual CO₂ concentration growth rate was larger between 1995 and 2005 (average: 1.9 ppm per year) than it has been since the beginning of continuous direct atmospheric measurements (1960–2005 average: 1.4 ppm per year), although there is year-to-year variability in growth rates (NOAA 2010). Currently, CO₂ represents an estimated 82.8 percent of total GHG emissions (EIA 2012). The largest source of CO₂, and of overall GHG emissions, is fossil fuel combustion.

Methane

CH₄ is an effective absorber of radiation, though its atmospheric concentration is less than that of CO₂ and its lifetime in the atmosphere is limited to 10 to 12 years. It has a global warming potential (GWP) approximately 21 times that of CO₂. Over the last 250 years, the concentration of CH₄ in the atmosphere has increased by 148 percent (IPCC 2007), although emissions have declined from 1990 levels. Anthropogenic sources of CH₄ include enteric fermentation associated with domestic livestock, landfills, natural gas and petroleum systems, agricultural activities, coal mining, wastewater treatment, stationary and mobile combustion, and certain industrial processes (EPA 2012).

Nitrous Oxide

Concentrations N₂O began to rise at the beginning of the industrial revolution and continue to increase at a relatively uniform growth rate (NOAA 2010). N₂O is produced by microbial processes in soil and water, including those reactions that occur in fertilizers that contain nitrogen, fossil fuel combustion, and other chemical processes. Use of these fertilizers has increased over the last century. Agricultural soil management and mobile source fossil fuel combustion are the major sources of N₂O emissions. The GWP of N₂O is approximately 310 times that of CO₂.

Fluorinated Gases

Fluorinated gases, such as HFCs, PFCs, and SF₆, are powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are used as substitutes for ozone-depleting substances such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons, and halons, which have been regulated since the mid-1980s because of their ozone-destroying potential and are phased out under the Montreal Protocol (1987) and Clean Air Act Amendments of 1990. Electrical transmission and distribution systems account for most SF₆ emissions, while PFC emissions result from semiconductor manufacturing and as a by-product of primary aluminum production. Fluorinated gases are typically emitted in smaller quantities than CO₂, CH₄, and N₂O, but these compounds have much higher GWPs. SF₆ is the most potent GHG the IPCC has evaluated.

STATEWIDE GREENHOUSE GAS EMISSIONS INVENTORY

Based upon the California Air Resources Board's (CARB's) California GHG Inventory for 2000-2016, California produced 429.4 million metric tons of CO₂ equivalent (MMTCO₂e) in 2016. The major source of GHG in California is transportation, contributing 41 percent of the state's total GHG emissions. Industrial sources are the second largest source of the state's GHG emissions (CARB 2018). California emissions are due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. Between 2015 and 2016, statewide emissions decreased by 12 MMTCO₂e, which represents an overall decrease of 13 percent since peak statewide emissions levels in 2004. In addition, in 2016, California achieved reductions 2 MMTCO₂e below the 1990 level and has achieved the state's 2020 reduction target of 431 million metric tons four years ahead of schedule (CARB 2018).

POTENTIAL EFFECTS OF CLIMATE CHANGE

According to the Intergovernmental Panel on Climate Change, which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature is expected to increase by 3–7 degrees Fahrenheit (°F) by the end of the century, depending on future GHG emission scenarios (IPCC 2007). According to the California Natural Resources Agency (CNRA), temperatures in California are projected to increase by 2–5°F by 2050 and by 4–9°F by 2100 (CNRA 2009).

Other environmental resources could be indirectly affected by the accumulation of GHG emissions and resulting rise in global average temperature. In the recent years, California has been marked by extreme weather and its effects. According to CNRA's report *Safeguarding California Plan: 2018 Update* (CNRA 2018), from 2012 through 2015, California experienced the driest 4-year statewide precipitation on record; the warmest years on average in 2014, 2015, and 2016; and the smallest and second smallest Sierra snowpack on record in 2015 and 2014 (CNRA 2018). In contrast, the northern Sierra Nevada experienced its wettest year on record in 2016 (CNRA 2018). The changes in precipitation exacerbate wildfires throughout California with increasing frequency, size, and devastation. As temperatures increase, the increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the snowpack of the Sierra Nevada and Cascade Range until spring would flow into the Central Valley concurrently with winter rainstorm events. This scenario would place more pressure on California's levee/flood control system (CNRA 2018). Furthermore, in the extreme scenario involving the rapid loss of the Antarctic ice sheet, sea level along the California's coastline could rise by 10 feet by 2100, which is approximately 30–40 times faster than sea level rise experienced over the last century (CNRA 2018).

Changes in temperature, precipitation patterns, extreme weather events, and sea-level rise have the potential to affect and decrease the efficiency of thermal power plants and substations, decrease the capacity of transmission lines, disrupt electrical demand, and threaten energy infrastructure with the increased risk of flooding (CNRA 2018).

The California Department of Transportation (Caltrans) owns and operates more than 51,000 miles along 265 highways, as well as three of the busiest passenger rail lines in the nation. Sea level rise, storm surge, and coastal erosion are imminent threats to highways, roads, bridge supports, airports, transit systems and rail lines near sea level and seaports. Shifting precipitation patterns, increased temperatures, wildfires, and increased frequency in extreme weather events also threaten transportation systems across the state. Temperature extremes and increased precipitation can increase the risk of road and railroad track failure, decrease transportation safety, and increase maintenance costs (CNRA 2018).

Water availability and changing temperatures, which affect the prevalence of pests, disease, and species, directly affect crop development and livestock production. Other environmental concerns include decline in water quality, groundwater security, and soil health (CNRA 2018). Vulnerabilities of water resources also include risks of degradation of watersheds, alteration of ecosystems and loss of habitat, impacts on coastal areas, and ocean acidification (CNRA 2018). The ocean absorbs approximately one-third of the CO₂ released into the atmosphere every year from industrial and agricultural activities, changing the chemistry of the ocean by decreasing the pH of seawater. This ocean acidification is harmful to marine organisms, especially calcifying species, such as oysters, clams, sea urchins, and corals (CNRA 2018).

LOCAL EFFECTS OF CLIMATE CHANGE

Although there is strong scientific consensus that global climate change is occurring and is influenced by human activity, there is less certainty as to the timing, severity, and potential consequences of the climate phenomena. Scientists have identified several ways in which global climate change could alter the physical environment in California (CNRA 2009, California Department of Water Resources 2006, IPCC 2007). These include:

- ▲ increased average temperatures;
- ▲ modifications to the timing, amount, and form (rain versus snow) of precipitation;
- ▲ changes in the timing and amount of runoff;
- ▲ reduced water supply;
- ▲ deterioration of water quality; and
- ▲ elevated sea level.

Cal-Adapt is a planning tool developed by the California Energy Commission (CEC) to evaluate climate change impacts, consistent with emissions scenarios identified in the IPCC Fifth Assessment Report (IPCC 2014). The IPCC Fifth Assessment Report uses future emissions scenarios known as Representative Concentration Pathways (RCPs) to estimate scenarios in which varying (higher or lower) levels of GHGs would be emitted in the future. The RCP scenarios take into account various socio-economic assumptions which affect GHG emissions with higher RCP scenarios assuming higher rates of GHG emissions through the end of the century. Emissions scenarios used in the Cal-Adapt are based on two RCP scenarios, RCP 4.5 and RCP 8.5. The RCP 4.5 scenario assumes that global GHG emissions would peak around 2040 and decline between 2040 and 2100. The RCP 8.5 scenario assumes that global GHG emissions would continue to rise through 2050 and peak around 2100. According to Cal-Adapt, Tuolumne County is projected to experience a temperature increase of 4.3°F by 2050 and 6°F by 2099 under the RCP 4.5 scenario and an increase of 5.5°F by 2050 and 9.1°F by 2099 under the RCP 8.5 scenario.

Cal-Adapt also includes a Wildfire tool, which provides modeling projections for increases in the annual average area burned (10-year annual average) for regions throughout California over the next century. The tool uses a statistical model based on historical data of climate, vegetation, population density, and fire history within various regions in California to model projected increases in annual mean hectares burned by wildfire through 2099. According to the Cal-Adapt Wildfire tool, Tuolumne County is projected to experience an increase of 5,651 annual mean acres burned by wildfire by 2050 and 9,155 annual mean acres burned by wildfire by 2099 under the RCP 4.5 scenario. Under the RCP 8.5 scenario, Tuolumne County is projected to experience an increase of 8,473 annual mean acres burned by wildfire by 2050 and 21,506 annual mean acres burned by wildfire by 2099.

Further, certain factors such as sea level rise would not have a direct impact to the Tuolumne County region which is located more than approximately 80 miles inland of the Pacific Ocean. See Supplemental Discussion at the end of Section 3.8.3 for a discussion of wildfire risks in Tuolumne County.

3.8.2 Regulatory Setting

The following regulations address both climate change and GHG emissions.

FEDERAL

Supreme Court Ruling

The U.S. Environmental Protection Agency (EPA) is the federal agency responsible for implementing the federal Clean Air Act (CAA) and its amendments. The Supreme Court of the United States ruled on April 2, 2007, that CO₂ is an air pollutant as defined under the CAA, and that EPA has the authority to regulate emissions of GHGs. The ruling in this case resulted in EPA taking steps to regulate GHG emissions and lent support for state and local agencies' efforts to reduce GHG emissions.

Regulations for Greenhouse Gas Emissions from Passenger Cars and Trucks and Corporate Average Fuel Economy Standards

In October 2012, EPA and the National Highway Traffic Safety Administration, on behalf of the U.S. Department of Transportation, issued final rules to further reduce GHG emissions and improve corporate average fuel economy (CAFE) standards for light-duty vehicles for model years 2017 and beyond (77 Federal

Register 62624). The CAFE standards have been enacted under the Energy Policy and Conservation Act since 1978. This national program requires automobile manufacturers to build a single light-duty national fleet that meets all requirements under both federal programs and the standards of California and other states. This program would increase fuel economy to the equivalent of 54.5 miles per gallon limiting vehicle emissions to 163 grams of CO₂ per mile for the fleet of cars and light-duty trucks by model year 2025 (77 Federal Register 62630).

In January 2017, EPA signed a determination to maintain the current GHG emissions standards for model year 2022–2025 vehicles. However, on April 2, 2018, the new EPA Administrator and U.S. Department of Transportation Secretary announced a final determination that the current standards are not appropriate and should be revised. It is not yet known when these revisions are anticipated to occur (EPA 2018a).

Clean Power Plan

The Clean Power Plan was unveiled August 3, 2015. The plan aims to reduce CO₂ emissions from electrical power generation by 32 percent within 25 years relative to 2005 levels. On March 28, 2017, Executive Order (EO) 13783 was signed, mandating the EPA to review the plan. EPA is proposing to repeal the Clean Power Plan because of a change to the legal interpretation of section 111(d) of the CAA, on which the Clean Power Plan was based. EPA accepted public comments on the proposal until April 26, 2018 (EPA 2018b). No update has been provided by EPA.

STATE PLANS, POLICIES, LAWS, AND REGULATIONS

Plans, policies, regulations, and laws established by state agencies are generally presented in the order they were established.

Executive Order S-3-05

In 2005, EO S-3-05 was signed into law and proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the EO established total GHG emission targets for the state. Specifically, statewide emissions are to be reduced to 2000 levels by 2010, 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

This EO was the subject of a California Supreme Court decision, *Cleveland National Forest Foundation v. San Diego Association of Governments (SANDAG)* (July 13, 2017) 3 Cal.5th 497. The case addressed the adequacy of the GHG analysis in the EIR SANDAG prepared for its 2011 Regional Transportation Plan (RTP). The Supreme Court decided a singular question in its decision, ruling that SANDAG did not abuse its discretion by declining "to adopt the 2050 goal as a measure of significance in light of the fact that the Executive Order does not specify any plan or implementation measures to achieve its goal."

