

4.12 TRANSPORTATION

4.12.1 INTRODUCTION TO TRANSPORTATION

This section provides baseline data on the existing transportation needs and mobility characteristics of the counties contained within each regional bundle. The scope of potentially significant transportation changes to the public roadway system and roads that traverse and provide access to private lands within the proposed project are evaluated in the impact analysis discussion of this section. The description of existing conditions provides an overview of the transportation system of the jurisdictions contained within each regional bundle, with a focus on the areas in the vicinity of project bundles. The data used in this section was obtained from various sources, including General Plan Circulation Elements, Regional Transportation Plans (RTP), and the California Department of Transportation (Caltrans).

4.12.2 SYSTEM-WIDE REGULATORY CONTEXT

General Plans for the counties contained within all regional bundles were reviewed for plans and policies directly relating to transportation conditions and projections. Plans or policies found to relate to these issues in the context of the proposed project are summarized below. These plans or policies entail the regulatory context for evaluating potential impacts in terms of adequate mobility.

Any development of Project Lands that could potentially affect roadway conditions, access, traffic flow, and parking on public streets and highways would necessitate encroachment permits or similar legal agreements from the public agencies responsible for each affected roadway. These encroachment permits would be issued by Caltrans, the affected counties in each of the five regional bundles, and by each of the affected National Forests for the forestry roads within the affected forest lands in each of the regional bundles. Any operational impact on public streets and highways from development of Project Lands would have to be mitigated in a fair share basis to acceptable level of services as determined by the affected local jurisdiction controlling the public rights-of-way.

The Federal Energy Regulatory Commission (FERC) licenses contain articles that apply to transportation and traffic, and include the following provisions that allow any U.S. Government agency to:

- Construct roads, trails, ditches, telephone and power lines, or any other means of transportation and communication on Project Lands without charge; and/or
- Take over, maintain and supervise the use of any project road as a public road.

Active Timber Harvest Plans (THPs) include provisions allowing new road construction. THP regulations require that new construction include erosion control measures, including reconstruction of existing roads with unstable soils and existing slides as specified in California Forest Practice Rules (PG&E Co., 1997a).

4.12.3 SYSTEM-WIDE-SETTING

Pacific Gas and Electric Company's hydroelectric generating facilities are primarily sited at remote locations along major waterways of the Sierra Nevada and Cascade Mountain Ranges, and in the Coastal Range. For efficiency, most generation facilities within a regional bundle are remotely operated from another location (known as a switching center, which is usually a centrally-located powerhouse). Hydroelectric projects utilize employees at the facilities for operations, maintenance of dams, canals and powerhouses, and monitoring of automated powerhouses and facilities. While operators are generally headquartered at switching centers, maintenance and water crews are headquartered at the Hydroservice Center serving each regional bundle. During scheduled outages and on an as-needed basis, operators travel from the service center to various Project Lands. The roads they travel generally include the State Routes (SRs), private roads, and public roads described later in this section. Vehicle traffic directly related to hydroelectric facility operations is heaviest at the centralized facilities (i.e., service centers and switching centers), and lightest at the remotely-operated powerhouses. Work crews report to a service center daily before departing to do work at different sites in the region. These crews report back to the service center throughout the day and at the end of the day. Switching centers are operated 24 hours a day, so operators travel to and from switching center sites around the clock. Remotely-operated facilities are generally visited daily for routine inspection.

The majority of Project Lands in the five regional bundles are located in rural areas and remote canyons. Access to the lands is provided via a variety of public and private roads. The public roads include roads owned by the counties, State, U.S. Forest Service (USFS), and Bureau of Land Management (BLM). The private roads include roads owned by Pacific Gas and Electric Company and others. The size and condition of the roads vary from State highways to dirt roads that are only passable in the winter by four-wheel drive vehicles, if at all.

Some of the roads used to access Project Lands are maintained by Pacific Gas and Electric Company because they also provide access to hydroelectric facilities or recreation sites and timber harvesting areas. Other roads are maintained by public agencies, such as Caltrans or county road departments, or private parties. These roads may go to, or through, the Project Lands.

Helicopters are used on an "as-needed" basis to survey remote facilities when roads are impassable, performing occasional cloud-seeding operations, delivering supplies and personnel to remote locations, and assisting with construction and maintenance activities. In addition, helicopters may be used in logging operations on the Project Lands. The use of helicopters for logging is regulated by the applicable (active) THP. Pacific Gas and Electric Company also uses boats on an as-needed basis for surveying and maintaining reservoirs as well as for emergency response. Recreational boating is permitted on many of the reservoirs.

Although operation of the hydroelectric facilities is not a source of heavy vehicular traffic, public use of the region's recreation facilities create seasonal traffic increases. Recreational vehicles (RVs), and vehicles pulling trailers may cause travel delays in certain areas during peak weekends.

Employees at Pacific Gas and Electric Company's hydroelectric facilities make up a component of local and regional populations in the areas where the facilities are located, contributing to ambient trip-making similar to other residents. Where timber harvesting occurs on Project Lands, additional personnel are required. For each area encompassed by an active THP, these personnel typically consist of one Pacific Gas and Electric Company forester assigned to manage the timber harvest, one contract forester to assist in the management, up to five contract registered professional foresters to mark the timber, and additional technical professionals (such as a wildlife biologist, fisheries biologist, geologist, and archaeologist) to oversee any specific resource issues associated with the THP. For specific activities related to harvesting and other fieldwork, Pacific Gas and Electric Company contracts with outside companies. These activities can create truck trips in concentrated areas.

Because many of the Project Lands are located in relatively unpopulated and remote areas, Pacific Gas and Electric Company historically built and maintained a number of employee residences at its powerhouses and reservoirs. Over time, as powerhouses have been retrofitted with automated operational equipment, some employees have chosen to commute longer distances due to improvements in vehicles and highways, and most of the employee housing has been demolished, vacated, or converted to storage facilities. Therefore, the majority of employee trips are made from areas outside of Project Lands.

4.12.4 REGIONAL AND LOCAL SETTING AND REGULATORY CONTEXT

4.12.4.1 Shasta Regional Bundle

Regional Setting

All of Pacific Gas and Electric Company's six FERC licenses in the Shasta Regional Bundle are currently operated from the Pit 3 and Pit 5 Switching Centers. Personnel staff the switching centers 24 hours a day and monitor automated data received from the more remote powerhouses and other facilities. Field personnel are dispatched to the remote facilities, as necessary, from the Pit 3 and Pit 5 Switching Centers and the Manton and Burney Hydroservice Centers and the Kilarc and Cow Creek Powerhouses. The facilities in this region are currently staffed by a total of 68 people, including the switching center operators and field operations and maintenance crews.

SR 299 runs northeast from Interstate 5 in Redding through the small towns of Burney, Fall River Mills, and McArthur to the Nevada border. It is a primary major access road to Bundle 1: Hat Creek and Bundle 2: Pit River project facilities and lands. The highway is two lanes with low volumes and few intersections. SR 299 serves as a major access road to small towns and rural lands of northeast California.

4.12 Transportation

SR 44 runs west to east from Interstate 5 in Redding to Susanville. SR 44 provides primary access to Bundle 3: Kilarc-Cow Creek project facilities and Bundle 4: Battle Creek project facilities and lands near Shingletown. SR 44 is a two-lane roadway with low volumes and few intersections. It serves as the primary link between Redding and Lassen Volcanic National Park and the City of Susanville.

SR 89 runs southeast from Interstate 5 in Mt. Shasta City to US 395 south of Lake Tahoe. SR 89 provides direct access to the Lake Britton area and secondary access to the Bundle 1: Hat Creek project facilities and lands. SR 89 also provides convenient access to the Hat Creek area and the town of Cassel. SR 89 serves as a major transportation link between communities in the Sierra Nevada and the Cascade mountain ranges. SR 89 is a two-lane highway with low volumes and few intersections.

SR 36 runs from west to east from Interstate 5 in Red Bluff in Tehama County to Susanville in Lassen County. SR 36 provides primary access to Bundle 4: Battle Creek project facilities and lands. SR 36 serves as a major route between North Sacramento Valley towns and Lassen Volcanic National Park and the Lake Almanor area. SR 36 is a two-lane highway with low volumes and few intersections.

Table 4.12-1 provides a list of public roadways within the Shasta Regional Bundle, which provide primary access to hydroelectric facilities and Project Lands. The table includes average daily trip (ADT) volumes and other relevant roadway characteristics.

Table 4.12-1 Public Roads within the Shasta Regional Bundle

Road Name	Jurisdiction	No. of Lanes	Location of Measurement	Year of Measurement	ADT
Bundle 1: Hat Creek					
SR 299	Caltrans	2	JCT SR 89	1999	3,200
			Fall River Mills	1999	3,200
Bundle 2: Pit River					
SR 299	Caltrans	2	JCT SR 89	1999	3,200
			Fall River Mills	1999	3,200
SR 299	Caltrans	2	Big Bend Rd.	1999	2,800
SR 89	Caltrans	2	JCT SR 299	1999	3,750
			Lake Britton Rd.	1999	2,900
McArthur Rd (A19)	Shasta County	2	0.26 miles north of McArthur	1992	580
Glenburn Rd (A20)	Shasta County	2	450 feet north of SR 299	1993	956
Cassel Fall River Rd	Shasta County	2	East of Cassel Rd.	1992	161
Big Bend Rd	Shasta County	2	No data available		
Cove Rd	Shasta County	2	300 feet north of Woodhill Dr.	1986	97
Bundle 3: Kilarc-Cow Creek					
SR 44	Caltrans	2	Millville Plains Road	1999	4,400
Bundle 4: Battle Creek					

Road Name	Jurisdiction	No. of Lanes	Location of Measurement	Year of Measurement	ADT
SR 44	Caltrans	2	Shingletown	1999	8,100
SR 36	Caltrans	2	Manton Rd.	1999	3,600
Manton Rd (A6)	Tehama County	2	Lanes Valley Rd.	1998	491

Sources: Caltrans, 2000; Shasta and Tehama County Public Works Departments

Local Regulations and Policies

Shasta County General Plan

The Circulation Element of the Shasta County General Plan (Shasta County, 1998a) provides part of the direction for transportation planning in the county. Much of the Circulation Element is derived from the Regional Transportation Planning Agency (RTPA) Regional Transportation Plan. Together, the documents serve as an infrastructure plan that concerns itself with the circulation of people, goods, energy, water, sewage, storm drainage, and communications.

The Shasta County RTP (Shasta County, 1998b) has a planning horizon of 20 years. It was amended in 1999 to meet air quality conformity analysis issues. This was necessary because Shasta County was designated as an air quality non-attainment area on July 1, 2000. Key issues identified in the RTP include growing traffic levels in the Redding area and growing deficits in funding for maintenance of streets and highways. The RTP indicates that none of the major road segments identified operate below Level of Service (LOS) E.

Tehama County General Plan

The Tehama County General Plan addresses circulation issues in the Community Development Group chapter. It concludes that the existing circulation pattern (for the Eastern Planning Area) will be able to accommodate the increase in traffic generated by future growth. No new roads have been proposed in this area in recognition of severe topographic constraints and associated public service costs. The General Plan development is based on a county population of 75,000 by the year 2000 (the end of the planning horizon). The current population is approximately 55,700.

Bundle 1: Hat Creek

Hat Creek 1 and 2 (FERC 2661)

The Hat Creek 1 and 2 Project Lands are located 10 miles northeast of the town of Burney. SRs 299 and 89 provide the main access to the Project Lands. Cassel Road is a principal road in the project vicinity. The Hat Creek 1 Powerhouse can be reached via Hat Creek Powerhouse Road (signed as Baum Lake Road) off of Cassel Road. Unimproved roads and trails provide access to Crystal and Baum Lakes from Hat Creek Powerhouse Road. Secondary and unimproved roads off of Cassel Road provide access to the Hat Creek 2 Powerhouse and related facilities. Unimproved

roads and the Pacific Crest Trail (PCT) provide access to the easternmost lands from Hat Creek 1 Powerhouse Road.

There are no active THPs on these Project Lands; accordingly, no traffic is generated by such use. Although recreationists use the roads in the area, Pacific Gas and Electric Company has not issued any road permits or entered into any recreation leases for these Project Lands.