The Supreme Court decision reveals useful guidance for agencies charged with CEQA compliance. In addition to concluding that an EIR need not use the EO's 2050 goal for determining significance, the Court described several principles relevant to CEQA review of GHG impacts, including: (1) that the 2050 target is "grounded in sound science," in that it is "based on the scientifically supported level of emissions reduction needed to avoid significant disruption of the climate"; and (2) that "agencies ... must ensure that CEQA analysis stays in step with evolving scientific knowledge and state regulatory schemes." Interestingly, even in the absence of a statutory statewide 2050 target, the Court treated "state policy" as "deeming" that the 2050 target as "necessary to stabilize the climate." The Court also ruled that "an EIR's designation of a particular adverse environmental effect as 'significant' does not excuse the EIR's failure to reasonably describe the nature and magnitude of the adverse effect."

The Court further recognized that the 40 percent reduction in 1990 GHG levels by 2030 is "widely acknowledged" as a "necessary interim target to ensure that California meets its longer-range goal of reducing greenhouse gas emissions 80 percent below 1990 levels by the year 2050." On this subject, the Court acknowledged the Legislature's 2016 enactment of Senate Bill (SB) 32 (discussed below), which put

the 2030 target into statute. The Court said that SB 32 “reaffirms California’s commitment to being on the forefront of the dramatic greenhouse gas emission reductions needed to stabilize the global climate. The legislation directs California Air Resources Board (CARB) to craft regulations to implement its goal (Health and Safety Code, Section 38566). These regulations may further clarify the way forward for public agencies to meet the state’s 2050 climate goals. This regulatory clarification, together with improved methods of analysis, may well change the manner in which CEQA analysis of long-term greenhouse gas emission impacts is conducted.”

Assembly Bill 32, the California Global Warming Solutions Act of 2006

In September 2006, the California Global Warming Solutions Act of 2006, Assembly Bill (AB) 32, was signed into law. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 also requires that (a) the statewide GHG emissions limit shall remain in effect unless otherwise amended or repealed; (b) the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020; and (c) CARB shall make recommendations to the Governor and the Legislature on how to continue reductions of GHG emissions beyond 2020 (Health and Safety Code Section 38551.).

Advanced Clean Cars Program

In January 2012, CARB approved the Advanced Clean Cars program which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles (ZEVs), into a single package of regulatory standards for vehicle model years 2017 through 2025. The new regulations strengthen the GHG standard for 2017 models and beyond. This will be achieved through existing technologies, the use of stronger and lighter materials, and more efficient drivetrains and engines. The program’s ZEV regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15 percent of California’s new vehicle sales by 2025. The program also includes a clean fuels outlet regulation designed to support the commercialization of zero-emission hydrogen fuel cell vehicles planned by vehicle manufacturers by 2015 by requiring increased numbers of hydrogen fueling stations throughout the state. The number of stations will grow as vehicle manufacturers sell more fuel cell vehicles. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions than the statewide fleet in 2016 (CARB 2016).

Senate Bill X1-2, the California Renewable Energy Resources Act of 2011 and Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently-owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50 percent of the total renewable energy for the 2011-2013 compliance period, at least 65 percent for the 2014-2016 compliance period, and at least 75 percent for 2016 and beyond. In October 2015, SB 350 was signed by Governor Brown, which requires retail sellers and publicly-owned utilities to procure 50 percent of their electricity from renewable resources by 2030.

Executive Order B-30-15

On April 20, 2015, EO B-30-15 was signed into law and established a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor’s EO aligns California’s GHG reduction targets with those of leading international governments such as the 28-nation European Union, which adopted the same target in October 2014. This 2030 target sets the next interim step in the state’s continuing efforts to pursue the long-term target expressed under EO S-3-05 to reach the goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically-established levels needed in the U.S. to limit global

warming below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Senate Bill 32 and Assembly Bill 197 of 2016

In 2016, SB 32 and AB 197 were signed into law and serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the state's continued efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

Senate Bill 375 of 2008

In September 2008, SB 375 was signed into law and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a Sustainable Communities Strategy or Alternative Planning Strategy, showing prescribed land use allocation in each MPO's RTP. CARB, in consultation with the MPOs, is to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in their respective regions for 2020 and 2035. The Tuolumne County Transportation Council (TCTC) is the regional transportation planning agency in Tuolumne County, but because of its size is not considered an MPO. Therefore, TCTC is not subject to the vehicle miles traveled (VMT) reduction targets established in SB 375. However, TCTC, in its most recent RTP (2016), has chosen to include a Rural Sustainable Strategy chapter within the plan which provides an alternative sustainability plan that is more feasible to Tuolumne County and possibly other rural agencies for compliance with the state's long-term GHG reduction targets. TCTC's Rural Sustainable Strategy is discussed in more detail in the local regulatory setting section.

California Building Efficiency Standards of 2016 (Title 24, Part 6)

Buildings in California are required to comply with California's Energy Efficiency Standards for Residential and Nonresidential Buildings established by CEC in Title 24, Part 6 of the California Code of Regulations. These standards were first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption and are updated on an approximately 3-year cycle to allow consideration and possible incorporation of new energy efficient technologies and methods. All buildings for which an application for a building permit is submitted on or after January 1, 2017, must follow the 2016 standards (CEC 2015). Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions.

The 2019 Title 24 Part 6 Building Energy Efficiency Standards were adopted by CEC on May 9, 2018, and will take effect on January 1, 2020. The standards are designed to move to the state closer to its zero net energy goals for new residential development. It does so by requiring all new residences to install enough renewable energy to offset all the site electricity needs of each residential unit (California Code of Regulations, Title 24, Part 6, Section 150.1(c)14). CEC estimates that the combination of mandatory on-site renewable energy and prescriptively-required energy efficiency features will result in new residential construction that uses 53 percent less energy than the 2016 standards. Nonresidential buildings are anticipated to reduce energy consumption by 30 percent compared to the 2016 standards primarily through prescriptive requirements for high-efficacy lighting (CEC 2018). The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary in response to local climatologic, geologic, or topographic conditions, provided that these standards are demonstrated to be cost effective and exceed the energy performance required by Title 24 Part 6.

Low Carbon Fuel Standard

In January 2007, EO S-01-07 established a Low Carbon Fuel Standard (LCFS). The EO calls for a statewide goal to be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020, and that a LCFS for transportation fuels be established for California. The LCFS applies to

all refiners, blenders, producers, or importers (“Providers”) of transportation fuels in California, including fuels used by off-road construction equipment (Wade, pers. comm., 2017). The LCFS is measured on the total fuel cycle and may be met through market-based methods (e.g., Providers exceeding the performance required by an LCFS receive credits that may be applied to future obligations or traded to Providers not meeting LCFS).

In June 2007, CARB adopted the LCFS as a Discrete Early Action item under AB 32 pursuant to Health and Safety Code Section 38560.5, and in April 2009, CARB approved the new rules and carbon intensity reference values with new regulatory requirements taking effect in January 2011. The standards require Providers of transportation fuels to report on the mix of fuels they provide and demonstrate they meet the LCFS intensity standards annually. This is accomplished by ensuring that the number of “credits” earned by providing fuels with a lower carbon intensity than the established baseline (or obtained from another party) is equal to or greater than the “deficits” earned from selling higher intensity fuels.

After some disputes in the courts, CARB re-adopted the LCFS regulation in September 2015, and the LCFS went into effect on January 1, 2016.

Climate Change Scoping Plan

In December 2008, CARB adopted its first version of its *Climate Change Scoping Plan*, which contained the main strategies California will implement to achieve the mandate of AB 32 to reduce statewide GHG emissions to 1990 levels by 2020. It has updated the plan since, and most recently adopted the *California’s 2017 Climate Change Scoping Plan (2017 Scoping Plan)* (CARB 2017). The 2017 Scoping Plan indicates that California is on track to achieve the 2020 statewide GHG target mandated by AB 32 (CARB 2017:9). It also lays out the framework for achieving the mandate of SB 32 of 2016 to reduce statewide GHG emissions to at least 40 percent below 1990 levels by the end of 2030 (CARB 2017). The 2017 Scoping Plan identifies the GHG reductions needed by each emissions sector.

The 2017 Scoping Plan also identifies how GHGs associated with proposed projects could be evaluated under CEQA (CARB 2017:101–102). Specifically, it states that achieving “no net increase” in GHG emissions is an appropriate overall objective of projects evaluated under CEQA if conformity with an applicable local GHG reduction plan cannot be demonstrated. CARB recognizes that it may not be appropriate or feasible for every development project to mitigate its GHG emissions to zero and that an increase in GHG emissions due to a project may not necessarily imply a substantial contribution to the cumulatively significant environmental impact of climate change.

Senate Bill 743 of 2013

SB 743 changes the way that public agencies evaluate the transportation impacts of projects under CEQA, from delay to VMT. One of the main impetuses of the bill was to align transportation and climate change goals. To that end, the Governor’s Office of Planning and Research (OPR) was tasked with developing potential metrics to measure transportation impacts and replace the use of delay and level of service.

In November 2017, OPR released its proposed changes to the CEQA Guidelines, including the addition of Section 15064.3 that would implement SB 743 (OPR 2017a:77–90a). In support of these changes, OPR also published its *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which recommends that the transportation impact of a project be based on whether it would generate a level of VMT per capita (or VMT per employee) that is 15 percent lower than existing development in the region (OPR 2017b:12–13). OPR’s technical advisory explains that this criterion is consistent with Public Resources Code Section 21099, which states that the criteria for determining significance must “promote the reduction in greenhouse gas emissions” (OPR 2017b:18). It is also consistent with the statewide per capita VMT reduction target developed by Caltrans in its Strategic Management Plan, which calls for a 15 percent reduction in per capita VMT, compared to 2010 levels, by 2020 (Caltrans 2015:11).

At the time of writing this EIR document, CNRA not yet adopted OPR’s proposed addition of Section 15064.3 to the CEQA Guidelines, and the guidelines would not take effect until 2020 if adopted as written.

Executive Order B-48-18: Zero-Emission Vehicles

In January 2018, EO B-48-18 was signed, requiring all state entities to work with the private sector to have at least 5 million ZEVs on the road by 2030, as well as install 200 hydrogen fueling stations and 250,000 electric vehicle charging stations by 2025. It specifies that 10,000 of the electric vehicle charging stations should be direct current fast chargers. This order also requires all state entities to continue to partner with local and regional governments to streamline the installation of ZEV infrastructure. The Governor's Office of Business and Economic Development is required to publish a *Plug-in Charging Station Design Guidebook* and update the *2015 Hydrogen Station Permitting Guidebook* (Eckerle and Jones 2015) to aid in these efforts. All state entities are required to participate in the updating the *2016 Zero-Emissions Vehicle Action Plan* (Governor's Interagency Working Group on Zero-Emission Vehicles 2016) to help expand private investment in ZEV infrastructure with a focus on serving low-income and disadvantaged communities. Additionally, all state entities are to support and recommend policies and actions to expand ZEV infrastructure at residential land uses, through the LCFS Program, and recommend how to ensure affordability and accessibility for all drivers.

LOCAL

As required by state law, the Natural Resources Agency amended the CEQA Guidelines in 2010 to address GHG emissions. The adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents but contain no suggested thresholds of significance for GHG emissions. Instead, they give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. The general approach to developing a threshold of significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation, adopted for the purpose of reducing statewide GHG emissions sufficiently to move the state towards climate stabilization. If a project would generate GHG emissions above the threshold level, its contribution to cumulative impacts would be considered significant.

Tuolumne County General Plan

The 1996 General Plan provides a policy framework for guiding development in the County. As the proposed project would update the 1996 General Plan, this document will be discussed in the context of the update within the impact analysis. The General Plan Update, specifically the Climate Change Element, discusses how GHG emissions and climate adaptation will be addressed in the plan area. The policies and implementation programs in the Climate Change Element provide details on how GHG emissions would be reduced through the implementation of the General Plan Update and provide specific strategies to prepare and adapt to the impacts of climate change. The Transportation Element and the Air Quality Element also include policies and implementation programs which would reduce GHG emissions and are included below. Specific General Plan Update policies and implementation programs are identified in Section 3.8.3, "Impact Analysis," below.

Tuolumne County Regional Blueprint Greenhouse Gas Study

In 2012, TCTC conducted a regional blueprint planning effort which presented the results of a countywide (including incorporated and unincorporated areas) GHG emissions inventory, which evaluated existing (2010) GHG emissions, and projected (2020, 2030, and 2040) emissions for three growth scenarios, including the scenario used to develop the General Plan Update. It also identified policies and measures Tuolumne County and land use project applicants can implement to reduce GHG emissions consistent with AB 32 and prepare for the potential impacts of climate change. In 2010, Tuolumne County emitted approximately 782,846 metric tons of CO₂ equivalent GHG emissions (MTCO_{2e}) as a result of activities and operations that took place within the transportation, residential (energy consumption), non-residential (energy consumption), off-road vehicles and equipment, agriculture and forestry, wastewater, and solid waste sectors. This equates to 9.8 MTCO_{2e} per resident and employee in Tuolumne County's service population (service population is defined as the total County resident population + people employed in the County).

The study identified a countywide target to reduce Tuolumne County's GHG emissions 15 percent below 2010 levels by 2020 (equivalent to 665,419 MTCO_{2e}) and policies that can be implemented to meet the target. The policies are organized into six categories: 1) Energy, 2) Transportation, 3) Resource Conservation, 4) Off-Road Vehicles and Equipment, 5) New Development, and 6) Adaptation. The study also identified a project-level threshold of 4.6 MTCO_{2e} per service population per year that can be applied evenly to future land development applications countywide to ensure that new development reduces its share of emissions consistent with AB 32 and the countywide reduction target (TCTC 2012). The Tuolumne County Regional Blueprint Greenhouse Gas Study and associated project-level thresholds were adopted by the County Board of Supervisors in January 2012.

Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan

Tuolumne County's Multi-Jurisdictional Hazard Mitigation Plan was mostly recently updated in 2018 and serves as the County's primary planning document for assessing potential hazards as well as establishing goals and objectives to mitigate the impact of hazards in the County and increase disaster preparedness. The plan includes goals, objectives, and mitigation actions for each type of hazard within the County. The following goals, objectives, and mitigation actions included in the plan would help to address the specific climate change impacts anticipated to affect the County over the coming century, as discussed in the Environmental Settings section.

GOAL 5: Minimize the level of damage and losses to people, existing and future critical facilities and infrastructure due to wildland fires.

Objective 5.1: Continue the comprehensive approach to reducing the level of damage and losses due to wildland fires through vegetation management, code enforcement, GIS mapping, and planning processes.

Mitigation Action 5.1A: Prevent wildfires through collaborative code enforcement efforts by working with Engine Company Captains and Fire Prevention staff to increase the education and enforcement of PRC 4291, defensible space rules.

Mitigation Action 5.1B: In order to assist fire prevention efforts and to better manage large fires when they occur, continue to improve GIS mapping and tracking efforts by gathering and maintaining relevant GIS data layers and imagery and utilizing the best available mapping applications and software.

Mitigation Action 5.1C: Continue to work with the Hwy 108 Fire Safe Council and SWIFT to initiate fuel thinning and chipping projects in high priority areas. Collaborate with property owners and regulatory agencies in order to utilize prescribed fire on private and state-owned lands in the county.

Mitigation Action 5.1D: Work with the Hwy 108 Fire Safe Council and SWIFT to update as needed the Community Wildfire Protection Plans for the County so that they will continue to:

- ▲ Assess the fire hazard in the County
- ▲ Prioritize treatment areas
- ▲ Enhance collaboration amongst all fire agencies and stakeholders
- ▲ Streamline environmental review processes

Mitigation Action 5.1E: Improve water supply and storage for firefighting use at the Curtis Creek Campus.

Mitigation Action 5.1F: Develop a wildfire evacuation plan which includes sheltering in place, at both the Curtis Creek and Sullivan Creek campuses and Columbia Union Elementary and Bellevue Elementary.

Mitigation Action 5.1G: Work with the Tuolumne Utilities District to improve fire flow, system reliability and redundancy, and increased water supply in their responsibility areas.

Mitigation Action 5.1H: Protect water conveyance system by reducing fuels adjacent to wooden flumes.

Objective 5.2: Enhance collaboration amongst all fire agencies and stakeholders.

Mitigation Action 5.2A: Encourage participation of all Fire Agencies in the monthly Fire Chief Association meetings and support, when possible, efforts by the Association to improve fire protection and preventions efforts in the County.

Mitigation Action 5.2B: Encourage participation in cooperative automatic and mutual aid agreements between Districts, the County and the City of Sonora

Tuolumne County Transportation Council Regional Transportation Plan

In 2016, TCTC adopted its most recent RTP, which serves as the County's transportation policy, action, and financial planning document. TCTC is the regional transportation planning agency in Tuolumne County, which is not considered an MPO and, therefore, not subject to the VMT reduction targets set for MPOs in SB 375. However, TCTC has chosen to include a Rural Sustainable Strategy chapter which sets GHG reduction goals for the County consistent with SB 375, AB 32, and EO B-30-15. The chapter provides an alternative sustainability plan that is feasible for Tuolumne County to remain consistent with the statewide GHG reduction goals. It includes the following policies, which specifically address GHG reductions:

GOAL 1: Ensure the balance of environmental, economic, and social equity metrics in making transportation decisions.

Objective: Implement the Rural Sustainable Strategies.

- ▲ **Policy 1:** Utilize the Rural Sustainable Project Level Performance Assessment tool for funding transportation projects.
- ▲ **Policy 2:** Facilitate and identify new funding opportunities through TCTC's List of Rural Sustainable Strategies
- ▲ **Policy 3:** Support and prioritize the Greenhouse Gas Emission Reduction Policies.

GOAL 2: Integrate land use and transportation decisions by prioritizing infrastructure investments within the Defined Community Boundaries that strikes a balance between development, available infrastructure, conserves natural resources, and provides for a high quality of life.

Objective: Increase funding towards transportation projects that support the land uses within the Defined Community Boundaries (Regional Blueprint Greenhouse Gas Study).

- ▲ **Policy 1:** Support land use and transportation decisions which encourage growth in the Defined Community Boundaries and avoid rural sprawl (RTP Evaluation & Analysis Plan & Regional Blueprint Greenhouse Gas Study).
- ▲ **Policy 2:** Provide a variety of transportation choices by adopting policies that promote more alternative modes of transportation.
- ▲ **Policy 3:** Ensure new developments are providing their fair share towards transportation impacts.

GOAL 3: Practice environmental stewardship by protecting air quality, natural resources, and historical and cultural assets.

Objective: Identify and mitigate potential environmental impacts from the transportation system.

- ▲ **Policy 1:** Improve air quality in the region by coordinating transportation infrastructure with air quality planning.
- ▲ **Policy 2:** Reduce air quality emissions and greenhouse gas emissions from the transportation sector (Regional Blueprint Greenhouse Gas Study).
- ▲ **Policy 3:** Reduce vehicle miles traveled (VMT's) by increasing the use of alternative modes of transportation.
- ▲ **Policy 4:** Identify potential climate change impacts affecting the transportation system and find reasonable solutions.
- ▲ **Policy 5:** Identify and implement Context Sensitive Solutions in the Defined Community Boundaries.
- ▲ **Policy 6:** Support the planning and construction of plug-in electric vehicle charging stations.

3.8.3 Impact Analysis

METHODS OF ANALYSIS

Construction Emissions

Construction-related emissions of GHGs were calculated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2 computer program (CAPCOA 2017). Modeling was based on available information (e.g., land uses, acreage, number of units); reasonable assumptions based on typical construction activities; and default values in CalEEMod that are based on the project's location and land use type. Construction emissions modeling used CalEEMod default assumptions regarding the number and types of heavy duty construction equipment used for the development of various land uses. Construction-related GHG emissions estimates assumed that projected development under the General Plan Update would occur at a constant annual rate through the General Plan Update horizon year of 2040. This annual emissions total was then multiplied by the number of years in the planning horizon of the General Plan Update (21 years) to generate a total construction emissions estimate for development of all the land uses through 2040. For further details regarding modeling inputs and assumptions refer to Appendix C.

Operational Emissions

CalEEMod was used to estimate operation-related emissions of GHG for the following sources: area sources (e.g., landscaping-related), energy use (i.e., electricity, propane, heating oil), water use, and solid waste. Indirect emissions associated with electricity use were estimated using GHG emissions factors from PG&E which is the electricity utility for Tuolumne County. GHG emissions associated with space heating were modeled for future heating oil using data on current conditions from the Tuolumne County Regional Blueprint Greenhouse Gas Study (Tuolumne County 2012:2-3). Propane use was based on default natural gas demand in CalEEMod. GHG emissions associated with the use of fireplaces were also estimated from existing data included in the Tuolumne County Regional Blueprint Greenhouse Gas Study (Tuolumne County 2012:2-3).

Mobile-source emissions were estimated using General Plan Update annual VMT estimates included in the General Plan Update's traffic study and vehicle emissions factors specific to Tuolumne County for the year 2040, generated with CARB's EMFAC 2017 emission software. The project-generated annual VMT estimates were generated from the TCTC Travel Demand Model and were included in the project traffic study (Wood

Rodgers 2016). VMT estimates were generated for the baseline (2015) and target year (2040), based on the projected development under the General Plan Update. (See Appendix D for the complete traffic study.)

THRESHOLDS OF SIGNIFICANCE

Global climate change is inherently a cumulative issue, as the GHG emissions of individual projects cannot be shown to have any material effect on global climate. Thus, the impact of the projected development under the General Plan Update to climate change is addressed only as a cumulative impact.

CEQA Guidelines Section 15064 and relevant portions of Appendix G recommend that a lead agency consider a project's consistency with relevant, adopted plans, and discuss any inconsistencies with applicable regional plans, including plans to reduce GHG emissions. In Appendix G of the State CEQA Guidelines, two questions are provided to help assess if the project would result in a potentially significant impact on climate change. These questions ask whether the project would:

- ▲ generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or
- ▲ conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?

In November 2017, CARB released California's 2017 Scoping Plan which serves as the planning document that demonstrates how the state will reach the goals set forth in SB 32 of reducing statewide GHG emissions to 40 percent below 1990 levels by 2030 and the longer-term state emissions reduction goal of 80 percent below 1990 levels by 2050 set forth by EO S-3-05. Chapter 5, "Achieving Success," of the 2017 Scoping Plan recommends several approaches for local plan-level projects to show consistency with state targets. As an overall goal, "CARB recommends statewide targets of no more than six metric tons CO₂e per capita by 2030 and no more than two metric tons CO₂e per capita by 2050" (CARB 2017:99). However, because not all emissions sectors reductions can be achieved by jurisdictions at the local level, CARB includes the following recommendations for demonstrating how local jurisdictions can demonstrate consistency with statewide targets. The following language in the 2017 Scoping Plan is related to local plan-level CEQA analyses (CARB 2017:100):

CARB advises that local governments also develop community-wide GHG emissions reduction goals necessary to reach 2030 and 2050 climate goals. Emissions inventories and reduction goals should be expressed in mass emissions, per capita emissions, and service population emissions. To do this, local governments can start by developing a community-wide GHG emissions target consistent with the accepted protocols as outlined in OPR's General Plan Guidelines Chapter 8: Climate Change. They can then calculate GHG emissions thresholds by applying the percent reductions necessary to reach 2030 and 2050 climate goals (i.e., 40 percent and 80 percent, respectively) to their community-wide GHG emissions target. Since the statewide per capita targets are based on the statewide GHG emissions inventory that includes all emissions sectors in the state, it is appropriate for local jurisdictions to derive evidence-based local per capita goals based on local emissions sectors and population projections that are consistent with the framework used to develop the statewide per capita targets. The resulting GHG emissions trajectory should show a downward trend consistent with the statewide objectives. The recommendation for a community-wide goal expands upon the reduction of 15 percent from "current" (2005-2008) levels by 2020 as recommended in the 2008 Scoping Plan.

As discussed above, the statewide per capita targets account for all emissions sectors in the state's GHG emissions inventory, statewide population forecasts recently prepared for 2030 and 2050, and all statewide reductions necessary to achieve the 2030 statewide target under SB 32 in all sectors. The per capita targets reported in the Scoping Plan are framed as targets that must be met on a statewide basis; however, this does not mean that the statewide per capita targets must be applied uniformly to every local jurisdiction.