Bundle 2: Pit River

Pit 1 (FERC 2687)

The Pit 1 Project Lands are located in the vicinity of the town of Fall River Mills. SR 299 and County Roads A19 and A20 provide the main access to the Project Lands. Horr Pond and Big Lake are accessible from secondary and unimproved roads off of County Route A19 and Day Road, off SR 299. The Pit 1 Forebay can be reached by unimproved roads and trails from County Route A20. An unimproved road from SR 299 leads to the Pit 1 Powerhouse. The northernmost lands can be accessed off of County Road A20. The central lands are located along SR 299, west of Haney Mountain to Fall River Mills. The southernmost lands are accessible from Cassel Fall River Road off SR 299 and from Shoshone Loop off Cassel Fall River Road. Numerous trails, unimproved roads, and two footbridges across the Pit River provide access to other Pit 1 Project-related features.

Pacific Gas and Electric Company has entered into one recreation home site agreement on these Project Lands (PG&E Co., 2000e), which may cause a minor increase in seasonal traffic; however, there are no road permits or active THPs on the Project Lands; and accordingly, no traffic is generated by such uses. The Fall River Mills Library is on Project Lands under a permit issued by Pacific Gas and Electric Company. The public library is a small one-room library, and traffic to and from the site is minimal.

Pit 3, 4, and 5 (FERC 0233)

The Pit 3, 4, and 5 Project is located northwest of the town of Burney. SR 89 and SR 299 provide the primary access to the Pit 3, 4, and 5 project area. Lake Britton is accessible by secondary and numerous unimproved roads and trails from SR 89. Pit 3, 4, and 5 Project Road, a two-lane paved road, leads from SR 89 to the Pit 3 Powerhouse (CDM, 1997b). Big Bend Road, off SR 299, provides access to Open Conduit Reservoir and the Pit 4 Powerhouse. The Pit 5 Powerhouse is accessible from Big Bend Road by unimproved roads and trails. Numerous trails and unimproved roads provide access to other Pit 3, 4, and 5 Project-related features.

The easternmost Project Lands are along SR 299 midway between Burney and Fall River Mills. Lands near Lake Britton are accessible by secondary and numerous unimproved roads and trails from SR 89. Big Bend Road, off SR 299, provides access to the westernmost lands.

Pacific Gas and Electric Company has granted one road consent, and there is one permit between Pacific Gas and Electric Company and the California Department of Forestry for a hiking trail on these Project Lands (PG&E Co., 2000e). A seasonal increase in traffic typically occurs due to recreation use in the area.

There are two active THPs on these Project Lands. The Tunnel THP includes provisions allowing new road construction. Regulations in the THP require that the construction include erosion control measures as specified in California Forest Practice Rules. The Baxter Bridge THP proposes some road reconstruction, including reconstruction of existing roads with unstable soils and existing slides. In order to control erosion, the THP requires that certain stretches of reconstructed road be reseeded and made temporary after completion of harvesting, and several roads are proposed to be abandoned (PG&E Co, 1997b). The THP also proposes two new landings for helicopter logging. These landings are required to be in excess of one half of an acre and located in areas of stable terrain and gentle slopes for safety reasons (PG&E Co., 1999b).

Pacific Gas and Electric Company has public roadway maintenance agreements with the Lassen National Forest and Shasta National Forest for three road segments in the Pit 3, 4, 5 Project. The agreements provide public access to recreational facilities at Lake Britton from the Lassen National Forest, and access to the Pit 3 Powerhouse. Each agreement contains specific conditions and levels of roadway maintenance.

McCloud-Pit (FERC 2106)

The McCloud-Pit Project is located 35 miles northeast of the City of Redding. Secondary and unimproved roads and trails leading from SRs 89 and 299 provide access to the Project Lands. McCloud Reservoir is accessible from numerous secondary and unimproved roads and trails from SR 89 southeast of McCloud. Iron Canyon Reservoir, and the James B. Black and Pit 6 Powerhouses, can be reached by numerous unimproved roads and trails from Big Bend Road, off SR 299. Secondary and unimproved roads from Fenders Ferry Road, off SR 299, provide access to the Pit 7 Powerhouse. Numerous trails and unimproved roads provide access to other McCloud-Pit Project-related features.

The Project Lands associated with the McCloud-Pit Project are located northeast of the City of Redding. Secondary and unimproved roads and trails leading from SRs 89 and 299 provide access to the Project Lands. Lands southeast of Iron Canyon Reservoir can be reached by unimproved roads and trails from Big Bend Road, off SR 299. The southernmost lands are accessible by numerous unimproved roads and trails from Big Bend Road and Cove Road off Big Bend Road.

The Pit 6 and Pit 7 Powerhouses are operated from the Pit 5 Powerhouse (FERC 0233) and are visited four or five times per week by roving operators. The James B. Black Powerhouse is also operated from the Pit 5 Powerhouse, but is visited only on an as-needed basis by roving operators dispatched from the Pit 5 Switching Center.

Pacific Gas and Electric Company has granted three road permits for general road purposes on these Project Lands (PG&E Co., 2000e). Although deer hunters occasionally use the roads in the area, there are no recreation leases; accordingly, no traffic is generated by such use.

Roads on these Project Lands are currently used for the transport of commercial products (including forest products) and have no significant problems with maintenance or excessive traffic.

Active THPs on these Project Lands include the Masters THP and the Baxter Bridge THP described above.

Pacific Gas and Electric Company has one public roadway maintenance agreement with the Shasta National Forest for three road segments in the McCloud-Pit Project. The agreements allow access to Pit 7 reservoir, Hawkins Landing, and the McCloud-Pit Penstock. The agreements specify levels of maintenance required of Pacific Gas and Electric Company.

Bundle 3: Kilarc-Cow Creek

Kilarc-Cow Creek (FERC 0606)

The Kilarc-Cow Creek Project and Project Lands are located 25 miles east of the City of Redding. Secondary and unimproved roads leading from SR 44 provide access to the project area. Whitmore and Fern Roads provide access to the Kilarc Powerhouse and related facilities. The Cow Creek Powerhouse and related facilities can be reached by South Cow Creek Road, off SR 44. In the winter, many of these roads become muddy and passable only by four-wheel-drive vehicles (CDM, 1997c). Numerous trails and unimproved roads provide access to other Kilarc-Cow Creek Project-related features.

Pacific Gas and Electric Company has granted one road permit for telephone lines, firebreaks, and general road use on these Project Lands (PG&E Co., 2000e). There are no recreation leases or active THPs on the Project Lands; and accordingly, no traffic is generated by such uses.

Bundle 4: Battle Creek

Battle Creek (FERC 1121)

The Battle Creek Project is located 25 miles east of the town of Anderson. SR 36 and SR 44 and County Roads A6 (Manton Road) and A17 (Ash Creek Road) provide the main access to the Battle Creek Project Lands. North Battle Creek and Macumber Reservoirs are accessible by secondary and unimproved roads and trails off SR 44. The Volta 1 and 2 Powerhouses and related facilities can be reached by secondary and unimproved roads and trails off SR 44 from the north and County Road A6 from the south. The South Powerhouse and related facilities can be reached by unimproved roads and trails south of the town of Manton, off County Road A6. The Inskip Powerhouse is just off County Road A6, west of Manton. The Coleman Powerhouse and related

facilities are accessible by various secondary roads off of County Roads A6 and A17. SR 44 is heavily traveled in the summer. Shingletown and the town of Manton are connected by Manton Road.

The Project Lands associated with the Battle Creek Project surround Battle Creek Project facilities. SR 36 and SR 44 and County Road A6 (Manton Road) provide the primary access to the Project Lands. The northernmost lands are located north of North Battle Creek Reservoir and are accessible by secondary and unimproved roads and trails off SR 44. Lands near the Volta Powerhouse can be reached by Grace Resort Road or Wilson Hill Road and other minor roads off SR 44 from the north or by County Road A6 from the south. The westernmost lands are located just west of Manton and can be reached by unimproved roads and trails off County Road A6. The southernmost parcel is accessible from Ponderosa Way off Highway 36. There are numerous subdivision roads, logging roads, farm roads, and canal maintenance roads found throughout the Battle Creek Project Lands. Many of these are privately owned (PG&E Co. et al., 1977).

4.12.4.2 DeSabra Regional Bundle

Regional Setting

All of Pacific Gas and Electric Company's five FERC licenses and three non-FERC licenses in the DeSabra Regional Bundle are currently operated from the Caribou and Rock Creek Switching Centers, which are operated 24 hours a day. Field personnel are dispatched to the remote facilities as necessary from the Rock Creek and Caribou Switching Centers and Rodgers Flat and Camp 1 Service Centers. The facilities in this region are currently staffed by a total of 71 people, including the switching center operators and field operations and maintenance crews.

The public roads in Butte County within the DeSabra Regional Bundle include SR 70, Centerville Road, Honey Run Road, and Big Bend Road. SR 70 runs through the Feather River Canyon from the North Sacramento Valley to the town of Quincy and beyond. SR 70 is a major regional transportation corridor. Centerville and Honey Run Road run through the Butte Creek Canyon from the City of Chico to the town of Paradise. Big Bend Road serves the remote Big Bend Area off of SR 70.

The majority of public roads in the DeSabra Regional Bundle are located in Plumas County. Major corridors through Plumas County include SRs 70, 36, and 89. SR 70 is a major east-west regional corridor between the North Sacramento Valley to Quincy and beyond. SR 36 is a major regional east-west corridor from Red Bluff to Susanville. In Plumas County, SR 36 runs from Deer Creek Meadows through the town of Chester to the Lassen County Line, where it passes through Clear Creek and Westwood. SR 89 links SR 70 to SR 36, and provides a north-south corridor between Quincy and Lake Almanor.

4.12 Transportation

Table 4.12-2 provides a list of public roadways within the DeSabra Regional Bundle which provide primary access to hydroelectric facilities and Project Lands. The table includes ADT volumes and other relevant roadway characteristics.

Local Regulations and Policies

Butte County General Plan

The Circulation Element of the Butte County General Plan (Butte County, 1984) was adopted May 1, 1984. The Circulation Element sets forth Butte County's Countywide and urban area's transportation goals, objectives, policies, and programs to the year 2000. It states that rural arterial roads and highway traffic capacity levels should be planned to provide an LOS "B", and be considered to be providing acceptable service at LOS "C" when fiscal, environmental, or site constraints are prohibitive.

Table 4.12-2 Public Roads within the DeSabra Regional Bundle

Road Name	Jurisdiction	No. of Lanes	Location of Measurement	Year of Measurement	ADT
Bundle 5: Hamilton Branch					
SR 147	Caltrans	2	Lassen County Road A-21	1998	910
SR 36	Caltrans	2	JCT Route 147	1999	2,900
Bundle 6: Feather River					
SR 70	Caltrans	2	Pinkston/Big Bend Roads	1999	4,050
Big Bend Rd	Butte County	2	Off SR 70	1999	710
SR 70	Caltrans	2	JCT Route 89 N	1999	4,250
SR 36	Caltrans	2	JCT Route 89	1999	3,350
			JCT SR 89	1999	3,350
SR 89	Caltrans	2	Almanor	1999	1,900
SR 147	Caltrans	2	Big Springs Road	1999	1,300
County Rd A13	Plumas County	2	Segment between SR 36 & 147	2000	4,000
Bundle 7: Bucks Creek					
Bucks Lake Rd	Plumas County	2	Big Creek Rd.	1999	451
County Rd A21	Lassen County	2	South of Greenwood St.	1994	1,544
Oroville-Quincy Hwy	Butte County	2	North of Bald Rock Rd.	1999	570
Bundle 8: Butte Creek					
Skyway Rd	Butte County	2	North of Nimsheiw Rd.	1999	1,929
			South of Honey Run Rd.	1998	10,140
Humbug Rd.	Butte County	2	West of Skyway	1999	120
Philbrook Rd	Butte County	2	Southeast of Humbug Rd.	1999	30
Honey Run Rd	Butte County	2	West of Centerville Rd.	1998	1,970
			East of Centerville Rd.	1998	900
Centerville Rd	Butte County	2	South of Nimsheiw Rd.	1999	60
			North of Honey Run Rd.	1998	1,020

Sources: 1998 and 1999 All Traffic Volumes on CSHS. Traffic and Vehicle Data Systems Unit. Caltrans, Butte County Public Works Department, Plumas County Public Works Department. Lassen County Public Works Department.

The Butte County Association of Governments (BCAG) developed the Butte County RTP (Butte County, 1998). The RTP is designed to be the blueprint for the systematic development of a balanced, comprehensive, multi-modal transportation system for the current and future needs of

Butte County. The RTP identifies SR 70 as a regionally significant roadway, and Centerville and Honey Run Roads as Significant Local Roads.

Plumas County General Plan

The Plumas County General Plan (Plumas County, 1981). Transportation/Circulation Element sets a policy framework to ensure that all developments are provided with roadway access; protect the present air and rail transportation facilities; improve existing county roads; and to establish a bikeway system.