Nevertheless, for this analysis, it has been determined that all emissions sectors included in the 2017 Scoping Plan would be applicable to the General Plan Update. For this analysis, a service population emissions threshold for Tuolumne County has been developed for the planned General Plan horizon year 2040. This threshold is used to analyze whether the General Plan Update would result in a substantial increase in GHG emissions or conflict with local or state plans adopted for the purpose of reducing GHG emissions.

The following discussion summarizes the methodology and equations used to establish a service population GHG efficiency threshold for Tuolumne County for 2040. The 2017 Scoping Plan includes a statewide mass emission target for 2030 and 2050. These statewide mass emission projections for 2030 and 2050 were interpolated to determine a statewide emissions goal for 2040. Using data from the California Department of Finance and Employment Development Department, statewide population and employment forecasts for the year 2040 were used to derive a statewide GHG service population threshold for the year 2040. This statewide emissions goal for 2040 is then divided by the 2040 statewide service population to derive a statewide service population GHG emissions threshold for 2040. Based on this equation, a statewide service population threshold of 3.1 MTCO₂e for the year 2040 was derived. Therefore, based on the anticipated emissions reduction projected in the 2017 Scoping Plan to meet statewide targets, a plan or project that results in no more than 3.1 MTCO₂e per service population by 2040 would not result in a substantial increase in GHGs or conflict with local or state plans adopted for the purpose of reducing GHG emissions. Project-generated mass emissions were divided by the projected 2040 Tuolumne County service population to compare to the project-specific emissions limit. County population increase is presented in the Project Description (Table 2-4) and employment estimates were provided by Tuolumne County from Caltrans's California County-Level Economic Forecast 2017-2050 (Caltrans 2017). See Appendix C for calculations.

This target setting approach is consistent with the California Supreme Court decision in *Center for Biological Diversity v. California Department of Fish and Wildlife and Newhall Land and Farming* (2015) 62 Cal.4th 204, which determined that the approach of assessing a project's consistency with statewide emission reduction goals must include a "reasoned explanation based on substantial evidence" that links the project's emission to the statewide Scoping Plan reduction goals. If the analysis demonstrates that the General Plan Update is consistent with the GHG reduction targets set in SB 32 and demonstrates progress towards the goals in EO S-3-05, the General Plan Update would not result in a substantial increase in GHGs or conflict with local or state plans adopted for the purpose of reducing GHG emissions.

GENERAL PLAN UPDATE POLICIES

The following goals, policies and implementation programs from the General Plan Update are specifically relevant to climate change and GHG emissions:

Transportation Element

- ▲ **Policy 4.B.1:** Develop a modern transportation system that incorporates alternative transportation modes into the system design.
- ▲ **Policy 4.B.2:** Expand and improve pedestrian sidewalks and facilities focusing on safety, connectivity, and accessibility.
- ▲ **Policy 4.B.3:** Expand and improve the bikeways within Tuolumne County, focusing on safety, connectivity, and accessibility.
- ▲ **Policy 4.B.4:** Encourage the use of alternative modes of transportation by incorporating public transit, bicycle and pedestrian modes in County transportation planning and by requiring new development to provide adequate pedestrian and bikeway facilities at suitable locations.

- ▲ **Policy 4.B.5:** Maintain and expand, where possible and appropriate, the system of non-motorized connections that link neighborhoods to larger roadways, activity centers and nodes, businesses, community services, parks and recreational facilities, and transit stops and stations.
- ▲ **Policy 4.B.6:** Actively investigate and seek alternative funding sources for bicycle and pedestrian facilities.

Public Safety Element

- ▲ **Policy 9.G.1:** Maintain County fire protection regulations that are consistent with Section 4290 or the equivalent of the California Public Resources Code and other applicable fire protection regulations.
 - **Implementation Program 9.G.a:** Utilize the following documents as reference in formulating County standards and ordinances for fire protection measures:
 - Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan
 - California Public Resources Code, Section 4290
 - Tuolumne County Community Wildfire Protection Plan
 - CAL FIRE Strategic Fire Plan for the Tuolumne/Calaveras Unit
 - California Fire Code Current Edition
 - California Building Code Current Edition
 - Insurance Services Office Publication “Guide for the Determination of Fire Flow”
 - Insurance Services Office Standards
 - Strategic Fire and Resource Protection Planning
 - National Fire Protection Association (NFPA) fire and building safety standards adopted by the County
 - CAL FIRE Fire Hazard Severity Zone Map
 - Highway 108 Strategic Plan
 - **Implementation Program 9.G.b:** Consult with the Tuolumne County Fire Department (TCFD) and CAL FIRE in revising Titles 11, 15, and 16 of the Tuolumne County Ordinance Code in order to determine if the proposed revisions are consistent with Section 4290 of the California Public Resources Code and other applicable fire protection regulations. Such revisions shall be consistent with fire protection regulations in effect at the time of consideration by the Board of Supervisors.
- ▲ **Policy 9.G.2:** Require new residential development to have adequate fire protection, which may include design and maintenance features that contribute to the protection of the County from the losses associated with wildland fire. Periodically update the County's fire protection standards to reflect new information and technology concerning fire prevention in wildland areas.
 - **Implementation Program 9.G.c:** Revise the County's development standards as necessary to reflect contemporary fire prevention and protection practices and measures and to determine that needed fire protection infrastructure, including road networks and water systems, are installed and maintained.
- ▲ **Policy 9.G.3:** Determine the impact proposed development will have on the provision of fire protection services and maintain the established level of service as outlined in the current *Tuolumne County Fire Department Service Level Stabilization Plan*.
 - **Implementation Program 9.G.d:** Require that a public water system, having adequate fire flow, is available prior to development of land for which a zone change to an urban zoning district is approved. Public water need not be available on-site at the time of zoning, however, financial and other assurances must be provided to the County which will allow such improvements to be installed in a timely manner.

- ▲ **Policy 9.G.4:** Require that residential development provide for defensible space around structures.
 - **Implementation Program 9.G.e:** Revise and enforce County fire protection regulations that require residential development to provide defensible space for structural fire protection consistent with Section 4290 of the California Public Resources Code and Section 15.20.060 of the Tuolumne County Ordinance Code.
 - **Implementation Program 9.G.f:** Investigate incentive programs between insurance providers, fire protection agencies, and property owners, whereby financial incentives can be obtained by property owners who implement fire prevention and protection measures through homeowner's insurance reductions or other programs. Such research can be accomplished through contact with legislative offices and the Office of the State Fire Marshal, and review of grant availability lists and fire service technical journals.
 - **Implementation Program 9.G.g:** Encourage insurance companies to determine fire insurance rates based upon evaluation of individual parcels rather than using the CAL FIRE Forest and Resource Assessment Program "Fire Hazard Severity Zone Map," which was not developed for this use.
- ▲ **Policy 9.G.5:** Require that street and structural identification are provided to assist in emergency response.
 - **Implementation Program 9.G.h:** Revise and enforce County fire protection regulations to require new development to provide street signing and structural identification necessary to allow prompt response during emergency situations pursuant to Sections 15.20.045 and 12.12.080 of the Tuolumne County Ordinance Code. Strive to maintain street signs on County-maintained roads. Assist residents and communities to replace street signs where necessary on roads that are not County-maintained.
- ▲ **Policy 9.H.1:** Establish or redirect existing revenue sources to provide a stable, adequate level of funding for the Tuolumne County Fire Department.
 - **Implementation Program 9.H.a:** Review the County Services Impact Mitigation Fees on a regular basis to evaluate the adequacy of the fire protection component.
 - **Implementation Program 9.H.b:** Investigate and pursue all available and appropriate options for funding of fire protection facilities, equipment and services.
- ▲ **Policy 9.H.2:** Enforce the provisions found in Title 15 of the Tuolumne County Ordinance Code and the California Fire Code for built-in fire suppression equipment in all new development in order to improve fire safety and offset the need for increased fire department staffing and equipment.

Air Quality Element

- ▲ **Policy 15.B.1:** Create a land use pattern that will encourage people to walk, bicycle or use public transit for a significant number of their daily trips.
 - **Implementation Program 15.B.a:** Encourage pedestrian oriented development to reduce the use of motor vehicles.
 - **Implementation Program 15.B.b:** Establish an incentive program to encourage transit-oriented development, including, where appropriate, exempting such projects from traffic impact mitigation fees.
 - **Implementation Program 15.B.c:** Support the development of high density housing, commercial and offices along high priority transit routes.

- **Implementation Program 15.B.d:** Work with Caltrans, transit providers, and property owners to identify park-and-ride sites with convenient access to public transit.
- **Implementation Program 15.B.e** Seek funding for park-and-ride facilities and develop, or support the development of such facilities, within the identified communities, and permit park-and-ride facilities in commercial and industrial zoning districts.
- **Implementation Program 15.B.f:** Create additional, and improve existing, car-sharing and ride-sharing programs and promote them within the region.
- **Implementation Program 15.B.g:** Work with Caltrans and other agencies to establish transportation demand management programs, such as park-and-ride facilities, transit incentives and telecommute centers.
- ▲ **Policy 15.B.2:** Develop a modern transportation system that incorporates alternative transportation modes into the system design.

Natural Hazards Element

- ▲ **Policy 17.E.1:** Reduce the exposure to risk from wildland fire to an acceptable level by only allowing development in high or very high fire hazard areas if it can be made safe by planning, construction, or other fire safety measures.
 - **Implementation Program 17.E.a:** Utilize the CAL FIRE Forest and Resource Assessment Program "Fire Hazard Severity Zone Map," including revisions thereto, as a basis for determining the significance of fire hazards when reviewing development applications.
 - **Implementation Program 17.E.b:** Recognize that new development, including urban or clustered development, is acceptable in moderate, high and very high fire hazard zones, provided that project design meets California Building and Fire Codes including Wildland-Urban Interface Building Codes. Such developments may be required to provide and maintain additional off-site fire defense improvements.
- ▲ **Policy 17.E.2:** Require the maintenance of defensible space setbacks in areas proposed for development if wildland fire hazards exist on adjacent properties.
- ▲ **Policy 17.E.3:** Require new development to have adequate fire protection and to include, where necessary, design and maintenance features that contribute to the protection of the County from the losses associated with wildland fire.
 - **Implementation Program 17.E.c:** Require new development to mitigate wildland fire hazards in such a manner that it minimizes the chance of wildland fire originating outside the development from entering the development and minimizes the chance of fire originating within the development escaping to adjoining property and adjacent wildland.
 - **Implementation Program 17.E.d:** Require developers to incorporate fire protection improvements into project designs where determined necessary by the Tuolumne County Fire Department and require maintenance of these improvements. Fuelbreaks, green belts, long-term comprehensive fuel management programs, access to developed water sources, strategic helispots (with water supply), and perimeter road systems can all serve to reduce the fire hazard on project sites as well as adjacent property.
 - **Implementation Program 17.E.e:** Require new development in areas subject to wildland fire to provide safe ingress and egress in accordance with Chapter 11.12 of the Tuolumne County Ordinance Code. Encourage new development that complies with Chapter 11.12 to provide multiple

access routes, especially in very high fire hazard severity zones or where one access route is susceptible to closure by landslide, loss of a bridge or other cause.

- **Implementation Program 17.E.f:** Support the efforts of the Tuolumne County Fire Department to prevent loss of life, property and resources. Refer land development applications which would permit structures in areas subject to wildland fire to the Tuolumne County Fire Department/CAL FIRE for review and identification of measures necessary to mitigate the fire hazard.
- **Implementation Program 17.E.g:** Consult the U.S. Forest Service, National Park Service and other federal land management agencies regarding applications for development on privately owned lands located adjacent to or within these agencies' boundaries to obtain comments regarding the impact of the project on the wildland fire protection mission of that agency.
- **Implementation Program 17.E.h:** Revise and enforce County fire protection regulations such that new development in areas subject to wildland fire provides for clearing adjacent to access roads in order to reduce radiant heat received by vehicles on the roadway and thereby facilitate safe evacuation of residents and response by emergency vehicles in the event of wildland fire.
- **Implementation Program 17.E.i:** Periodically update the County's fire protection standards to reflect new information and technology concerning fire prevention in wildland areas.
- **Implementation Program 17.E.j:** Locate new essential public facilities including, but not limited to, hospitals, health care facilities, emergency shelters, emergency operations centers and emergency communications facilities, outside very high fire hazard severity zones if feasible. If essential public facilities must be located in high or very high fire hazard severity zones, incorporate design, construction or other measures to minimize damage in the event of a wildland fire.
- ▲ **Policy 17.E.4:** Promote public awareness of wildland fire hazards present within the County, as well as proper fire prevention and protection practices.
 - **Implementation Program 17.E.k:** Actively seek funding to develop fire prevention public awareness and education programs.
 - **Implementation Program 17.E.l:** Educate residents in forested areas about wildfire hazards and the steps to avoid excessive risk.
- ▲ **Policy 17.E.5:** Maintain firefighting assets within the County at necessary levels.
 - **Implementation Program 17.E.m:** Support the operation of a fully-staffed CAL FIRE Columbia Air Attack Base at the Columbia Airport.
 - **Implementation Program 17.E.n:** Continue to make County airports available to facilitate fire suppression aircraft operations.
- ▲ **Policy 17.E.6:** Encourage rapid post-fire assessment and rehabilitation of burned lands to limit soil erosion, protect water quality, minimize flooding and restore damaged landscapes.
 - **Implementation Program 17.E.o:** Support the efforts of fire protection organizations and property owners to develop burn area recovery plans that include rapid post-fire assessment and implementation actions that encourage salvage of burned trees and reforestation activities, create resilient and sustainable landscapes and restore functioning ecosystems.

- ▲ **Policy 17.E.7:** Protect natural resources from the effects of wildland fire.
 - **Implementation Program 17.E.p:** In the event of major wildland fires that exceed the capability of local fire protection resources to control, implement the Wildland Fire Plan contained in the *Emergency Services Plan for Tuolumne County*.
 - **Implementation Program 17.E.q:** Coordinate revisions of the *Tuolumne County Community Wildfire Protection Plan* and individual community wildfire protection plans with the current version of the CAL FIRE *Strategic Fire Plan for the Tuolumne/Calaveras Unit* to include projects to reduce the wildland fire in the County.
 - **Implementation Program 17.E.r:** Utilize the *Tuolumne County Community Wildfire Protection Plan*, the *Highway 108 Strategic Plan*, the CAL FIRE *Strategic Fire Plan for the Tuolumne/Calaveras Unit* and other adopted fire prevention, protection and response plans to identify the maximum acceptable wildfire size and acceptable initial attack success rate for protection of wildland areas and provide the resources necessary to achieve these standards.
- ▲ **Policy 17.E.8:** Require property owners to maintain wildlands in a fire resistant manner consistent with Section 4291 of the Public Resources Code. Assist fire protection agencies in their efforts to enforce Section 4291.
 - **Implementation Program 17.E.s:** Maintain the County's policies concerning development in the Tuolumne County Ordinance Code in the wildland urban interface area to further reduce the risk of life and property loss from future wildfires.
 - **Implementation Program 17.E.t:** Require property owners to remove trees killed by drought, disease, insects and other pests to utilize the timber value and reduce the wildland fire hazard consistent with Section 4291 of the Public Resources Code unless a tree is determined to have significant wildlife habitat value by a qualified biologist.
- ▲ **Policy 17.E.9:** Consider effects on cultural resources, wildlife habitat and special status species when developing wildfire prevention, protection and recovery plans.
 - **Implementation Program 17.E.u:** Evaluate the effects on wildlife habitat and special status species when developing wildfire prevention, protection and recovery plans. Incorporate measures to mitigate potentially significant impacts into adopted plans.
 - **Implementation Program 17.E.v:** Incorporate the habitat needs of native wildlife species into wildfire prevention, protection and recovery plans. Utilize plant species native to the area when designing revegetation plans.
 - **Implementation Program 17.E.w:** Evaluate the effects on cultural resources when developing wildfire prevention, protection and recovery plans. Incorporate measures to mitigate potentially significant impacts into adopted plans.
- ▲ **Policy 17.E.10:** Identify assets that require protection from wildland fire and prioritize their protection needs.
 - **Implementation Program 17.E.x:** When updating the *Tuolumne County Community Wildfire Protection Plan* or updating or preparing other community wildfire protection plans, include the following:
 1. A prioritization of physical assets that require protection from wildland fire; and

2. Fire defense strategies that provide fire protection without dependence on air attack and could serve as safety zones for the public or emergency support personnel.

- ▲ **Policy 17.E.11:** Encourage resolution of conflicts between wildland fire protection and habitat conservation for wildlife.
 - **Implementation Program 17.E.y:** Coordinate with CAL FIRE, the Tuolumne County Fire Department and the California Department of Fish and Wildlife to identify acceptable levels of wildland fuel reduction in areas conserved for biological resources to mitigate impacts of development.
- ▲ **Policy 17.E.12:** Acknowledge that wildland areas provide natural resource values to the citizens of the County, visitors and other persons throughout the state, including watershed resources, timber resources, visual resources, carbon sequestration, wildlife habitat and special status species habitat.

Climate Change Element

- ▲ **Policy 18.A.1:** Prepare a Climate Action Plan (CAP), or similar GHG emission reduction plan, that establishes a GHG reduction target consistent with the Senate Bill (SB) 32 goal to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030. The CAP shall identify specific measures to reduce countywide emissions consistent with the established target and will also include adaptation strategies for the County to appropriately adjust to the environmental effects of climate change. Many of the measures in the CAP will overlap with and help implement goals, policies, and implementation programs identified in this General Plan.
 - **Implementation Program 18.A.a:** Include specific GHG emissions reduction measures in the CAP. Examples include, but are not limited to, the following:
 - Incentivize energy efficiency improvements in existing buildings;
 - Require energy audits for major additions to or alterations of existing buildings;
 - Require compliance with CALGreen Tier 1 Green Building standards and Tier 1 Building Energy Efficiency Standards for eligible alterations or additions to existing buildings;
 - Require compliance with CALGreen Tier 1 Green Building standards and Tier 1 standards for all new construction, and phase in Zero Net Energy (ZNE) standards for new construction;
 - Require new or replacement residential water heating systems to be electrically powered and/or alternatively fueled systems;
 - Expand current renewable energy and green energy incentives and update local ordinances;
 - Develop a program to offset project GHG emissions by retrofitting existing income-qualified homes and buildings;
 - Support waste-to-energy programs at landfills;
 - Increase availability and accessibility of transit information;
 - Support alternatives to private vehicle travel for visitors, such as shuttles;
 - Increase the supply of electric vehicle charging stations;
 - Promote telecommuting at office-based businesses;

- Encourage expansion of composting programs;
 - Establish a waste diversion goal that exceeds the State's 2020 75 percent target;
 - Promote alternatives to open burning of biomass;
 - Convert all stationary diesel or gas-powered irrigation pumps to electric pumps;
 - Require Tier 4 equipment for all construction activity and forestry/mining operations by 2030;
 - Adopt a new water conservation ordinance for commercial and residential land uses limiting outdoor watering;
 - Expedite and/or reduce permit fees associated with water conservation installations in existing facilities;
 - Require water audits for large new commercial or industrial projects and significant expansions of existing facilities;
 - Establish targets and enhanced programs for oak woodland and coniferous forest preservation and mandatory replanting;
 - Refine protection guidelines for existing riparian lands to establish a no-net-loss goal;
 - Develop a program to require repurposing of usable lumber from trees removed due to land conversion to avoid wood burning;
 - Promote the sale and consumption of locally-grown foods and/or products; and
 - Establish and local carbon offset program.
- **Implementation Program 18.A.b:** Include specific adaptation strategies in the CAP. Examples include, but are not limited to the following:
- Identify critical infrastructure vulnerable to extreme heat events;
 - Develop outreach programs for outdoor workers to prevent heat-related illness;
 - Educate residents on heat-related illness prevention;
 - Encourage installation of cool roof technologies and rooftop gardens;
 - Explore options to incorporate cool pavement technology;
 - Improve parking lot shading and landscaping;
 - Establish an Excessive Heat Emergency Response Plan;
 - Identify locations that are newly at risk or at higher risk for wildland fire hazard;
 - Identify critical infrastructure vulnerable to wildland fire;
 - Evaluate vulnerabilities of water supply systems and networks;

- Consider innovative options to meet future water demand;
 - Promote use of rainwater catchment and storage systems;
 - Collaborate with agencies to identify future water supplies and explore alternative supply sources; and
 - Pursue grant funding for water resource planning projects.
- **Implementation Program 18.A.c:** Consider preparing a CAP that meets the criteria for CEQA Guidelines section 15183.5, which provides for tiering and streamlining opportunities.
 - **Implementation Program 18.A.d:** Adopt and begin implementing the CAP prior to 2020.
- ▲ **Policy 18.A.2:** Continue to implement, prior to adoption of the CAP, the Tuolumne County Regional Blueprint Greenhouse Gas Study (January 2012) (including any updates) to reduce GHG emissions to 1990 levels by 2020 pursuant to Assembly Bill 32. The 2012 Greenhouse Gas Study will be considered superseded by the CAP once it is adopted.
 - ▲ **Policy 18.A.3:** Continue to implement the policies and strategies identified in the 2016 Final Regional Transportation Plan, including the Rural Sustainable Strategies.
 - ▲ **Policy 18.A.4:** Recognize that climate change may affect air quality and water quality creating health and safety hazards.
 - **Implementation Program 18.A.e:** Adopt local policies and programs and seek funding and support efforts by local, regional, State and Federal agencies and others to develop policies and manage programs that allow the County to adapt to extreme climate change effects, such as prolonged drought and flooding.
 - **Implementation Program 18.A.f:** Prepare for potential climate change effects on water resources, such as prolonged drought and flooding, by working with water agencies to implement measures to reduce water consumption, expand water storage capacity, protect water quality, and explore and promote more diverse sources of water.
 - **Implementation Program 18.A.g:** Prepare for potential climate change effects on water resources by working to implement measures to reduce water consumption, expand emergency water storage capacity, protect water quality, and explore and promote more diverse sources of water.
 - **Implementation Program 18.A.h:** Participate in inter-agency and/or inter-jurisdictional meetings and planning activities to identify and periodically reassess regional climate change vulnerabilities.
 - **Implementation Program 18.A.i:** Collaborate with community-based organization partners, such as health care providers, mental health providers and public health advocates, to disseminate climate change health impact information, promote good health, and public preparedness and emergency response.
 - ▲ **Policy 18.A.5:** Promote energy efficiency and alternative energy while reducing energy demand.
 - **Implementation Program 18.A.j:** Facilitate voluntary energy efficient retrofits in existing structures by connecting home and business-owners with technical and financial assistance, such as Federal, State, and utility rebates, and tax credits, through the County's or Tuolumne County Transportation Council's website.