The Plumas County RTP (Plumas County, 2000) combines the General Plan Circulation Element and the State-mandated RTP. The RTP contains a background discussion of the county, including projected population growth and economic conditions and presents an assessment of existing and future transportation needs in the county.

Lassen County General Plan

The Lassen County General Plan Circulation Element (Lassen County, 1999) was updated in 1999. The Circulation Element classifies SRs 147 and 36 as minor arterials. The Element states that SR 44 is at LOS D from the Plumas County line to SR 44.

Bundle 5: Hamilton Branch

Hamilton Branch (non-FERC)

The Hamilton Branch Powerhouse is located at the junction of SR 147 and County Road A13, near the banks of Lake Almanor. Mountain Meadows Reservoir and other facilities are accessible by secondary and unimproved roads off of SRs 36 and 147.

Bundle 6: Upper North Fork Feather River

Upper North Fork Feather River (FERC 2105)

The North Fork Feather River (NFFR) project is located northeast of the cities of Oroville and Chico. SR 36 is the primary access to Lake Almanor. SRs 70 and 89 also provide access to Lake Almanor and the NFFR Project Lands. The Prattville-Butt Reservoir Road, which turns into Caribou Road below the Butt Valley Reservoir, runs between SRs 70 and 89 and provides access to Butt Valley Reservoir, Belden Forebay, and Butt Valley, Caribou 1, Caribou 2 and Oak Flat Powerhouses. Generally, one-lane and two-lane paved roads and a few dirt roads lead to other NFFR project-related facilities (CDM, 1997d).

The Project Lands associated with the NFFR Project are located northeast of the Cities of Oroville and Chico. SR 36 is the primary access to Lake Almanor. SRs 70, 89, and 147 also provide access to the Lake Almanor area. The northernmost lands are located along the shores of Lake

Almanor and are accessible from the east by SR 147 and from the west by SR 89. Several parcels are located along the Prattville-Butt Reservoir Road that runs between SRs 70 and 89. The central lands are accessible from SR 70 near the junction with the Prattville-Butt Reservoir Road. The southernmost lands are accessible from Dark Canyon Road off SR 70.

Pacific Gas and Electric Company has granted one road consent to Plumas County, issued three permits to third parties, and entered into one agreement with Plumas County for general road purposes. Pacific Gas and Electric Company also has a license granted from Western Pacific Railroad Company for road purposes. In addition, Pacific Gas and Electric Company has entered into three leases and granted four licenses for recreation home sites on these Project Lands. A seasonal increase in traffic typically occurs due to recreation use in the area.

There is one active THP on these Project Lands. Timber management is a normal seasonal occurrence in this area and no significant changes to the traffic patterns result from timber harvesting (PG&E Co., 1997b). The Canyon Dam THP includes provisions allowing new road construction. Regulations in the THP require that the construction include erosion control measures as specified in California Forest Practice Rules.

Rock Creek-Cresta (FERC 1962)

The Rock Creek-Cresta Project is located northeast of the City of Oroville. SR 70 provides access to the Project Lands. Both the Rock Creek and Cresta reservoirs and powerhouses are located along this highway. Unimproved roads and trails provide access to other Rock Creek-Cresta Project-related facilities.

The Project Lands associated with the Rock Creek-Cresta Project are located northeast of the City of Oroville. SR 70 provides access to all of the Project Lands; the northernmost lands are near the town of Storrie and the southernmost are located near Magee Ridge.

Pacific Gas and Electric Company has issued one road permit for general road use on these Project Lands. There are no recreation leases or active THPs on the Project Lands; accordingly, no traffic is generated by such uses.

Poe (FERC 2107)

The Poe Project is located northeast of the City of Oroville. SR 70 provides access to the Project Lands. Poe Reservoir is located adjacent to the highway and Poe Powerhouse can be reached from SR 70 via Big Bend Road and unimproved roads. Other Poe project-related facilities can be accessed by unimproved roads and trails.

The Project Lands associated with the Poe project are located northeast of the City of Oroville. SR 70 provides access to the Project Lands. The northernmost lands are located along SR 70 near Magee Ridge. The central lands are located along SR 70 and can also be accessed by Ponderosa

Way off SR 70. The southernmost lands are located near Big Bend Mountain and can be reached from SR 70 by Big Bend Road, Dark Canyon Road, and unimproved roads.

There are no active THPs on these Project Lands; accordingly, no traffic is generated by such uses. Although recreationists occasionally use the roads in the area, Pacific Gas and Electric Company has not issued any road permits or entered into any recreation leases for these Project Lands.

Bundle 7: Bucks Creek

Bucks Creek (FERC 0619)

The Bucks Creek Project is located northeast of the City of Oroville. SRs 70 and 89 provide access to the Project Lands. Bucks Lake can be reached from the town of Quincy via Bucks Lake Road, off SR 70. Bucks Creek Powerhouse is located on SR 70, near the town of Storrie. Other Bucks Creek project-related facilities are located in remote canyons and hillsides and can be reached by unimproved roads and trails. Many of the roads to and around the Buck Creeks Project reservoirs are located at higher elevations and are closed during the winter months (CDM, 1997e).

The Project Lands associated with the Bucks Creek Project are located along SR 70 and in the vicinity of Bucks Lake. Bucks Lake Road provides access to those lands near Bucks Lake.

There are no road permits, recreation leases, or active THPs on these Project Lands; and accordingly, no traffic is generated by such uses.

Bundle 8: Butte Creek

DeSabra-Centerville (FERC 0803)

The DeSabra-Centerville Project is located north of the town of Paradise. Skyway Road, off of SR 191, provides the main access to the DeSabra-Centerville Project Lands. Round Valley Reservoir (Snag Lake) and Philbrook Reservoir can be reached off Skyway Road by Humboldt Summit and Philbrook Roads. Toadtown Powerhouse can be accessed by unimproved roads off of Skyway Road. DeSabra Forebay is located adjacent to Skyway Road. DeSabra Powerhouse can be reached by secondary roads off of Humbug Road. Centerville Powerhouse can be reached from Centerville Road, a secondary road off of Humbug Road. Several secondary and unimproved roads lead from Humbug Road to other DeSabra-Centerville Project-related features.

The Project Lands associated with the DeSabra-Centerville Project are primarily located northwest of the town of Paradise. Skyway Road, off SR 191, provides the main access to the Project Lands. Project Lands can be reached from Powelltown Road off Skyway Road and Doe Mill Road off Powelltown Road. In addition, Project Lands can be accessed by Centerville Road and by secondary roads off Centerville Road and Doe Mill Road. One parcel of the Project Lands is located several miles north of the others and can be reached by Ponderosa Way off SR 32 at Soda Springs.

Pacific Gas and Electric Company has issued two road permits to third parties on these Project Lands. One permit is for hauling logs and one is for general road use. There are no recreation leases or active THPs on these Project Lands; accordingly, no traffic is generated by such uses.

Lime Saddle (non-FERC)

The Lime Saddle Powerhouse is located just south of the town of Paradise. Pentz Road, off of SR 70, provides the main access to the area. Kunkle Reservoir is located adjacent to Pentz Road, while Lime Saddle Powerhouse can be reached by secondary roads off of Pentz Road. Secondary and unimproved roads provide access to other facilities.

Coal Canyon (non-FERC)

The Coal Canyon Powerhouse is located north of the City of Oroville. SRs 70 and 191 provide the main access to the area. Coal Canyon Powerhouse is located off of Coal Canyon Road, off SR 70. Secondary and unimproved roads provide access to other features.

Project Lands associated with the Coal Canyon Powerhouse are located northeast of the City of Oroville. SR 70 and Oroville Dam Road provide the main access to the area. All of the Project Lands are located south of the Thermalito Diversion Pool, just south of Oroville Dam. The lands are accessible from other minor roads off Oroville Dam Road.

There are no road permits, recreation leases, or active THPs on these Project Lands, and accordingly, no traffic is generated by such uses.

4.12.4.3 Drum Regional Bundle

Regional Setting

All Pacific Gas and Electric Company FERC licenses in the Drum Regional Bundle are currently operated from the Drum and Wise Switching Centers, which are operated 24 hours a day and are responsible for monitoring automated data received from remote powerhouses and other facilities. Field personnel are dispatched on an as-needed basis from the Alta and Auburn Service Centers. The Potter Valley Project is currently operated from the Fulton Substation, although Pacific Gas and Electric Company plans to relocate remote monitoring for the Potter Valley Powerhouse to the Wise Switching Center. Pacific Gas and Electric Company crews are dispatched to the Potter Valley Project Lands from the Potter Valley Powerhouse. The facilities in the Drum Regional Bundle Region are currently staffed by a total of 64 people, including the switching center operators, field operations crews, and maintenance crews.

Interstate 80 (I-80) runs along the southern border of Nevada County and serves as the primary east-west interstate facility for the region. This highway connects the large urban areas of Reno, Sacramento, and the San Francisco Bay Area, and consequently accommodates a large amount of traffic. I-80 is also the only major east-west route connecting western and eastern Placer County.

LOS on I-80 is generally B or C, with a few segments reaching LOS D. I-80 provides primary access to the Drum-Spaulding Bundle.

SR 49, the only north-south highway connecting the western portion of Nevada County to the Sacramento area, is heavily traveled by commuters. This highway is primarily a two-lane road with many local access points; it also contains a four-lane freeway section between Nevada City and Grass Valley. SR 49 is operating over capacity and has the lowest level of service (LOS "F") between Grass Valley and the Nevada-Placer County line. SR 49 also provides north-south transportation through the Sierra Nevada foothills in El Dorado County. SR 49 is one of three roads that provide primary access to the Chili Bar Bundle.

SR 20 begins at I-80 near Lake Spaulding and extends west into Yuba County through Nevada City, Grass Valley, and Penn Valley. SR 20 also serves Placer County. This highway is classified as a principal arterial, and maintains an LOS B, within Placer County. SR 20 also passes through Mendocino and Lake Counties. The highway is a two-lane roadway, with a short four-lane segment. Portions of this highway near the Lake County line and south of Clear Lake experience heavy traffic and are near capacity. Secondary roads originating at SR 20 provide primary access to the Narrows and Potter Valley Bundles.

Elk Mountain Road, a minor collector, provides access to Lake Pillsbury in the Potter Valley project area.

U.S. 50, a four-lane freeway, traverses El Dorado County from east to west and is its primary transportation corridor. Traffic on this roadway is often congested, as it is an access route to many recreational areas. U.S. 50 is one of three roads that provide primary access to the Chili Bar Bundle.

SR 193 connects two points along SR 49. This is mostly a 28-foot-wide roadway, but it does include some narrow, steep, winding road. SR 193 is one of three roads that provide primary access to the Chili Bar Bundle.

Table 4.12-3 provides a list of public roadways within the Drum Regional Bundle, which provide primary access to hydroelectric facilities and Project Lands. The table includes ADT volumes and other relevant roadway characteristics.

Local Regulations and Policies

Nevada County

The primary objective of Nevada County's Circulation Element in the County General Plan is to establish and maintain a desired level of service that minimizes growth and development within the region. LOS C has been adopted for rural regions and LOS D has been adopted for community regions.

4.12 Transportation

Table 4.12-3 Public Roads Within the Drum Regional Bundle

Road Name	Jurisdiction	No. of Lanes	Location of Measurement	Year of Measurement	ADT
Bundle 9: North Yuba River					
SR 20	Caltrans	2	Yuba Co./ Nevada Co.	1999	10,400
		2	Jct. I-80	1999	2,800
Mooney Flat Road	Nevada County	2	Between SR 20 and Englebright Reservoir	1998	630
Bundle 10: Potter Valley					
SR 20	Caltrans	2	Potter Valley Road	1999	10,200
		2	Jct. I-80	1999	2,800
Elk Mountain Road	Lake County	2	Elk Mtn Rd becomes Mendenhall Rd. near intersection w/ SR 20	1998	1,750
			50' North of Forest Service Station	1998	2,250
Eel River Road	USFS	2	No available count data		
Bundle 11: South Yuba River					
Interstate 80	FHWA	4	Alta Road to Baxter	1990	23,400
Alta Bonnybrook Road	Placer County	2	PM 0.42	1996	988
			PM 1.98	1996	635
Dutch Flat Road	Placer County	2	No available count data		
Drum Powerhouse Rd.	Placer County	2	No available count data		
Lake Valley Road	Private	2	No available count data		
Six Mile Road	Private	2	No available count data		
Dry Creek Road	Placer County	2	West of intersection with Christian Valley Rd.	1997	1952
			East of intersection with SR 49	1997	4691
Christian Valley Road	Placer County	2	East of intersection with Bancroft Rd.	1996	3,199
			North of intersection with Dry Creek Rd.	1996	3,130
Bancroft Road	Placer County	2	North intersection with Christian Valley Road	1998	741
Wise Road	Placer County	2	West of Doty Ravine	1998	830
			South of Mt Vernon Rd.	1998	371
SR 20	Caltrans	2	Jct. I-80	1999	2,800
Bowman Road	Placer County	2	From Bowman UC to Bell Rd.	1990	1,400
Quaker Hill Road		2	West of Pasquale Rd.	2000	1,526
Chalk Bluff Road	USFS	2	No available count data		
SR 49	Caltrans	4	Jct. Bell Road	1999	26,500
		2	Jct. SR 20 South	1999	32,500
Canal Street	Placer County	2	At Luther	1997	2,398
Bell Road	Placer County	4	East of SR 49	1997	18,213
			West of I-80	1998	28,715
New Airport Road	Placer County	2	East of SR 49	1998	1,751
Bundle 12: Chili Bar					
U.S. Highway 50	FHWA	4	West of Jct. SR 49	1999	45,000
SR 49	Caltrans	2	Jct. SR 193 East	1999	8,300

Table 4.12-3 Public Roads Within the Drum Regional Bundle

Road Name	Jurisdiction	No. of Lanes	Location of Measurement	Year of Measurement	ADT
SR 193	Caltrans	2	Jct SR 49 Jct.	1999	6,300
Rock Creek Road	El Dorado County	2	East of Jct SR 193	1999	162

Notes: USFS = U.S. Forest Service; FHWA = Federal Highway Administration

Sources: Caltrans, 2000; Lake County, 2000; Placer County, 2000a; Placer County, 2000b; Nevada County, 2000; El Dorado County, 2000a; El Dorado County, 2000b.

Nevada County also seeks a balance between roadway congestion and future development within the region. Future roadway congestion, maintenance and safety issues are to be alleviated with the implementation of RTPs, development fees, and the Nevada County Road Improvement Plan. Furthermore, the county works toward improvement and maintenance of roadways by coordinating with all incorporated cities and relevant agencies.

The county seeks to increase the availability of alternative modes of transportation by implementing a Pedestrian and Bikeway Master Plan, and through land use guidance as well as requiring a discussion and feasibility analysis of alternatives to automobile transportation. In addition, the county coordinates with the Transportation Management Association to increase opportunities for ridesharing, transit, and other means of reducing roadway capacity.

Placer County

The Placer County General Plan includes a Transportation and Circulation Element that lists numerous goals and policies relating to the management of roadways and projected growth. The goals and policies listed primarily discuss the importance of road maintenance and safety. A LOS C is generally to be maintained on all rural and urban/suburban roadways with the exception of the roadways that are located near State highways.

The county also has specific policies discussing funding for the maintenance and improvement of existing roadways. Specifically, policies include the adoption of a Capital Improvement Plan, a traffic fee allocation process, and a road fund within the general fund.

Policies and goals within the Transportation and Circulation Element discuss the importance of transit and alternative forms of transportation. The primary goal is to promote a safe and efficient mass transit system, including both rail and bus, to reduce congestion and improve the environment. In addition, the county requires close coordination with the appropriate Federal, State and local agencies for the development of a safe, comprehensive and integrated system of facilities for non-motorized transportation. Alternative forms of transportation also include the promotion of bike corridors and enhancement of the environment to encourage the use of bicycles.

El Dorado County

The El Dorado County transportation system, coordinated with the land use plan, ensures that new development is efficiently, safely and conveniently accessed, and consistent with the regional highway system (RHS). Residential development is directed to where county road service is acceptable, taking advantage of existing circulation and mitigating direct impacts. New development shall be responsible for necessary road improvements, pay a mitigation fee, or both, to accommodate project impacts. Roadway system improvements, including freeway interchanges and highway alignments, will be similarly financed through fees, special benefit assessment districts, sales and gas taxes, and governmental sources. The county strives to maintain an operating LOS E or better on all urban roadways and improve safety in rural areas, with a Capital Improvement Plan targeting areas where LOS or safety standards are not being met.

The county supports public transportation utilizing the El Dorado County Transit Authority (EDCTA) and the County Transportation Commission advisory committees to review and implement improvements. These include multi-modal information and service, increasing commuter transit service and use, extending rail service, assisting public transit-dependent riders, encouraging cost effective transportation alternatives, assuring system maintenance, and cooperating in regional transit planning and funding.

As discussed in Chapter 4.1, Land Use, it should be noted that the El Dorado County General Plan Update was nullified by the California Supreme Court because it allowed for too much growth and development density. The EIR on El Dorado County's 1996 General Plan Update was successfully challenged. The county is currently in the process of preparing additional analyses and revisions to the General Plan Update to accommodate the specific deficiencies in the EIR and General Plan identified by the Court. In addition, the voters of El Dorado County recently passed an initiative entitled "Measure Y." This measure is intended to ensure that the levels of service for roadways within El Dorado County are maintained in the face of substantial future planned development. Implementation of this measure and pending revisions to the General Plan directly influence the extent and nature of future development in the county.

Mendocino County

County goals recognize the need for continued development and maintenance of a safe, energy efficient and balanced multi-modal transportation system that addresses the needs of commerce, agriculture, industry, public transportation, and recreation in making use of city, county and State roads. Based upon a priority system, the county seeks to address increased traffic volumes, safety hazards, natural road and bridge deterioration and structural deficiencies as it makes permanent facilities built initially for logging purposes. County goals include developing a transportation system that:

- Is safe, coordinated, balanced, and efficient;
- Reflects the natural, cultural, and economic resources of the county;
- Provides collector, local and regional corridors to serve intra-community and regional concerns;
- Initiates and maintain a continuing five-year capital improvement program for streets, highways, and bridges;
- Complements circulation of adjacent cities, communities and employment centers;
- Minimizes the breakdown of agricultural and urban land patterns;
- Provides separate funding for public transit systems and streets and roads;
- Accommodates non-motorized, air and marine travel; and
- Is supported by State government, local agencies and county residents.

Lake County

Lake County's Regional Transportation Agency prepares and implements the regional plan, which includes policies addressing roads and road design, circulation and land use planning, public transit within and between cities, air transport, alternative transit, and transmission and pipe lines. The county's goal is safe and adequate levels of service on county and State roads to support residential development and an orderly pattern of land uses, commercial and tourism expansion and geothermal activity through reliance on standards for construction and improvements, and regular road upgrades based upon priorities set in the regional plan. Scheduled air carrier service is encouraged through policies that support improved and modernized county activities and services as addressed in the airport master plan. Non-motorized transportation is encouraged: the county emphasizes the addition of bike routes on upgraded roadways, bicycle storage facilities at offices, schools and shopping centers, and hiking and equestrian trails established where feasible.

Yuba County

The Yuba County General Plan has a series of General Plan goals and policies relating to transportation. These goals generally strive to maintain an efficient and cost effective countywide transportation system that recognizes the difference between urban and rural environments while coordinating with future land use plans to accommodate future growth.

The county proposes to meet these goals by maintaining existing roadways, encouraging the use of alternative forms of transportation, and by maintaining LOS C throughout the county. Alternative modes of transportation, proposed by the county, include bikes and car-pooling and the use of mass transit to facilitate this goal. In addition the county's policies stress the importance of coordinating with Federal, State and local agencies.

Bundle 9: North Yuba River

Narrows (FERC 1403)

The Narrows Project and associated Project Lands are located in portions of Nevada and Yuba counties, west of the town of Grass Valley and east of Marysville. Primary access to the Project Lands is provided by SR 20. SR 20 begins at I-80 near Lake Spaulding and extends west into Yuba

County through Nevada City, Grass Valley, and Penn Valley (Nevada County, 1995). This road is classified as a principal arterial and generally operates at LOS B (Placer County, 1992). SR 20 is primarily a two-lane roadway, with a short four-lane segment.

The Narrows Powerhouse is accessible from SR 20 via Mooney Flat Road. Locked gates control vehicular access to the substation area. The Narrows powerhouse, penstock, and stand pipe are accessed by a tramway. The steep emergency access trail associated with the tramway has been closed because of maintenance and safety concerns. If the tram were not available, the Narrows powerhouse would be accessible by helicopter. The Project Lands are served by a road system that serves local recreational areas, including Englebright Lake.

Bundle 10: Potter Valley

Potter Valley (FERC 0077)

The Potter Valley Project and associated Project Lands are located northeast of Ukiah in portions of Mendocino and Lake Counties. Primary access to the Project Lands is provided by secondary roads off of SR 20. SR 20 is primarily a two-lane roadway, with a short four-lane segment (Mendocino County, 1993). Portions of this highway near the county line and south of Clear Lake experience heavy traffic and are near capacity. Elk Mountain Road, a minor collector, provides access to Lake Pillsbury in the vicinity of the Potter Valley Project Lands (Lake County, 1981).

Elk Mountain Road, Eel River Road, and Powerhouse Road provide access to Lake Pillsbury, Van Arsdale Reservoir, and the Potter Valley Powerhouse, respectively. The Project Lands are served by various county roads and Mendocino National Forest roads. Much of the traffic in the area is related to recreational use.

Bundle 11: South Yuba River

Drum-SpaULDing (FERC 2310)

The Drum-SpaULDing project is located east of Grass Valley and northeast of Auburn, in portions of Nevada and Placer Counties. Primary access to Project Lands in the South Yuba River Bundle is provided by I-80. This highway connects the large urban areas of Reno, Sacramento, and the San Francisco Bay Area. I-80 runs along the southern border of Nevada County and serves as the primary east-west interstate facility for the region (Nevada County, 1995). I-80 is also the only major east-west route connecting western and eastern Placer County. LOS on I-80 is generally B or C, with a few segments reaching LOS D (Placer County, 1992).

Spaulding 3 Powerhouse can be reached via a footpath along the north shore of Lake Spaulding by boat or by helicopter. Spaulding 1 and 2 Powerhouses and reservoirs associated with the Spaulding 3 Powerhouse are accessible by secondary and unimproved roads originating at SR 20. Reservoirs associated with the Spaulding 1 and 2 Powerhouses are accessible by secondary and

unimproved roads originating at I-80. Deer Creek Powerhouse is accessible from SR 20 by Quaker Hill Road or Chalk Bluff Road. Drum 1 and 2 Powerhouses are accessible by Drum Powerhouse Road off of I-80. Drum Forebay can also be reached by secondary and unimproved roads from I-80. Lake Valley Reservoir is accessible from I-80 via Lake Valley Road and Six Mile Road. Kelly Lake can be reached from I-80 via Crystal Lake Road. The Dutch Flat Powerhouse can be reached by secondary roads from the town of Dutch Flat. The Alta Powerhouse is located near the town of Alta, at the end of Alta Powerhouse Road. The Halsey Powerhouse is located just north of Auburn, on Dry Creek Road off I-80. Halsey Forebay is located near the junction of Christian Valley Road and Bancroft Way off I-80, near the town of Clipper Gap. The Wise 1 and 2 Powerhouses are located off I-80 near Wise Road, just west of Auburn. Rock Creek Lake is accessible by Bell Road or New Airport Road off SR 49. The Newcastle Powerhouse can be reached via numerous secondary roads that originate at I-80. Both county and USFS roads provide access to Project Lands in this bundle.

Bundle 12: Chili Bar

Chili Bar (FERC 2155)

The Chili Bar Project and associated Project Lands are located north of Placerville in El Dorado County. Primary access to Project Lands is provided by U.S. Highway 50, SR 49 (a minor arterial) (Amador County, 1998) and SR 193. U.S. Highway 50, a four-lane freeway, traverses El Dorado County from east to west and is its primary transportation corridor. Traffic on this roadway is often congested, as it is an access route to many recreational areas. SR 49 provides north-south transportation through the Sierra Nevada foothills. SR 193 connects two points along Highway 49. This is mostly a 28-foot-wide roadway, but it does include some narrow, steep, winding sections (El Dorado County, 1995). Chili Bar Reservoir and Chili Bar Powerhouse are accessible from SR 193 via Rock Creek Road.

4.12.4.4 Motherlode Regional Bundle

Regional Setting

All Pacific Gas and Electric Company FERC licenses in the Motherlode Regional Bundle are currently operated from the Tiger Creek Switching Center. Angels Camp and Sonora Service Centers also provide service center functions shared with other Pacific Gas and Electric Company business units and would be retained by Pacific Gas and Electric Company when the project is implemented. The Fresno Dispatching Center (FDC) remotely monitors and alarms the Merced Falls project. This switching center is staffed 24 hours a day, and is responsible for monitoring automated data received from remote powerhouses and other facilities. Field personnel are dispatched on an as-needed basis from the Tiger Creek Powerhouse, Angels Camp and Sonora Service Centers, and Salt Springs Powerhouse, as well as from Merced Irrigation District (MID) for the Merced Falls Powerhouse. The facilities in the Motherlode Regional Bundle are currently

staffed by a total of 49 people, including the Tiger Creek Switching Center operators, field operations crews, and maintenance crews.