- **Implementation Program 18.A.k:** Work with Pacific Gas and Electric Company and other electric utility providers to promote voluntary upgrades to energy-efficient technology and products through campaigns targeted at residents and local businesses, ENERGY STAR® appliance change-out programs, and incentives, such as give-a-ways or Federal/State/utility rebates.
- **Implementation Program 18.A.l:** Work with Pacific Gas and Electric Company and other electric utility providers to encourage local businesses and public agencies to install energy conserving technologies, such as occupancy sensors, and implement energy conserving policies, such as “lights out at night.”
- **Implementation Program 18.A.m:** Reduce the energy demand of public facilities and conserve electricity through the following: a) retrofitting County owned or operated street, traffic signal, and other outdoor lights with energy efficient light emitting diode (LED) lamps; b) retrofitting heating and cooling systems to optimize efficiency, such as replacing HVAC systems; and c) replacing old appliances and technologies with ENERGY STAR® products. Obtain funding for and install renewable energy technologies on public property.
- **Implementation Program 18.A.n:** Work with Pacific Gas and Electric Company and other electric utility providers to educate residents and businesses about Smart Meters, how to monitor electricity use, and the potential benefits associated with Smart Meters.
- **Implementation Program 18.A.o:** Work with Pacific Gas and Electric Company and other electric utility providers to promote the use of financial incentives, such as Federal/State/utility rebate and, tax credits, for the voluntary installation of “cool roofs” on existing structures, such as ENERGY STAR® roof products, that have a high solar and thermal reflectance.
- **Implementation Program 18.A.p:** Encourage the use of electric lawnmowers and leaf blowers over those powered by gasoline.
- **Implementation Program 18.A.q:** Encourage the incorporation of energy conservation into the design of residential and commercial buildings; such as Tier 1 and Tier 2 of the Green Building Code.
- **Implementation Program 18.A.r:** Encourage the use of deciduous landscape trees near new development to provide shade during the hot summer months and allow solar warming during the cold winter months.
- **Implementation Program 18.A.s:** Support the use of alternative energy vehicles by encouraging new development to install electric charging stations for passenger vehicles, in particular at high use and density areas.
- **Implementation Program 18.A.t:** Support development of electric charging stations for passenger vehicles, in particular near transit stop locations and high use parking areas.
- ▲ **Policy 18.A.6:** Encourage the use of solar power and other innovative energy sources as alternatives to more traditional forms of energy.
 - **Implementation Program 18.A.u:** Promote Federal, State, and utility incentives, such as rebates, vouchers, and tax credits, and consider participating in a Property Assessed Clean Energy (PACE) program under AB 811 to provide property owners financing for solar photovoltaic systems.
 - Implementation Program 18.A.v:** Assist landowners wishing to utilize solar power and other alternatives by offering information on the requirements for their use in building codes.
 - Implementation Program 18.A.w:** Promote Federal, State, and utility financial incentives, such as rebates, vouchers and tax credits, to facilitate the installation of solar water heaters in homes.

- ▲ **Policy 18.A.7:** Encourage reduced consumption of fossil fuel energy by promoting alternative transportation methods and encouraging pedestrian oriented development to reduce the use of motor vehicles. See the Transportation Element and the Community Development and Design Element for a detailed listing of policies and implementation programs.

PROJECT IMPACTS

This section presents a programmatic-level analysis of potential impacts associated with global climate change from development facilitated by implementation of the proposed General Plan Update. Evaluation of environmental impacts associated with the General Plan Update considers the development that would be facilitated by the General Plan Update, in accordance with goals, policies, and implementation programs, to accommodate projected growth in the County. It should be noted that the County's population is projected to grow by 0.6 percent annually over the planning horizon (2040). As discussed in detail in Chapter 2, "Project Description," and the introduction to Chapter 3, this is a relatively low amount of growth.

Global climate change is inherently a cumulative issue, as the GHG emissions of individual projects cannot be shown to have any material effect on global climate. Thus, the impact of the projected development under the General Plan Update to climate change is addressed only as a cumulative impact.

Impact 3.8-1: Generation of GHG Emissions, either Directly or Indirectly

Projected development under the General Plan Update would include construction and operational activities associated with the development of new land uses, both resulting in the generation of GHG emissions. Projected development under the General Plan Update would result in annual GHG emissions of 5.2 MTCO_{2e} per service population in Tuolumne County by 2040 and would remain above the 2040 statewide target of 3.1 MTCO_{2e} per service population established for this analysis. As a result, the General Plan Update would result in a considerable increase in GHG emissions and would conflict with the state's 2017 Scoping Plan which was adopted for the purpose of reducing GHG emissions. The General Plan Update includes a number of goals, policies, and implementation programs which would reduce GHG emissions associated new land uses. Policy 18.A.1 in the Climate Change chapter requires the development of a CAP with a target of reducing GHG emissions consistent with statewide targets. However, it is unknown whether the CAP would be fully implemented and, in turn, reduce countywide emissions consistent with state targets. Therefore, this impact would be **significant**.

Projected development under the General Plan Update would result in the development of various new land uses in the County, resulting in an overall net increase in population, housing units, and commercial and industrial square footage. Table 2-6 in the Project Description of this EIR provides a full list of the land use increases that would occur as a result of the General Plan Update. Construction and operational emissions are shown below.

Construction Emissions

Development consistent with the General Plan Update would result in associated construction activities. The development of these land uses would generate GHG emissions from the use of heavy-duty construction equipment, haul truck trips to and from projects being developed, and construction worker commute trips. GHG emissions associated with construction activity would vary depending on the type and size of land uses being developed. Construction-related GHG emissions would be temporary and intermittent in nature for any given project but when considered for the projected development under the General Plan Update, construction emissions could be cumulatively considerable. Table 3.8-1 provides a summary of the total construction-related emissions that would occur as a result of new land uses.

Table 3.8-1 Construction Related GHG Emissions Through 2040

Scenario	MTCO _{2e}
Total Construction Emissions	19,255
Annual Construction Emissions 2019-2040	917

Note: MTCO_{2e} = metric tons carbon dioxide equivalent per year.
Source: Modeling performed by Ascent Environmental in 2018

Operational Emissions

Projected development under the General Plan Update would include residential, commercial and industrial uses, as well as other development. Activity associated with the operation of these land uses would result in project-generated vehicle trips (i.e., project-generated VMT); area-source emissions from operation of landscape maintenance equipment; energy-source emissions from the consumption of electricity and natural gas; water-source emissions from water use and the conveyance and treatment of wastewater; and waste-source emissions from the transport and disposal of solid waste. GHG emissions associated with each land use would vary based on the activities that would occur and by the size and type of each land use. Table 3.8-2 provides a summary of the total operational GHG emissions at the 2040 horizon year of the General Plan Update.

Table 3.8-2 Operational Greenhouse Gas Emissions at Planning Horizon Year 2040

Category	MTCO _{2e} /year
Area	3,835
Energy Use	11,956
Mobile-Source	35,116
Waste Generation	2,337
Water-Related	1,316
Total Annual Operational Emissions	54,561
Amortized Construction Emissions	917
Total Annual Project Emissions	55,478

Notes: Totals may not add due to rounding.
CO_{2e} = carbon dioxide equivalent; MT = metric tons.
See Appendix C for detailed input parameters and modeling results.
Source: Modeling performed by Ascent Environmental in 2018

As discussed above and shown in Table 3.8-1 and Table 3.8-2, projected development under the General Plan Update would result in construction and operational GHG emissions totaling 55,478 MTCO_{2e}/year. As shown in Table 3.8-3, based on population projections included in Table 2-4 in Chapter 2, "Project Description," an increase of 8,906 new residents by 2040 is projected under the General Plan Update. Based on information provided by Tuolumne County staff, the General Plan Update would result in 1,735 jobs by 2040, resulting in a service population (residents plus employment) for the General Plan Update of 10,641. Based on estimated annual GHG emissions resulting from projected development under the General Plan Update, this would result in annual emissions of 5.2 MTCO_{2e} per service population in Tuolumne County by 2040, above the 3.1 MTCO_{2e} per service population target calculated as the threshold of significance for this Recirculated Draft EIR.

Table 3.8-3 General Plan Update - GHG per Service Population (2040)

Category	
Net Increase in County Population by 2040 (Residents)	8,906
Net Increase in County Employment by 2040 (Employees)	1,735
Total Service Population by 2040 (Residents + Employees)	10,641
Total Annual Project GHG Emissions (MTCO _{2e} /year)	55,478
GHG Emissions per Service Population (MTCO _{2e} /year)	5.2
Statewide Service Population Threshold for 2040 (MTCO _{2e} /year)	3.1

Notes: Totals may not add due to rounding; /year = per year; CO_{2e} = carbon dioxide equivalent; MT = metric tons.

See Appendix C for detailed input parameters and modeling results.

Source: Modeling performed by Ascent Environmental in 2018

Therefore, the General Plan Update would result in a substantial increase in GHG emissions and its GHG emissions trajectory would exceed what is needed to attain the statewide targets established in SB 32 and EO S-3-05. Although, the General Plan Update is estimated to result in an increase GHG emissions, the General Plan Update also includes a number of policies that would reduce GHG emissions from the various emissions sources as the County continues to grow. The following discussions include the policies which would reduce the GHG emissions from each emissions source.

Mobile Source Emissions

As shown above, mobile source emissions are the largest emissions source associated with projected development under the General Plan Update and would emit an estimated 35,116 MTCO_{2e}/year. Mobile source emissions are associated with vehicle trips from new residents in the County, as well as trips to and from new non-residential land uses projected to be developed under the General Plan Update. As highlighted in the Methods of Analysis section, the General Plan Update includes policies that would specifically reduce mobile source GHG emissions. In the Transportation Element, Policy 4.B.1 through Policy 4.B.6 and associated implementation programs are focused on reducing VMT in the County and the promotion of alternative modes of transportation, such as biking and walking, through the incorporation of bicycle and pedestrian facilities into new development projects. Strategies from these policies include the development of bikeways throughout the County, requirements for pedestrian and other facilities in new development projects, and the promotion of new pedestrian and bicycle facility connections between identified communities in the County.

In the Air Quality Element, Policy 15.B.1 and Policy 15.B.2 focus on the promotion of new land uses that would reduce traffic congestion and VMT associated with future development. This includes prioritizing future development in identified communities in an effort to increase residential densities and encourage trips made by walking and biking. In the Climate Change Element, Policy 18.A.3 directs the continued implementation of the 2016 RTP, while Policy 18.A.7 calls for the reduction of fossil fuel use within the County's transportation system by promoting pedestrian-oriented development. The combination of these policies would serve to address transportation emissions as the County continues to grow during the planning horizon of the General Plan Update.

In addition to the policies included in the General Plan Update which would reduce transportation-related GHG emissions, current state regulations that address transportation-related GHG emissions, including AB 1403 (Clean Car Standards) and CARB's Advance Clear Car Program will also help to reduce transportation-related GHG emissions in the County. Based on information included in the traffic study conducted for this Recirculated Draft EIR (Woods Rodgers 2016), daily VMT in the County in 2015 was 1,829,654, resulting in annual emissions of 324,264 MTCO_{2e}. The projected daily VMT in the County for 2040, as shown in the traffic study and which incorporates projected development under the General Plan Update, would be 2,152,846, but would result in annual emissions of only 233,917 MTCO_{2e}, a reduction of 90,293 MTCO_{2e}.

Although the projected daily VMT in the County would increase over baseline conditions by 2040, the annual emissions associated with this VMT would decrease due to the implementation of the aforementioned state regulations.

Energy Use Emissions Policies

Projected development under the General Plan Update would result in GHG emissions associated with energy use, including indirect emissions from the consumption of electricity as well as the combustion of propane and heating oil. As shown in Table 3.8-2, projected development under the General Plan Update would generate 11,956 MTCO_{2e}/year related to energy use. However, in the Climate Change Element, Policy 18.A.3, Policy 18.A.5, and their associated implementation programs specifically address GHG emissions associated with energy consumption. These policies focus specifically on energy efficiency improvements and the use of renewable energy resources for existing and future land uses in the County.

County Climate Action Plan

The Climate Change Element includes policies to ensure the County remains consistent with the statewide GHG reduction targets. Goal 18.A is to “Reduce Greenhouse Gas (GHG) emissions from community activities and County government facilities and operations within the County to support the state’s efforts under Assembly Bill 32 and other state and federal mandates to mitigate the County’s GHG emissions impacts.” Included under Goal 18.A, Policy 18.A.1 states that the County will:

Prepare a Climate Action Plan (CAP), or similar GHG emission reduction plan, that establishes a GHG reduction target consistent with the Senate Bill (SB) 32 goal to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030. The CAP shall identify specific measures to reduce countywide emissions consistent with the established target and will also include adaptation strategies for the County to appropriately adjust to the environmental effects of climate change.

The implementation programs under Policy 18.A.1 also provide a list of potential measures that would be included in the CAP and ensure the County endeavors to reduce countywide emissions consistent with the established statewide targets. Although a CAP or similar GHG reduction plan has not been developed yet, once adopted, the CAP will implement goals, policies, and implementation programs (identified through the CAP development process) that would put the County on track to meeting established GHG reduction targets. Additionally, in 2012, the County adopted the Tuolumne County Regional Blueprint Greenhouse Gas Study, which includes various GHG mitigation policies which are discussed in Section 3.8.2, “Regulatory Setting.” The information and suggested strategies included in the Tuolumne County Regional Blueprint Greenhouse Gas Study would also help to inform the policies included in the County’s forthcoming CAP or similar GHG reduction plan.