SR 49 is designated a rural minor arterial within Tuolumne County. This highway is considered a minor arterial within Amador County, except for the section that is concurrent with SR 88 (from Martell to Jackson), which is classified as a principal arterial. SR 49 is the only north-south route in Calaveras County, and traverses the central county, connecting to Amador and Tuolumne counties in the north and south, respectively. Three segments of SR 49 are locally considered scenic highway. SR 49 is classified as a minor arterial within Calaveras County. This highway is one of four highways that provide primary access to the Merced Falls Bundle.

SR 88 is classified as a principal arterial in Amador County. All other routes in the county are considered minor arterials, and connect with a network of county and city collector and local streets. SR 88 traverses Alpine County from east to west. This road is classified as a minor arterial and is sparsely connected with a network of major and minor county roads. SR 88 is designated a scenic highway in the National Highway System. A planning agreement between Alpine, El Dorado, and Amador Counties, Caltrans, USFS, and the Federal Highway Administration has been established which sets an hourly minimum LOS C for SR 88. This highway provides primary access to the Mokelumne River Bundle.

SR 4 is a trans-Sierra route serving southern Calaveras County and connecting to Alpine County. A portion of SR 4 is designated a State Scenic Highway, and another portion is locally considered a scenic highway. SR 4 traverses Alpine County from east to west. This road is classified as a minor arterial, and is sparsely connected with a network of major and minor county roads. SR 4 experiences heavy recreation-related traffic in the summer months. SR 4 is one of two primary access roads for the Stanislaus River Bundle.

SR 108 runs through Tuolumne County and provides access to the Phoenix and Spring Gap-Stanislaus hydroelectric facilities. Both of these highways are designated rural minor arterials within Calaveras County. Portions of the highway are also locally considered scenic highway. SR 108 is the only major east-west route in its area of the western Sierra Nevada foothills, and portions of this road experience heavy traffic, resulting in LOS D or E and average daily traffic volumes between 20,000 and 25,000. Other segments of SR 108 which are steep, narrow and winding experience similar LOSs. SR 108 is one of two primary access roads for the Stanislaus River Bundle.

SR 132 extends for 76 miles between I-580 and SR 49, and traverses San Joaquin, Stanislaus, Tuolumne, and Mariposa counties. SR 132 is designated a principal arterial for 29 miles of its length, and a minor arterial for the remaining 47 miles. This road is one of four that provide primary access to the Merced Falls Bundle. County Road J-16 is approximately 76 miles long, and travels through Stanislaus, Merced, and Mariposa counties.

County Road J-17 is approximately 39 miles long and traverses Stanislaus and Merced counties. This roadway is one of four that provide primary access to the Merced Falls Bundle. Table 4.12-4 lists public roadways within the Motherlode Regional Bundle that provide primary access to hydroelectric facilities and Project Lands. The table includes roadway ADT volumes and other relevant roadway characteristics.

Table 4.12-4 Public Roads Within the Motherlode Regional Bundle

Road Name	Jurisdiction	No. of Lanes	Location of Measurement	Year of Measurement	ADT
Bundle 13: Mokulumne River					
SR 88	Caltrans	2	Jct SR 26	1998	7,000
SR 26	Caltrans	2	Jct SR 88	1999	2,350
SR 49	Caltrans	2	Amador-El Dorado County Line	1999	2,300
		2	Amador-Calaveras County Line	1999	6,700
		2	Calaveras-Tuolumne County Line	1999	5,200
Bundle 14: Spring Gap-Stanislaus					
SR4	Caltrans	2	East Jct SR 49	1998	5,500
Camp Nine Road	Calaveras County	1.5	No available count data		
SR 49	Caltrans	2	Tuolumne-Mariposa County Line	1998	800
Parrots Ferry Road	Tuolumne County	2	¼ mile north of Jct SR 49	1999	9,411
SR 108	Caltrans	4	Phoenix Lake Road	1998	22,300
Phoenix Lake Road	Tuolumne County	2	1,000 feet north of SR 108	1992	5,298
Bundle 15: Merced River					
SR 49	Caltrans	2	Jct. SR 132 West (Coulterville)	1998	850
SR 132	Caltrans	2	Merced Falls Road	1998	2,000
		2	Tuolumne County Line	1998	1,500
County Road J-16 (Keys Road)	Merced County	2	150' East of Cox Ferry Road	1987- 88	222 - 274
County Road J-17 (East Ave)	Merced County	2	no available count data		

Sources: Caltrans, 2000; Tuolumne County, 2000; Merced, 2000.

Local Regulations and Policies

The following is a summary of the local regulations and policies associated with transportation that are applicable to the proposed project.

Amador County

The Amador County General Plan seeks to provide safe, efficient, convenient, and comfortable streets, roads and highways that meet the travel needs of people and goods and that are compatible with other scenic, historic, economic and recreational resource values. Amador County strives to maintain a LOS C or better for average daily conditions and intersection peak hours as defined within the RTP on all State highways and local streets and roads. Funding and other constraints have led the county to accept LOS D or LOS E in certain locations.

4.12 Transportation

The county wishes to preserve the safety and operational integrity of the county road system by properly mitigating impacts from population growth and new development. Amador County supports the establishment of regional and local traffic mitigation fees as well as a policy stating that new developments that consume ten percent or more of the reserve capacity of a road or intersection are considered to have a significant impact. Consumption of less than ten percent of the reserve capacity may also be considered a significant impact if the increase causes a violation of the level of service standard.

The county also supports a policy to secure adequate road right-of-way dedications in order that future improvements to streets and roads can be constructed where it is shown to be necessary due to new development. Amador County seeks to coordinate land use decisions with impacts on the State and local transportation system through a cooperative effort with State and local agencies

Calaveras County

The Calaveras County General Plan Element discusses both roadway improvements for State and local roadways as well as transportation goals and policies. In general, the policies emphasize the maintenance of roadway service and safety and off-setting cumulative roadway impacts caused by land development (Calaveras County, 1996). Maintenance and safety of roadways is achieved through coordination with the appropriate Federal, State and local agencies and through funding which is developed on an equitable, proportional project specific basis. The general plan provides for the formation of special districts for road maintenance and allows for the creation of new county service areas when specific criteria are met.

Alpine County

Alpine County has combined their RTP and General Plan Circulation Element into one document. The plan's primary purpose is to insure the safe and adequate circulation of persons, goods and utilities throughout Alpine County. The secondary purpose is to convey the county's transportation needs, issues, plans and priorities to the State government.

The RTP/Circulation Element requires periodic improvements of State Highways and some highway and bridge reconstruction to maintain safety and circulation standards. There is an emphasis on maintaining the scenic quality of transportation corridors. New development is required to construct new roads and provided road maintenance while an effort is made to generate additional county revenues for road maintenance. In addition, county policies encourage the stimulation of recreation and tourism.

Alternative modes of transportation are promoted to alleviate future congestion and traffic-related problems. Bicycle and pedestrian facilities are promoted where reasonable in all new construction. County policies encourage fulfilling the parking needs of local citizens, employees, and visitors.

Tuolumne County

Through the General Plan the county seeks to preserve its substantial investment in existing roads and provide long-range planning and development of the county's transportation system (Tuolumne County, 1996) through:

- Land development review;
- Regular needs assessments;
- Prioritizing maintenance expenditures;
- Evaluating traffic impacts relative to General Plan goals and objectives;
- Updating the Regional Transportation Plan;
- Coordinating with State and Federal agencies; and
- Evaluating the use of county roads as alternatives to State highways and seeking appropriate funding.

The county road system consists of approximately 139 miles of State highways, 600 miles of maintained county roads and 26 miles of maintained city streets. A 1993 evaluation indicated that 91 percent of the county roads were operating "acceptably" with LOS A through C, six percent LOS D, and three percent at LOS E. Impact fees usually fail to generate sufficient revenue to pay for new roadway facilities, or correct existing deficiencies. The county encourages and seeks additional funding for transportation alternatives, builds such facilities when funding is available and gives special consideration to alternative transit in design review.

Merced County

According to the Merced County General Plan, the county seeks to provide a road system that provides free movement of vehicles throughout the county. Roadways are improved and maintained to sustain LOS C for existing and anticipated traffic volumes. The county supports providing appropriate levels of roadway access to all existing and future land uses. Circulation within Merced County is meant to provide for a variety of transportation modes for the safe and efficient movement of people and goods throughout the county. Another goal of the county is to provide an adequate public transit system to meet existing and future population needs.

Mariposa County

Mariposa County is a rural mountain county containing many miles of unpaved, narrowly paved, substandard, and non-aligned roads. According to the County Regional Transportation Plan, the county's State highways and county roads are adequate to accommodate its current needs (Mariposa County, 1983). The county contains 117 miles of State highway. SR 49 runs through the county for approximately 45.7 miles and is one of two major highways in the county. State Highway 132 crosses the county for a lesser length near the county boundary. Both of these highways provide access to Motherlode Regional Bundle facilities.

Bundle 13: Mokelumne River

Mokelumne River (FERC 0137)

SR 88 provides primary access to the Mokelumne River area and associated Project Lands, and is located east of Jackson. The Project Lands are located in portions of Alpine, Amador, and Calaveras Counties. SR 88 traverses Alpine County from east to west. This road is classified as a minor arterial in Alpine County, and is sparsely connected with a network of major and minor county roads. SR 88 is designated a scenic highway in the National Highway System. A planning agreement between Alpine, El Dorado, and Amador Counties, Caltrans, USFS, and the Federal Highway Administration has been established which sets an hourly minimum of LOS C for SR 88. ADTs on SR 88 are projected to range from 3,200 to 4,000 in the year 2010, and from 3,600 to 4,500 in the year 2015 (Alpine County, 1999). SR 88 is classified as a principal arterial within Amador County (Amador County, 1998).

Reservoirs associated with the Salt Springs Facility are accessible by Blue Lakes Road off of SR 88. Salt Springs Reservoir and Powerhouse can also be reached by unimproved roads and trails. Lower Bear River Reservoir is accessible by Bear Creek Road off of SR 88. The Tiger Creek Powerhouse and associated facilities can be reached by secondary and unimproved roads off of SR 88. The West Point Powerhouse is located on SR 26 (Red Corral Road). Lake Tabeaud is located on Pine Grove Road, which can be reached by various secondary roads off of SRs 49 and 88. The Electra Powerhouse is located at the end of Electra Road off of SR 49. Most Project Lands are located in remote canyons and hillsides and are accessed by one-lane paved or dirt roads. The project area is also home to numerous trails and unimproved roads.

Within the Mokelumne River Regional Bundle, Pacific Gas and Electric Company allows full access to its lands and facilitates access to BLM and USFS lands, including the Pacific Gas and Electric Company-owned and maintained road from the Tiger Creek Powerhouse to Ellis Road up the North Fork of the Mokelumne Canyon.

Bundle 14: Stanislaus River

Spring Gap-Stanislaus (FERC 2130)

The Spring Gap-Stanislaus Project Lands are located northeast of Sonora in portions of Tuolumne and Calaveras Counties. SRs 4 and 108 provide primary access to the Spring Gap-Stanislaus area and associated Project Lands. SR 4 is a trans-sierra route serving south Calaveras County and connecting to Alpine County. A portion of SR 4 is designated a State Scenic Highway, and another portion is locally considered a scenic highway. SR 4 is classified as a minor arterial (Calaveras County, 1996). SR 108 is designated a rural minor arterial. Portions of this highway are also locally considered a scenic highway. SR 108 is the only major east-west route in its area of the western Sierra Nevada foothills, and portions of this road experience heavy traffic, resulting in

LOS D or E and average daily traffic volumes between 20,000 and 25,000. Other segments of SR 108 are steep, narrow and winding, and experience similar LOSs (Tuolumne County, 1996).

Pinecrest Reservoir is located near the town of Pinecrest, off of SR 108. Stanislaus Forebay is accessible off of State Highway 4 (via Camp Nine Road) or off of SR 49 (via the Parrots Ferry Road). There are numerous unimproved roads in the vicinity of the Project Lands.

Pacific Gas and Electric Company has authorized log hauling with conditions and payments for annual and deferred maintenance on roads accessing Spring Gap Powerhouse Roads 4N01 and 4N88 on lands administered by the USFS. The last authorization expired in 1997.