Conclusion

As discussed above and highlighted in the Methods of Analysis section, the General Plan Update includes a number of policies which would reduce GHG emissions associated with transportation activity and energy use as a result of new land uses. However, it is unknown whether the policies would reduce GHG emissions to the degree needed to achieve the statewide 3.1 MTCO_{2e} service population threshold by 2040. Therefore, projected development under the General Plan Update could result in an increase in GHG emissions and could conflict with state’s 2017 Scoping Plan, which was adopted for the purpose of reducing GHG emissions.

Implementation of the General Plan Update and associated policies may result in some GHG reductions, although it is unknown whether these policies would achieve reductions consistent with statewide targets. Policy 18.A.1 of the General Plan Update requires the preparation of a CAP, or similar GHG reduction plan. As specified in the Policy 18.A.1, the CAP would include a set of measures, which when fully implemented, would ensure that countywide emissions would be reduced consistent with the SB 32 goals to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030. If achieved, this would demonstrate efforts towards achieving the statewide reduction target for 2050. However, as of writing this document, a CAP or similar GHG reduction plan has not been adopted by the County and cannot therefore be relied upon

to attain the 2040 GHG targets. Projected development under the General Plan Update would result in a substantial increase in GHG emissions. This impact would be **significant**.

Mitigation Measures

Mitigation Measure 3.8-1 adds additional measures to these implementation programs for the County to consider including in its CAP.

Mitigation Measure 3.8-1: Revise Implementation Program 18.A.a

The County will revise Implementation Program 18.A.a as follows to include the following GHG emissions reduction measures in the list of potential measures to include in the CAP.

Implementation Program 18.A.a: Include specific GHG emissions reduction measures in the CAP.

Examples include:

- Foster land use intensity near, along with connectivity to, retail and employment centers and services to reduce vehicle miles travelled and increase the efficiency of delivery services through adoption and implementation of smart growth principles and policies;
- Improve the local jobs/housing balance to reduce vehicle miles travelled;
- Incentivize energy efficiency improvements in existing buildings;
- Require energy audits for major additions to or alterations of existing buildings;
- Require compliance with CALGreen Tier 1 Green Building standards and Tier 1 Building Energy Efficiency Standards for eligible alterations or additions to existing buildings;
- Require compliance with CALGreen Tier 1 Green Building standards and Tier 1 standards for all new construction, and phase in Zero Net Energy (ZNE) standards for new construction;
- Require new or replacement residential water heating systems to be electrically powered and/or alternatively fueled systems;
- Expand current renewable energy and green energy incentives and update local ordinances;
- Develop a program to offset project GHG emissions by retrofitting existing income-qualified homes and buildings;
- Support waste-to-energy programs at landfills;
- Increase availability and accessibility of transit information;
- Support alternatives to private vehicle travel for visitors, such as shuttles;
- Increase the supply of electric vehicle charging stations;
- Promote telecommuting at office-based businesses;
- Encourage expansion of composting programs;
- Establish a waste diversion goal that exceeds the State's 2020 75 percent target;
- Identify potential sites for renewable energy facilities and transmission lines;
- Promote recycling to reduce waste and energy consumption;

- Identify appropriate sites for waste recovery facilities to minimize escape of GHGs;
- Convert all stationary diesel or gas-powered irrigation pumps to electric pumps;
- Require Tier 4 equipment for all construction activity and forestry/mining operations by 2030;
- Adopt a new water conservation ordinance for commercial and residential land uses limiting outdoor watering;
- Expedite and/or reduce permit fees associated with water conservation installations in existing facilities;
- Require water audits for large new commercial or industrial projects and significant expansions of existing facilities;
- Conserve natural lands for carbon sequestration;
- Establish targets and enhanced programs for oak woodland and coniferous forest preservation and mandatory replanting;
- Refine protection guidelines for existing riparian lands to establish a no-net-loss goal;
- Develop a program to require repurposing of usable lumber from trees removed due to land conversion to avoid wood burning;
- Promote the sale and consumption of locally-grown foods and/or products;
- Establish and local carbon offset program;
- Identify lands suitable for wind power generation;
- Promote alternatives to open burning of biomass, including exploring the feasibility of the development of a biomass power plant in the County;
- Provide economic incentives and creative financing for renewable energy projects;
- Pursue incentives, grants, and creative financing for projects that improve energy efficiency;
- Prepare and implement a comprehensive plan to improve energy efficiency of municipal facilities;
- Develop a program to promote forest health and enhance the carbon sequestration potential of forests in the County.
- Establish a coordinated, creative public outreach campaign, including publicizing the importance of reducing GHG emissions and steps community members can take to reduce their individual impacts;
- Install renewable energy systems at municipal facilities including solar photovoltaic systems on municipal roofs and solar water heating;
- Ensure that County staff receive appropriate training and support to implement objectives and policies to reduce GHG emissions included in the County CAP;
- Evaluate the feasibility and effectiveness of using Community Choice Aggregation as a model for providing renewable energy to meet the community's electricity needs, including potential partnerships with other jurisdictions;
- Identify and remove or otherwise address barriers to renewable energy production including revisions to the County's building and development codes, design guidelines, and zoning ordinances;

- Provide information, marketing, training and technical assistance regarding green building practices and renewable energy systems;
- Identify and remove regulatory or procedural barriers to implementing green building practices within the County, such as updating codes, guidelines, and zoning, and ensure that all plan review and building inspection staff are trained in green building materials, practices, and techniques; and
- Establish menus and check-lists for developers and contractors to ensure water-efficient infrastructure and technology are used in new construction, including low-flow toilets and shower heads, moisture-sensing irrigation, and other such advances.

Significance after Mitigation

Because the County is rural with varied topography, and because 77 percent of the total land in the County is under the jurisdiction of a state or federal agency, certain types of GHG reduction measures, such as those tailored to high-density urban areas, are not appropriate or feasible in Tuolumne County.

The GHG reduction measures included in Mitigation Measure 3.8-1 are appropriately suited to the rural characteristics of the County and would more effectively achieve GHG reductions. The General Plan Update is the culmination of many years of planning and discussion during which the County carefully weighed competing interests in the County to create a proposed set of policies and programs that meet the County's particular objectives.

As discussed above, the General Plan Update includes a number of policies that would help to reduce GHG emissions associated with projected development under the General Plan Update. These include policies which would reduce GHG emissions from the two largest emissions sources, energy use and mobile source emissions. Additionally, Policy 18.A.1 of the General Plan Update requires the preparation of a CAP or similar GHG reduction plan that sets targets in line with those mandated by the state. The implementation of a County CAP would serve to further reduce emissions associated with the General Plan Update and serve as the best tool for reducing GHG emissions in the County. Mitigation Measure 3.8-1 includes a more extensive list of GHG reduction measures which are appropriate for the characteristics of the County and would serve to further reduce GHG emissions as part of the County's CAP. However, as mentioned above, as of writing this Recirculated Draft EIR, a CAP has not been adopted or implemented and estimated GHG emissions associated with the General Plan Update would result in a substantial increase in GHG emissions and, therefore could potentially conflict with state's 2017 Scoping Plan. For these reasons, this impact would be **significant and unavoidable**.

Impact 3.8-2: Conflict with Any Applicable Plan, Policy, or Regulation for Reducing the Emission of GHGs

Projected development under the General Plan Update would result in GHG emissions associated with temporary construction activity and long-term operational activity. The General Plan Update includes a series of policies which would reduce GHG emissions. These policies have been shown to be consistent the GHG reduction goals in the 2016 RTP and would not conflict with this plan. However, CARB's 2017 Scoping Plan states that plan-level projects should demonstrate reductions in GHG emissions levels consistent with statewide targets. The General Plan Update does include policies that would help to reduce overall GHG emissions in the County to support achievement of the statewide GHG reduction targets. However, it is unknown at this time what level of GHG reductions these General Plan policies would achieve. Projected development under the General Plan would result in annual GHG emissions of 5.2 MTCO_{2e} per service population in Tuolumne County by 2040 and would remain above the 2040 statewide threshold of 3.1 MTCO_{2e} per service population which demonstrates how plan-level projects would remain consistent with the statewide reduction targets. Therefore, implementation of the General Plan Update would potentially conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs, specifically the 2017 Scoping Plan. This impact would be **significant**.

This impact discusses the consistency of the General Plan Update with available GHG-reduction plans. The analysis qualitatively compares the policies of the adopted local and statewide plans to the policies of the General Plan Update.

Tuolumne County Regional Blueprint Greenhouse Gas Study

In 2012, Tuolumne County prepared the *Tuolumne County Regional Blueprint Greenhouse Gas Study* which includes a countywide GHG inventory for the year 2010. In 2010, Tuolumne County, including the incorporated City of Sonora, generated 782,846 MTCO_{2e}. The emissions inventory included emissions in activity sectors including transportation, residential (energy consumption), non-residential (energy consumption), off-road vehicles and equipment, agriculture and forestry, wastewater, and solid waste sectors. The study also included suggested GHG reduction strategies which the County could implement to reduce GHG emissions to achieve the targets established in AB 32. Although these strategies provide guidance on how the County can achieve GHG reductions consistent with AB 32 and the County has adopted the document, the Blueprint GHG Study was not adopted with the specific intent of reducing GHG emissions and does not require specific measures. Rather, it “identifies policies and measures Tuolumne County and land use project applicants can implement to reduce GHG emissions consistent with AB 32 and prepare for the potential impacts of climate change” (Tuolumne County 2012:2-3). However, the strategies and information included in the study did inform the goals, objectives, and policies included in the 2016 RTP, which is discussed in more detail below.

Tuolumne County Transportation Council 2016 Regional Transportation Plan

In 2016, TCTC adopted its most recent RTP which includes the Rural Sustainable Strategy chapter intended to reduce transportation-related GHG emissions in the County. The goals, objectives and policies in this RTP focus primarily on reducing VMT in the County through various strategies. Goal 1 and its associated objective and policies focus on implementing the list of Rural Sustainable Strategies within the 2016 RTP, which include supporting active transportation modes, the design and development of streets for all roadway users, improvements in traffic operations to relieve traffic congestion, promoting the use of public transit, and supporting planning for the use of ZEVs. Goal 2 and its associated objective and policies focus on prioritizing transportation infrastructure investments within the identified communities in the County so as to encourage the use of active transportation modes within these communities. Goal 2 also encourages prioritizing new development within the identified communities to avoid rural sprawl and reduce increases in VMT in the future. Goal 3 and its associated objective and policies focus on protecting air quality and reducing transportation related GHG emissions in the County through reductions in VMT, countywide.

Consistent with the goal, objectives, and strategies in the 2016 RTP, Goal 4B and its associated policies in the Transportation Element focuses on the promotion of active transportation modes through the development of pedestrian and bicycle facilities in the County, particularly as part of new development projects. Policy 15.B.1 and Policy 15.B.2 in the Air Quality Element focus on incorporating active transportation facilities into the County’s transportation system, as well as prioritizing development within identified communities to encourage trips made by biking and walking. Policy 15.B.2 also promotes other strategies to reduce GHG emissions including the use of public transit and rideshare and car-share programs. Finally, Policy 18.A.3 in the Climate Change Element specifically directs the continued implementation of the 2016 RTP, including the Rural Sustainable Strategies, as means to reduce transportation-related GHG emissions. As shown, many of the policies in the General Plan Update demonstrate a consistency with the goals, objectives, and policies in the 2016 RTP. The policies in General Plan Update support overall implementation of the 2016 RTP and further support the RTP’s goals of reducing transportation related GHG emissions in the County.