Phoenix (FERC 1061)

SR 108 provides primary access to the Phoenix Project area and associated Project Lands. (See Spring Gap-Stanislaus discussion, above, for a description of SR 108.) Lyons Reservoir and the Tuolumne Canal can be reached by secondary and unimproved roads from Twain Harte and Mi-Wuk Village off of SR 108. Lyons Dam Road, the primary access to Lyons Reservoir, is closed by a gate on USFS-administered land. This is authorized by a one-year Special Use permit issued to Pacific Gas and Electric Company by Stanislaus National Forest. Public access to Pacific Gas and Electric Company's lands surrounding the Lyon Reservoir is limited to the recreation season. Unauthorized public use and the use of off-road vehicles have caused serious erosion problems and degraded natural and cultural resources in the past. Phoenix Reservoir and Powerhouse is accessible via Phoenix Land Road from SR 108. There are numerous unimproved roads in the vicinity of the Project Lands.

Powerhouses in the Phoenix Project Lands are remotely operated from the Tiger Creek Hydroservice Center. Maintenance and water crews are headquartered at the Sonora and Angels Camp Service Centers.

Bundle 15: Merced River

Merced Falls (FERC 2467)

The Merced Falls area and associated Project Lands are located east of the City of Modesto in portions of Merced and Mariposa Counties. SRs 49 and 132 and County Roads J-16 and J-17 provide access to the Merced Falls Project Lands. County Roads J-16 and J-17 provide direct access to Merced Falls Reservoir as well as the surrounding area. SR 49 is designated a rural minor arterial. Portions of this highway are also locally considered scenic highway (Tuolumne County, 1996). County Road J-16 is classified as a major collector. The Project Lands are accessed primarily by public roads, but contains numerous unimproved roads.

The Merced Falls project is remotely operated by the MID. Maintenance and water crews are headquartered at the Sonora and Angels Camp Service Centers.

4.12.4.5 Kings Crane-Helms Regional Bundle

Regional Setting

Pacific Gas and Electric Company's hydroelectric facilities and Project Lands associated with the Kings Crane-Helms Regional Bundle are in rural and remote areas within Madera, Fresno, Tulare, and Kern Counties. Service Centers associated with this regional bundle include Auberry, Balch Camp, and the Helms Hydroservice Centers.

Pacific Gas and Electric Company's Fresno Dispatch Center serves as the switching center for this regional bundle. Pacific Gas and Electric Company's facilities in this region are currently staffed by a total of 74 people, including the dispatching center operators and field operations and maintenance crews. These employees primarily use the public roads described in Table 4.12-5 to commute to and from the facilities each day.

SR 41 runs south to north from Morro Bay in San Luis Obispo County to the southern portion of Yosemite National Park. SR 41 provides the primary access to the Crane Valley Powerhouse and the San Joaquin powerhouses in the Crane Valley Bundle. SR 41 is usually a three-lane road (two lanes plus one passing lane) with the exception of four lanes through the town of Oakhurst. There are two stop lights on SR 41 through Oakhurst and no stop lights or stop signs between Oakhurst and Yosemite. SR 41 provides the main access to Yosemite National Park from the Fresno area.

SR 168 runs west to east from SR 41 in Fresno to east of Huntington Lake (near the Sierra Summit Ski Area) in the Sierra National Forest. SR 168 provides the primary access to San Joaquin 1A, 3, 2, and A.G. Wishon Powerhouses in the Crane Valley Bundle. SR 168 also provides the primary access to the Kerckhoff Bundle and the Helms Pumped Storage Facility in the Kings River Bundle. Southwest of the town of Auberry, SR 168 is a four-lane road for approximately ten miles. Other portions of SR 168 (e.g., near Fresno and in the Sierra National Forest) are two lanes. SR 41 provides access to the Sierra National Forest, including the Sierra Summit Ski Area from Fresno.

SR 180 runs west to east from the town of Mendota, through Fresno, to the Kings Canyon National Park. West of Fresno, the SR 180 is referred to as Whites Bridge Road, and east of Fresno, SR 180 is referred to as Kings Canyon Road. SR 180 provides the primary access to the Haas-Kings River and the Balch facilities in the Kings River Bundle. SR 180 is two-lane roadway. SR 180 provides the main access to the Kings Canyon National Forest from Fresno and State Highway 99.

The applicable portion of SR 190 to this project runs west to east from south of the town of Corcoran through Porterville to California Hot Springs. South of Camp Nelson, SR 190 is closed for the winter. SR 190 provides the primary access to the Tule River Bundle. SR 190 is a two-lane roadway. SR 190 provides access from State Highway 99 and Porterville to the Sequoia National Forest.

SR 178 runs west to east from Bakersfield to SR 14 near Freeman Junction (about ten miles south of the SR 178 and Interstate 395 Junction). SR 178 provides the primary access to the Kern Canyon Bundle. SR 178 is a two-lane roadway. SR 178 provides access from the Bakersfield area to Lake Isabella and State Highway 14 and I-395.

Table 4.12-5 provides a list of public roadways within the Kings Crane-Helms Regional Bundle, which provide primary access to hydroelectric facilities and Project Lands. The table includes ADT volumes and other relevant roadway characteristics.

Table 4.12-5 Public Roads Within the Kings Crane-Helms Regional Bundle

Road Name	Jurisdiction	No. of Lanes	Location of Measurement	Year of Measurement	ADT
Bundle 16: Crane Valley					
SR 41	Caltrans	4 through Oakhurst	South of County Road 426	1999	25,000
		2 plus a passing lane	North of County Road 426	1999	20,500
			South of Road 222	1999	11,100
			North of Road 222	1999	5,200
SR 168	Caltrans	4	West of Auberry/Tollhouse Road	1999	8,900
			East of Auberry/Tollhouse Road	1999	4,600
		2	West of Auberry Rd at Lodge Road	1999	5,800
			East of Auberry Rd at Lodge Road	1999	6,800
County Road 222	Madera Co.	2	East of Highway 41	1998	2,710
			South of County Road 247	1995	2,482
			West of County Road 247	1995	5,556
County Road 274	Madera Co.	2	East of Road 222	1995	3,308
County Road 426	Madera Co.	2	Southeast of Road 427	1994	6,587
Bundle 17: Kerchoff Bundle					
SR 168	Caltrans	2	Same as presented for the Crane Valley Bundle		
Auberry Road	Fresno Co.	2	South of Powerhouse Road	1998	3,800
Powerhouse Road	Fresno Co.	2	No ADT information available		
Smalley Road	BLM/PG&E Company	1	No ADT information available		
Bundle 18: Kings River					
Helms Pumped Storage Facility					
SR 168	Caltrans	2	West of Dinkey Creek Road	1999	4,600
			East of Dinkey Creek Road	1999	5,100
Dinkey Creek Road	Fresno Co.	2	No ADT information available		
McKinley Grove Road	FS	2	No ADT information available		
Courtright Road	FS	2	Between McKinley Grove Road and Lake Courtright.	1988	185
Hass Kings River Powerhouse and Balch					
SR 180	Caltrans	2	West of Trimmer Springs Road	1999	8,200
			East of Trimmer Springs Road	1999	8,900
Trimmer Springs Road	Fresno Co.	2	North of Belmont Road	1994	1,500
Courtright Road	FS	2	Between McKinley Grove Road and Lake Courtright.	1988	185

Table 4.12-5 Public Roads Within the Kings Crane-Helms Regional Bundle

Road Name	Jurisdiction	No. of Lanes	Location of Measurement	Year of Measurement	ADT
Black Rock Road	FS	1	No ADT information available		
McKinley Grove Road	FS	2	No ADT information available		
Bundle 19: Tule River					
SR 190	Caltrans	2	West of Balch Park Road	1998	3,750
			East of Balch Park Road	1998	940
Wishon Drive	Tulare Co.	2	No available count data		
Bundle 20: Ken Canyon					
SR 178	Caltrans	2	West of Cottonwood Creek	1999	3,600
			East of Cottonwood Creek	1999	3,650
Rancheria Road	City of Bakersfield	2	North of Highway 178	1999	250

Sources: Caltrans, 2000; Madera Co, 2000; Fresno Co, 2000a; Fresno Co, 2000b; BLM, 2000; Kern Co, 2000a; Kern Co, 2000b; USFS, 2000; and Bakersfield, 2000.

Local Regulations and Policies

Fresno County

Fresno County has recently (January 2000) updated the Transportation and Circulation Element of its general plan. The Transportation and Circulation Element provides the framework for the Fresno County decisions concerning the countywide transportation system, which includes various transportation modes and related facilities. It also provides for coordination with the cities and unincorporated communities within the county, with the Regional Transportation Plan adopted by the Council of Fresno County Governments, and with State and Federal agencies that fund and manage transportation facilities within the county. The Transportation and Circulation Element reflects the urban and rural nature of Fresno County. The element establishes standards that guide the development of the transportation system, and management of access to the highway system by new development, throughout the unincorporated areas of the county (Fresno County, 2000c).

Madera County

Madera County has adopted a Transportation and Circulation element as part of its overall general plan policy document. The element contains goals, policies, and implementation programs designed to provide for the long-range planning and development of the county’s roadway system.

The county has a level of service policy (Policy Number 2.A.9) to identify the potential impacts of new development on traffic service levels. The policy requires the preparation of traffic impact analyses for developments determined to be large enough to have potentially significant traffic impacts (Madera County, 1995).

Tulare County

The Tulare County Association of Governments (TCAG) developed a RTP in 1998. The RTP is a 20-year planning document that is consistent with the Regional Transportation Improvement Program (RTIP) to qualify Projects for the State Transportation Improvement Program (STIP). This document is based on regional transportation facilities and proposed constrained improvements funded during the time frame of this plan.

TCAG's jurisdiction includes the Cities of Dinuba, Exeter, Farmersville, Lindsay, Porterville, Tulare, Visalia, Woodlake, and Tulare County, Native American tribal groups, and communities in the transportation planning process. TCAG works with Federal, State, regional governments and the Native American tribal governments to develop strategies that address transportation issues. This effort promotes direct involvement by the government and interested groups in the transportation planning and project selection process (Tulare County, 1998).

Kern County

The Kern County circulation system is based on the adopted circulation element of the County General Plan. The system is composed of three classifications of roads: major highways, secondary highways, and local streets. In addition, the plan delineates freeways, expressways, scenic highways, railroads, airports and military airfield. The element incorporates by reference circulation plans noted on the following community plans: Bakersfield; Kern River Valley; Ridgecrest; Shafter, Taft; and Wasco (Kern County, 1979).

City of Bakersfield

The City of Bakersfield's General Plan contains a Circulation Element that contains goals and policies associated with the city's transportation facilities. The Element was approved in 1989. The City of Bakersfield Planning Department is currently in the process of updating the General Plan, including the Circulation Element (Bakersfield, 2000).

Bundle 16: Crane Valley***Crane Valley (FERC 1354)***

The Crane Valley Bundle is southeast of the town of Oakhurst. SRs 41 and 168 and County Road 222 provide the main access to the Crane Valley area and associated Project Lands. Crane Valley Reservoir (Bass Lake) is on County Road 222, with secondary access via County Roads 426 and 274. Snowplowing of county-maintained roads allows year-round public road access to Bass Lake. The Crane Valley Powerhouse is located at the south end of Bass Lake. The San Joaquin 3, 2, and A.G. Wishon Powerhouses and Manzanita Lake are located along County Road 222, off State Highway 168. San Joaquin 1A Powerhouse and Corrine Lake can be reached by secondary and unimproved roads off County Road 222 south of the town of North Fork. Numerous unimproved roads and trails provide access to other project-related features (PG&E Co., 1999a).

Bundle 17: Kerckhoff

Kerckhoff (FERC 0096)

The Kerckhoff Bundle is just west of the town of Auberry. SR 168 provides the main access to Project Lands in the Kerckhoff Bundle. Powerhouse Road provides the main access to the Kerckhoff powerhouse. Kerckhoff Lake is near Auberry and can be accessed by Powerhouse Road and unimproved roads. The Kerckhoff 1 and 2 Powerhouses are accessed by Powerhouse and Smalley Roads. A portion of Smalley Road is under BLM jurisdiction in the Squaw Leap Management Area. Numerous unimproved roads and trails provide access to other project-related features (PG&E Co., 1999a).

Bundle 18: Kings River

Helms Pumped Storage (FERC 2735)

The Helms Pumped Storage facility, including the Helms Headquarters Service Center, is northeast of the city of Fresno. Secondary roads from SR 168 provide the main access to the Helms Pumped Storage Project Lands. Principal roadways in the project area include Dinkey Creek Road, Courtright Road, and McKinley Grove Road. Numerous unimproved roads and trails provide access to the project-related features. The Helms Pumped Storage Project is staffed 24 hours a day (PG&E Co., 1999a).

Haas-Kings River (FERC 1988)

The Haas-Kings River Project is located east of the city of Fresno. Secondary roads from SR 180 provide the main access to the Haas-Kings River Project Lands. Principal roadways in the project area include Trimmer Springs Road, Courtright Road, and McKinley Grove Road. A one-lane paved road leads to the Haas Powerhouse. A short, two-lane road off Trimmer Springs Road leads to the Kings River Powerhouse. Trimmer Springs Road also provides the main access to Pine Flat Reservoir. Project roadways provide access to all the recreation facilities within the project boundaries, including scenic views and vistas. Numerous unimproved roads and trails provide access to other project-related features (PG&E Co., 1999a).

Balch (FERC 0175)

The Balch facility, including the Balch Camp Service Center, is located east of the city of Fresno. Secondary roads from SR 180 provide the main access to the project area. Trimmer Springs Road and Balch Camp Road are the principal roadways in the project area. Traffic in the project area consists mainly of the few residents of Balch Camp, Pacific Gas and Electric Company staff, and recreationists using the Black Rock Reservoir Campground. Numerous unimproved roads and trails provide access to project-related features (PG&E Co., 1999a).

Bundle 19: Tule River***Tule River (FERC 1333)***

The Tule River Bundle is located east of the town of Porterville. SR 190 provides the main access to the Tule River Project Lands. The main roadways in the study area include Camp Four Road and Wishon Drive. The Tule River Powerhouse is located near the junction of SR 190 and Wishon Drive. Numerous unimproved roads and trails provide access to other project-related features (PG&E Co., 1999a).

Bundle 20: Kern Canyon***Kern Canyon (FERC 0178)***

The Kern Canyon Bundle is located northeast of the city of Bakersfield. SR 178 provides the main access to the Kern Canyon Project Lands. Rancheria Road and a private road provide direct access to Kern Canyon Powerhouse from SR 178. Traffic in the vicinity of the subject area is primarily associated with regional recreation. Although the project's facilities are monitored from Midway Substation, the operations are conducted in the vicinity of the powerhouse (PG&E Co., 1999a).

4.12.5 STANDARDS OF SIGNIFICANCE

For the purposes of this EIR, an impact is considered significant if one or more of the following conditions would result from implementation of the proposed project:

- The project would cause a substantial increase in traffic on the surrounding road system. A substantial increase in traffic is assumed to occur if more than 200 equivalent dwelling units (EDUs) are developed within a Land Area that distributes traffic to a Class I roadway or if more than 100 EDUs are developed within a Land Area that distributes traffic to a Class II through V roadway; or
- The project would eliminate access across Project Lands, causing a substantial disruption of travel patterns (i.e., an increase in ten-vehicle-miles-traveled) to reach a public destination point either on Project Lands or on other lands that are primarily accessed by Project Lands.

4.12.6 ANALYTICAL METHODS

The land use assumptions outlined in Chapter 3 of this document, along with local general plan circulation elements and other policy and background information, roadway maps of the area, Caltrans and local data pertaining to ADT volumes, and information contained in the Proponent's Environmental Assessment were used to determine the possible transportation impacts that could arise from implementation of the project. The specific methodology used to assess traffic impacts is provided below.

4.12.6.1 Increase in Vehicular Trips Resulting from a Change in Land Uses and/or New Employment Opportunities

Using information contained in Chapter 3 with respect to the number of equivalent dwelling units (EDUs) that potentially could be developed within each land area, long-term operational traffic was generated using a daily trip generation rate of 9.57 trips per EDU. This trip generation rate is based on the Institute of Transportation Engineers (ITE) Trip Generation Manual (ITE, 1997) for single-family detached housing on weekdays, which assumes full-time occupancy on a year-round basis. The trip generation rates for other types of potential land uses, including vacation homes and recreational facilities, were also considered. The trip generation rates for vacation homes, recreational facilities, and hotels are generally less than the rates for single-family detached homes, while the trip generation rates for commercial uses such as hotels, restaurants, and retail stores are generally greater than the rates for single-family detached homes. Because the specific mix of land uses is unknown at this time, the trip generation rate for a single-family detached home occupied year-round provides a conservative, yet realistic, representation of the trip generation rate that could occur with implementation of the project. As a general note, all traffic generated by each Land Area was distributed through a single route (rather than two, or more, possible routes) either destined for, or originating from, a regional roadway. The roadways on which traffic was distributed to and from each Land Area are defined as "primary access roads."

In order to accurately and quantitatively determine traffic impacts, site-specific data (e.g., roadway and lane geometrics, signal timing, type of intersection [controlled or uncontrolled], ADT, peak hour traffic [including turning movements], capacity, levels of service, and circulation patterns) must be utilized. Typically, this data is collected when a specific development proposal is brought forth for consideration by a local jurisdiction. However, in order to programmatically assess impacts that could occur with implementation of the project, a broader set of data was considered to determine what level of development could result in a potentially significant traffic impact. This methodology is further described below.

For purposes of this analysis, all roadways were classified into Class I through Class V roadways. The classification is defined in Table 4.12-6.

Using the classification of each primary access roadway, as well as the amount of traffic that each Land Area could generate, it was determined that any increase of 200 or more EDUs served by a Class I roadway or any increase of 100 or more EDUs served by a Class II through V roadway could cause an increase in vehicle trips that could result in significant impacts on roadway links and/or intersections. This method only considers the project-related increase in traffic as compared to the existing ADT. Although this method does not account for site-specific traffic conditions such as peak hour traffic or unique geometric or operational characteristics (e.g., movement of opposing traffic at uncontrolled intersections, choke points, steep grades), it is appropriate for this level of analysis. This analysis discloses general traffic data for key roadway segments, including existing

ADT, existing LOS, project-related traffic, project-related and existing ADT, and project-related and existing LOS.

Table 4.12-6 Roadway Classification System

Class	Description ^a	Daily Service Volumes (in Vehicles per Day) ^b				
		LOS A	LOS B	LOS C	LOS D	LOS E
I	11' to 12' lanes, 4' + shoulders, 0% - 40% no passing and level-rolling terrain	2,600	5,900	10,300	16,900	20,200
II	11' to 12' lanes, 2' + shoulders, 40% - 60% no passing and level-rolling terrains	2,200	5,200	9,300	15,300	18,900
III	10' to 11' lanes, 2' + shoulders, 60% - 80% no passing and level-rolling terrain	1,600	4,500	8,600	14,200	18,600
IV	10' to 11' lanes, 0-4' shoulders, 80% to 100% no passing and rolling mountainous terrain	1,200	3,300	6,400	11,000	15,500
V	9' to 10' lanes, no shoulders, 80% to 100% no passing and rolling-mountainous terrain	1,000	3,000	5,900	10,200	14,300

a. 1998 Amador County Regional Transportation Plan/Circulation Element

b. Transportation Research Record 1194, Transportation Research Board 1988, as cited by the 1996/97 Amador County Regional Transportation Plan/Circulation Element

CEQA analysis of development projects normally involves the evaluation of traffic impacts. For this project, analysis includes potential trips generated by physical development of Project Lands and alteration of travel patterns if Project Lands are no longer available for through trips. For this project, evaluation of existing roadway safety (e.g., turning radii, emergency access), limited parking impacts (which would be limited), and other detailed traffic evaluation are not analyzed because the level of detail required to analyze these issues is beyond the scope of the project analysis. Because the development potential within each regional bundle could occur in a range of possible locations and take access from one or more major public roadways, that level of analysis would not be meaningful at this point.

With regard to traffic generated by potential timber harvest on project lands, this traffic would be short term in nature and would not be anticipated to cause significant traffic-related impacts.

The creation of private roadways within Project Lands is not analyzed. These impacts would only be of concern at points of connection to the public roadway network, which is required to be analyzed by the mitigation measures proposed as part of the proposed project when more specific information about the developments is known.

Vehicular trips associated with operation and maintenance of hydroelectric facilities and associated facilities are not expected to substantially change as a result of the project and are not discussed further in this section.

4.12.6.2 Restriction of Access Opportunities Across Project Lands Resulting in the Potential Disruption of Existing Travel Patterns

A system-wide qualitative approach was used to assess traffic and circulation impacts that could result from the restriction of access opportunities across Project Lands.

For purposes of this analysis, the elimination of any access across Project Lands that would result in the substantial disruption of travel patterns (i.e., an increase in ten vehicle miles traveled) to reach a public destination point either on Project Lands or on other lands that are accessed by Project Lands would result in a significant impact.

4.12.7 INTRODUCTION TO IMPACTS AND MITIGATION MEASURES

For Transportation, the following impacts have been identified:

- Impact 12-1: The project could cause increased vehicular trips resulting from changes in land use and/or new employment opportunities (Significant).
- Impact 12-2: The project could restrict access across Project Lands, resulting in the potential disruption of existing travel patterns (Significant).

Where impacts are significant, mitigation measures are recommended at the conclusion of the analysis of each impact.

4.12.8 IMPACT 12-1: IMPACT, ANALYSIS, AND MITIGATION MEASURES

Impact 12-1: The project could cause increased vehicular trips resulting from changes in land use and/or new employment opportunities.

Within the five regional bundles, there are a wide range of possible types of development including industrial, resort residential, outdoor recreation, timber harvesting, and mining, as well as agriculture, residential (including single family, multi-family, and urban low-density), commercial, and neighborhood commercial. Residents, employees and/or visitors traveling to and from new development could cause an increase in vehicle trips on local and regional roads.

4.12.8.1 Shasta Regional Bundle

The estimated development potential (Chapter 3, Approach to Environmental Analysis) concludes that substantial development could occur within the Shasta Region. For this analysis, it is assumed that one EDU generates 9.57 vehicle trip ends on weekdays. Table 4.12-7 identifies the roadways impacted by the development potential scenario. Land Areas where development could result in a significant increase in traffic (i.e., over 200 EDUs for Class I roads and more than 100 EDUs for Class II through V roads) include Hat Creek, Pit 1, Pit 3, Lake Britton, and Shingletown. The Hat Creek Land Area is projected to generate 594 EDUs, almost 500 EDUs over the significance criteria. This land area could change the LOS on SR 299 from A to B in the Fall River Mills area. The Pit 1 Land Area is projected to generate 714 EDUs, more than 600 EDUs over the significance

criteria. The projected development intensity at Pit 1 could change the LOS from A to C on SR 299. The Pit 3 Land Area is projected to generate 736 EDUs, more than 600 EDUs over the significance criteria. This projected development intensity could lead to a change in LOS from A to C on SR 299. Distinct roadway segment ADTs were used for Land Areas along SR 299. Assuming full development buildout, substantial impacts could occur on SR 299. The Lake Britton Land Area is projected to be 164 EDUs over the significance criteria. This development intensity would not lower the SR 89 LOS. The Shingletown Land Area is projected to generate 558 EDUs, more than 450 EDUs over the significance criteria. This development intensity could lead to a change in LOS from A to B on SR 44. Bundle 3 is the only bundle within the Shasta Regional Bundle where traffic related impacts are projected to be less than significant. All other bundles would have significant traffic related impacts.