CARB 2017 Scoping Plan

The 2017 Scoping Plan recommends that plan-level projects demonstrate GHG reductions consistent with the targets set forth in SB 32 and result in a GHG emissions trajectory that shows a downward trend consistent with the statewide 2050 reduction target. The 2017 Scoping Plan also suggests that local jurisdictions can demonstrate consistency with the statewide GHG reduction targets through per capita or per service population efficiency thresholds for plan-level projects. As shown in Table 3.8-3 and discussed in

Impact 3.8-1, projected development under the General Plan Update would result in annual GHG emissions of 5.2 MTCO_{2e} per service population in Tuolumne County by 2040. Based on emissions reduction projections in the 2017 Scoping Plan, plan-level projects would have to be at or below the service population threshold of 3.1 MTCO_{2e} by 2040 to demonstrate consistency with the statewide GHG reduction targets. Therefore, the projected development under General Plan Update would generate GHG emissions per service population above the statewide threshold of 3.1 MTCO_{2e} and would conflict with state's 2017 Scoping Plan.

Nonetheless, as discussed under Impact 3.8-1, the General Plan Update also includes various policies which address GHG emissions in the County. Specifically, the Air Quality, Transportation, and Climate Change Elements include policies which address GHG emissions primarily from the transportation and energy sector. More specifically, Policy 18.A.1 of the General Plan Update requires the preparation of a CAP, or similar GHG reduction plan, which would be developed to ensure that countywide emissions would be reduced consistent statewide GHG emissions reduction targets. The implementation of Policy 18.A.1 and the subsequent implementation of the County's CAP would help the County demonstrate GHG reductions consistent with the statewide targets. However, considering that the CAP, as proposed in the General Plan Update, has not yet been developed and cannot be shown to demonstrate that the County would reduce GHG emission consistent with the statewide targets, projected development under the General Plan Update would result in GHG emissions inconsistent with statewide reduction targets and potentially conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Summary

As discussed above, the General Plan Update includes policies in the Transportation, Air Quality, and Climate Change Elements that specifically address transportation-related GHG emissions in the County. These policies are shown to be consistent with similar policies included in the 2016 RTP for the purpose of reducing transportation-related GHG emissions. As a result, the General Plan Update would not conflict with the GHG reduction goals in the in the 2016 RTP. The General Plan Update also includes policies that address overall GHG emissions in the County to support achievement of the statewide GHG reduction targets. However, it is unknown at this time what level of GHG reductions these General Plan Update policies would achieve. Based on available information, projected development under the General Plan Update would result in annual GHG emissions of 5.2 MTCO_{2e} per service population in Tuolumne County by 2040 and would remain above the 2040 statewide threshold of 3.1 MTCO_{2e} per service population/year, which would demonstrate how plan-level projects would remain consistent with the statewide reduction targets. Therefore, this impact would be **significant**.

Mitigation Measures

No mitigation is available.

Significance after Mitigation

Policy 18.A.1 of the General Plan Update requires the preparation of a CAP, or similar GHG reduction plan. The implementation of a County CAP, as part of the General Plan Update, that includes GHG reduction goals consistent with the statewide targets would ensure the County's General Plan would not conflict an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. Beyond the implementation of a CAP consistent with statewide reduction targets, there are no available mitigation measures for this impact. The County should ensure that Policy 18.A.1 of the General Plan Update is implemented to achieve this goal. However, at the time of writing this Draft EIR, a CAP has not yet been adopted or implemented and estimated GHG emissions levels associated with General Plan Update would conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs, specifically the 2017 Scoping Plan. For these reasons and because no mitigation is available, this impact would be **significant and unavoidable**.

Supplemental Discussion: Impacts of Climate Change On the Project (for informational purposes only/ analysis not required by CEQA)

Climate change is expected to result in a variety of effects that would influence conditions in the County. These effects include increased temperatures, increased wildfire risk, and changes to timing and intensity of precipitation, resulting in increased stormwater runoff. However, numerous state and County programs and policies are in place to protect the County against, and respond to, wildland fire such that growth under the General Plan Update would not substantially change any climate change impacts on the County.

The discussion below is presented for informational purposes only. Under *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, CEQA generally does not require agencies to analyze the impact of existing environmental conditions on a project's future users or residents except where the project risks exacerbating those existing environmental hazards or conditions. By presenting this discussion, the County is not asserting that this is a potentially significant environmental impact. The County has also not adopted a significance threshold that is related to this impact.

Human-induced increases in GHG concentrations in the atmosphere have led to increased global average temperatures (climate change) through the intensification of the greenhouse effect, and associated changes in local, regional, and global average climatic conditions.

Although there is strong scientific consensus that global climate change is occurring and is influenced by human activity, there is less certainty as to the timing, severity, and potential consequences of the climate phenomena. Scientists have identified several ways in which global climate change could alter the physical environment in California (CNRA 2012, California Department of Water Resources 2006, IPCC 2007). These include:

- ▲ increased average temperatures;
- ▲ modifications to the timing, amount, and form (rain versus snow) of precipitation;
- ▲ changes in the timing and amount of runoff;
- ▲ reduced water supply;
- ▲ deterioration of water quality; and
- ▲ elevated sea level.

These changes may translate into a variety of issues and concerns that may affect the plan area, including but not limited to:

- ▲ increased frequency and intensity of wildfire as a result of changing precipitation patterns and temperatures;
- ▲ increased stormwater runoff associated with changes to precipitation patterns; and
- ▲ increased risk of flooding associated with changes to precipitation patterns.

Of the above-mentioned effects, increases in wildfire severity are of most concern in Tuolumne County, with the greatest potential to result in impacts to existing or new development, and is therefore the focus of this analysis. For additional discussion of wildfire hazards, refer to Impact 3.9-2 in Section 3.9, "Hazards and Hazardous Materials."

According to Cal-Adapt, Tuolumne County is projected to experience a temperature increase of 4.3 °F by 2050 and 6 °F by 2099 under the RCP 4.5 scenario and an increase of 5.5 °F by 2050 and 9.1 °F by 2099 under the RCP 8.5 scenario. According to the Cal-Adapt Wildfire tool, Tuolumne County is projected to experience an increase of 5,651 annual mean acres burned by wildfire by 2050 and 9,155 annual mean acres burned by wildfire by 2099 under the RCP 4.5 scenario. Under the RCP 8.5 scenario, Tuolumne County is projected to experience an increase of 8,473 annual mean acres burned by wildfire by 2050 and 21,506 annual mean acres burned by wildfire by 2099.

In 2004, the Tuolumne County Community Wildfire Protection Plan was prepared to identify risks to citizens and firefighters, assess wildland areas, identify key policy issues and develop recommendations for changes/additions to public policy, and establish the fiscal policy to monitor wildland fire protection in the County. In addition, the Tuolumne-Calaveras Unit Pre-Fire Management Plan was prepared in 2005. These plans identify high-risk areas and set pre-fire management priorities to prevent and manage fires in high fire prone areas. Policy 17.E.7 would ensure that updates and revisions to these plans are coordinated with the appropriate agencies (i.e., California Department of Forestry and Fire Protection [CAL FIRE]) and to continue to use these plans to manage fire risk.

The Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan also includes policies and mitigation actions specific to addressing wildfires and serving to assess and reduce the impact of wildfires in the County. Mitigation Action 5.1F requires the County to develop a wildfire evacuation plan to include sheltering in place, at both the Curtis Creek and Sullivan Creek campuses and Columbia Union Elementary and Belleview Elementary. Mitigation Action 5.1B encourages improvements to GIS mapping and tracking efforts by gathering and maintaining relevant GIS data layers and imagery to better assess wildfire risk. Objective 5.2 and the associated mitigation actions encourages collaboration between all fire agencies and stakeholders in the County to improve resiliency to wildfires in the County.

In addition to preparing and maintaining fire prevention plans, the General Plan Update has numerous policies in place to combat fire risk by recognizing the importance of good site planning, requiring new development to incorporate fire mitigation features, establish funding requirements and promoting education about fire prevention, and continued coordination with fire protection agencies. Policy 17.E.1 and its associated implementation programs only allow development in high or very high fire hazard areas if safe planning and fire measures are implemented such as requiring that project design meets California Building and Fire Codes including Wildland-Urban Interface Building Codes, as well as providing additional off-site fire defense improvements. Further, Implementation Program 17.E.j requires that public facilities (e.g., hospitals, emergency shelters, health care facilities) be located outside very high fire hazard zones or they must incorporate design, construction or other measures to minimize damage in the event of a wildland fire.

In addition to good site planning, numerous policies require new development to incorporate appropriate design features to reduce fire risk. Policy 17.E.3 and its implementation programs require development to incorporate fuel breaks, green belts, long-term comprehensive fuel management programs, access to developed water sources, and safe access including multiple access routes. Further, the implementation of these measures would be reviewed and approved by the Tuolumne County Fire Department to ensure they would mitigate wildland fire hazards in such a manner that minimizes the chance of wildland fire originating outside the development from entering the development and minimizes the chance of fire originating within the development escaping to adjoining property and adjacent wildland. Implementation Programs 17.E.h and 17.E.i also require that the County update its fire protection regulations on a regular basis to keep them up to current requirements and recommendations from relevant agencies (e.g., CAL FIRE, U.S. Forest Service). In addition, Policy 17.E.8 requires property owners to maintain wildlands in a fire-resistant manner, assisting fire protection agencies in their efforts to enforce fires. Implementation Program 17.E.t requires property owners to remove trees killed by drought, disease, insects and other pests to utilize the timber value and reduce the wildland fire hazard. Policy 17.E.4 ensures that funding sources would be sought to develop fire prevention awareness and educational programs. Tuolumne County was recently awarded a federal disaster relief grant to plan and build two resilience centers. The centers would provide education seminars, emergency response services, and potentially provide space for emergency personnel and citizens to use during emergencies.

Finally, numerous policies are in place that would require the continued coordination between the County fire protection agencies. Policy 17.E.6 promotes the continued support from the County to develop burn area recovery plans that include rapid post-fire assessment and implementation actions that encourage salvage of burned trees and reforestation activities, create resilient and sustainable landscapes, and restore functioning ecosystems. In addition, Policy 17.E.5 requires the County to maintain firefighting assets within the County at necessary levels by supporting the CAL FIRE and making County airports available.

The Safety Element also includes several policies to decrease the risk of impact of wildfires on new development. California Public Resources Code Section 4290 requires local jurisdictions in California to adopt General Plan Safety elements that meet Section 4290 standards or, in lieu of this requirement, local jurisdictions must adopt local fire safe ordinances addressing issues including emergency access, signing and building numbering, private water supply reserves for emergency fire use, and vegetation modification. The County currently has local fire safe ordinances in place in Titles 11, 15, and 16 of the Tuolumne County Ordinance Code. The California Board of Forestry and Fire Protection certified the County's fire safe ordinances in 2016. Policy 9.G.1 and its implementation programs requires the County to maintain these fire protection regulations and ensure they are consistent with California Public Resources Code Section 4290. Policy 9.G.2 requires new residential development to have adequate fire protection and requires the County to periodically update the County's fire protection standards to reflect new information and technology concerning fire prevention in wildland areas. Policy 9.G.3 requires the County to assess the impacts new development would have on the provision of fire protection services and use the *Tuolumne County Fire Department Service Level Stabilization Plan* to ensure that the established level of service in the plan is met. Policy 9.G.4 and its implementation programs require that new residential development in the County include defensible space around structures. Policy 9.G.5 and its implementation program require that street and structural identification are provided to assist in emergency response. Policy 9.H.1 directs the County to establish or redirect existing revenue sources to the Tuolumne County Fire Department to ensure a stable, adequate level of funding. Policy 9.H.2 requires all new development to include built-in fire suppression equipment pursuant to the provisions found in Title 15 of the Tuolumne County Ordinance Code and the California Fire Code.

Considering the number of policies included in the General Plan Update, the County's local fire safe ordinances in lieu of Section 4290, the policies included in Tuolumne County Multi-Jurisdictional Hazard Mitigation Plan, and the extensive pre-fire planning that Tuolumne County has and continues to participate in, adequate policies and programs are in place that would ensure the County has the ability to prepare for fire events and respond adequately when they do occur. In addition, the proposed land use pattern of the General Plan Update is focused on development in the identified communities. These factors, in combination with the numerous requirements in place to reduce fire risk at new development, indicate that Tuolumne County would be prepared, even as fire hazards become more intense or severe.

In conclusion, the proposed General Plan Update will not exacerbate existing environmental hazards or conditions.

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