Table 4.12-7 Development Potential Traffic Impacts for Shasta Regional Bundle

Land Area	Potential Development (EDUs)	Project Related ADT	Primary Roadway Access	Roadway Class	Existing ADT	Existing Roadway LOS	Existing Plus Project ADT	Existing Plus Project LOS	Significant Traffic Impact ?
Bundle 1: Hat Creek									
Hat Creek	594	5,685	SR 299	Class II	3,200	A	8,885	B	Yes
Bundle 2: Pit River									
Pit 1	714	6,833	SR 299	Class II	4,450	A	11,283	C	Yes
McArthur Swamp 3	17	163	SR 299	Class II	4,450	A	4,613	A	No
Pit 3	736	7,044	SR 299	Class II	3,200	A	10,244	C	Yes
Lake Britton	264	2,526	SR 89	Class II	1,450	A	3,976	A	Yes
McCloud, Black, Pit	95	938	SR 299	Class II	2,800	B	3,738	B	No
Bundle 3: Kilarc-Cow									
Kilarc-Cow Creek	20	191	SR 44	Class II	4,400	A	4,591	A	No
Bundle 4: Battle Creek									
Shingletown	558	5,340	SR 44	Class II	3,700	A	9,040	B	Yes
Inskip (Tehama)	38	364	SR 36	Class II	1,450	A	1,814	A	No

4.12.8.2 DeSabra Regional Bundle

The estimated development intensity (Chapter 3, Approach to Environmental Analysis) concludes that substantial development could occur within the DeSabra Region. For this analysis it is assumed that one EDU generates 9.57 vehicle trip ends on weekdays. Table 4.12-8 identifies the roadways impacted by the development potential scenario. Land Areas where development could result in a significant increase in traffic include West Lake Almanor/Prattville, Southeast Lake Almanor, Humbug Valley, and Bucks Creek/Bucks Lake. The West Lake Almanor/Prattville Land Area is projected to generate 276 EDUs, which is 150 EDUs over the significance criteria. However, the projected development intensity would not change in LOS on SR 89. The southeast Lake Almanor Land Area is projected to generate 615 EDUs, 515 EDUs over the significance criteria. This projected development intensity could lead to a change in LOS from A to B on SR 147. The Humbug Valley Land Area is projected to generate 240 EDUs, 140 EDUs over what is allowed

Table 4.12-8 Development Potential Traffic Impacts for DeSabra Regional Bundle

Land Area	Potential Development (EDUs)	Project Related ADT	Primary Roadway Access	Roadway Class	Existing ADT	Existing Roadway LOS	Existing Plus Project ADT	Existing Plus Project LOS	Significant Traffic Impact ?
Bundle 5: Hamilton Branch									
Mt. Meadows (Lassen County)	19	182	SR 36	Class I	2,900	A	3,082	A	No
Hamilton Branch	16	153	SR 147	Class II	910	A	1,063	A	No
Bundle 6: Upper North Fork Feather River									
North Lake Almanor	87	833	SR 36	Class I	2,350	A	3,183	A	No
West Lake Almanor/Prattville	276	2,614	SR 89	Class II	1,900	A	4,514	A	Yes
Southeast Lake Almanor	615	5,886	SR 147	Class II	1,300	A	7,186	B	Yes
Butt Valley Reservoir	92	880	SR 89	Class II	1,900	A	2,780	A	No
Caribou to Belden	16	153	SR 70	Class I	4,250	A	4,403	A	No
Humbug Valley	240	2,297	SR 89	Class II	1,900	A	4,197	A	Yes
Rock Creek-Cresta	19	182	SR 70	Class I	4,250	A	4,432	A	No
Poe (Butte County)	31	297	SR 70	Class I	4,050	A	4,347	A	No
Bundle 7: Bucks Creek									
Bucks Creek/Bucks Lakes	244	2,335	Oroville/Quincy Highway	Class III	570	A	2,905	A	Yes
Bundle 8: Butte Creek									
DeSabra-Centerville (Butte County)	66	632	Skyway	Class I	1,929	A	2,561	A	No
Coal Canyon (Butte County)	378	3,617	Dispersed urban streets	-			>3,617		No

under the significance criteria. This projected development intensity would not change the LOS on SR 89. The Bucks Creek/Bucks Lake Land Area is projected to generate 244 EDUs, almost 150 EDUs over the significance criteria. However, the EDUs would not lower the LOS on Oroville/Quincy Highway. Based on the foregoing, Bundle 6 and Bundle 7 could have a significant traffic related impacts. Bundles 5 and 8 would have no impacts.

4.12.8.3 Drum Regional Bundle

Table 4.12-9 identifies the roadways impacted by the development potential scenario for each Land Area. Based on the standards of significance identified in Section 4.12.6, Land Areas where development could result in a significant increase in traffic within the Drum Regional Bundle include Lake Pillsbury, Lake Valley Reservoir, Lake Spaulding/Drum Penstock Forebay, Dutch Flat-Bear River North of Rollins Reservoir, and Halsey Forebay/Lake Arthur. With the exception of the Lake Pillsbury land area in the Potter Valley bundle (Bundle 10), which is projected to have a potential development of 188 EDUs, the greatest development intensity would occur in the vicinity of the I-80 corridor in the South Yuba River bundle (Bundle 11). Assuming full development build-out of all Land Areas in this bundle, significant impacts to I-80, which is a primary access roadway, could result. Specifically, the projected EDUs would vary from

Table 4.12-9 Development Potential Traffic Impacts for Drum Regional Bundle

Land Area	Potential Development (EDUs)	Project Related ADT	Primary Roadway Access	Roadway Class	Existing ADT ^a	Existing Roadway LOS	Existing Plus Project ADT	Existing Plus Project LOS	Significant Traffic Impact ?
Bundle 9: North Yuba River									
Narrows-Lake Englebright	3	29	SR 20	Class II	10,400	C	10,429	C	No
Bundle 10: Potter Valley									
Van Arsdale Reservoir/Potter Valley Powerhouse	13	124	SR 20	Class II	10,200	C	10,324	C	No
Lake Pillsbury	188	1,799	SR 20	Class II	6,500	B	8,299	B	Yes
Bundle 11: South Yuba River									
Kidd Lake/Cascade Lakes	38	364	I-80	Class I	22,700	E	23,064	E	No
Meadow Lake/Fordyce Lake/Lake Sterling/White Rock Lake	7	67	I-80	Class I	21,000	E	21,067	E	No
Rock Lake/Lindsey Lakes	5	48	I-80	Class I	21,200	E	21,248	E	No
Lake Valley Reservoir	329	3,149	I-80	Class I	21,000	E	24,149	E	Yes
Lake Spaulding/Drum Penstock Forebay	2,396	22,930	I-80	Class I	21,200	E	44,130	E	Yes
Dutch Flat - Bear River North of Rollins Reservoir	517	4,948	I-80	Class I	23,400	E	28,348	E	Yes
Rollins Reservoir/Bear River	12	115	I-80	Class I	25,500	E	25,615	E	No
Halsey Forebay/Lake Arthur	357	3,417	I-80	Class I	38,000 (1990)	E	41,417	E	Yes
Rock Creek Lake/Auburn	198	1,895	I-80	Class I	26,500	E	28,395	E	No
Folsom Lake	4	38	I-80	Class I	---	E	---	E	No
Bundle 12: Chili Bar									
American River-Chili Bar/Slab Creek Reservoirs	4	38	SR 49	Class II	3,900	A	3,938	A	No

a 1999 Caltrans Data, unless otherwise noted

4.12.8.4 Motherlode Regional Bundle

Within the Motherlode Regional Bundle, development potential is generally low, with the exception of the Lake Tabaud/Electra Powerhouse land area in the Mokulumne River Bundle 14. Table 4.12-10 identifies the roadways impacted by the development potential scenario for each

Table 4.12-10 Development Potential Traffic Impacts for Motherlode Regional Bundle

Land Area	Potential Development (EDUs)	Project Related ADT	Primary Roadway Access	Roadway Class	Existing ADT ^a	Existing Roadway LOS	Existing Plus Project ADT	Existing Plus Project LOS	Significant Traffic Impact ?
Bundle 13: Mokelumne River									
Tiger Creek Reservoir and Facilities	11	105	SR 49	Class II	5,800	B	5,905	B	No
Electra Tunnel/West Point Powerhouse	5	48	SR 49	Class II	2,250	A	2,298	A	No
Lake Tabeaud/Electra Powerhouse	150	1,435	SR 49	Class II	15,500	D	16,935	D	Yes
Bear River Reservoir/Lower Bear River Reservoir/Salt Springs	38	364	SR 49	Class II	3,000	A	3,364	A	No
Upper and Lower Blue Lakes/Meadow Lake/Twin Lake	67	641	SR 49	Class II	2,800	A	3,441	A	No
Bundle 14: Stanislaus River									
Stanislaus River and Lyons Reservoir/Phoenix Reservoir	47	450	SR 108	Class IV	3,000	A	3,450	B	No
Bundle 15: Merced River									
Merced Falls	1	10	SR 57	Class III	410	A	420	A	No

a 1999 Caltrans Data, unless otherwise noted

Land Area. Based on the standards of significance identified in Section 4.12.5, the only Land Area where development could result in a significant increase in traffic within the Motherlode Regional Bundle is Lake Tabeaud/Electra Powerhouse. The projected development intensity at the Lake Tabeaud/Electra Powerhouse Land Area is 150 EDUs. SR 49 would continue to operate at an unacceptable LOS (LOS D). Based on the foregoing, Bundle 13 could have traffic related significant impacts. Bundles 14 and 15 would not have significant impacts.

4.12.8.5 Kings Crane-Helms Regional Bundle

The projected development intensity (Chapter 3, Approach to Environmental Analysis) concludes that substantial development could occur within the Kings Crane-Helms Regional Bundle. For this analysis, it is assumed that one EDU generates 9.57 vehicle trip ends on weekdays. Table 4.12-11 identifies the roadways impacted by the development potential scenario. As shown in that table, the development scenario for several Land Areas could result in a significant increase in traffic that would change the LOS to a higher category. Land Areas where development could result in a significant increase in traffic include Bass Lake, Bass Lake/Manzanita Lake, and Wishon Reservoir. The Bass Lake Land Area is projected to generate 104 EDUs, four EDUs over the significance criteria. However, this development intensity would not change the LOS on SR 41.

Table 4.12-11 Development Potential Traffic Impacts for Kings Crane-Helms Regional Bundle

Land Area	Potential Development (EDUs)	Project Related ADT	Primary Roadway Access	Roadway Class	Existing ADT	Existing Roadway LOS	Existing Plus Project ADT	Existing Plus Project LOS	Significant Traffic Impact ?
Bundle 16: Crane Valley Bundle									
Bass Lake	104	995	SR 41	Class II	11,100	C	12,095	C	Yes ^a
Bass Lake, Manzanita Lake	246	2,354	County Rd 222	Class III	5,556	B	7,910	B	Yes ^a
Bundle 17: Kerckhoff Bundle									
Kerckhoff Reservoir	91	871	SR 168	Class II	8,900	B	9,771	C	No
Bundle 18: Kings River									
Wishon Reservoir	150	1,436	SR 168	Class II	5,100	A	6,536	B	Yes
Bundle 19: Tule River									
Tule River	45	431	SR 190	Class II	3,750	A	4,181	A	No
Bundle 20: Kern Canyon									
Kern Canyon	30	287	SR 178	Class II	3,600	A	3,887	A	No

- a While the LOS does not change, an increase in EDUs of 100 or more along a Class II or III roadway is still considered to be significant.

The Bass Lake/Manzanita Lake Land Area is projected to generate 246 EDUs, which is nearly 150 EDUs over the significance criteria, but would not change the LOS on County Road 222. The Wishon Reservoir Land Area is projected to generate 150 EDUs, 50 EDUs over the significance criteria. This projected development intensity could change the LOS from A to B on SR 168. Based on the foregoing, Bundles 16 and 17 could have traffic related significant impacts. Bundles 17, 19, and 20 would not have significant impacts.

4.12.8.6 Evaluation of Impact 12-1 to Entire System

Project-induced vehicular trip increases resulting from future development of Project Lands could result in significant impacts to transportation facilities. It should be noted, however, that these increases in vehicular trips are expected to be localized.

4.12.8.7 Impact 12-1: Mitigation Measures

Mitigation Measures Proposed as part of the Project

None.

Mitigation Measures Identified in This Report

Mitigation Measure 12-1: Prior to the approval of development on the Land Areas of Hat Creek (Bundle 1), Pit 1, Pit 3, and Lake Britton (Bundle 2), Shingletown (Bundle 4), West Lake Almanor/Prattville, Southeast Lake Almanor, and Humbug Valley (Bundle 6), Bucks Creek/Bucks Lake (Bundle 7), Lake Pillsbury (Bundle 10), Lake Valley Reservoir, Lake Spaulding/Drum Penstock Forebay, Dutch Flat-Bear River North of Rollins Reservoir, and Halsey Forebay/Lake

Arthur (Bundle 11), Lake Tabeaud/Electra Powerhouse (Bundle 13), Bass Lake and Bass Lake/Manzanita Lake (Bundle 16), and Wishon Reservoir (Bundle 18), a traffic study shall be completed by a licensed traffic engineer to evaluate potential traffic impacts of the proposed development and to identify the methods and/or physical improvements that would reduce peak hour traffic flows on local and regional roadway segments and intersections to a less-than-significant level as determined by the local jurisdiction and Caltrans. These measures shall be implemented prior to, or in conjunction with, project development and could include, but are not limited to, the following actions:

- Compliance with established street standards, requiring new roadways to comply with such standards or existing roadways to be upgraded;
- Identification of design treatments to increase the vehicular capacity of existing intersections and/or roadway links, such as street widening, the provision of additional lanes (e.g., through or turn lanes through re-striping or street widening) or additional roadway features designed to improve speeds (e.g., provision of shoulders);
- Development of parking standards, such as the prohibition of parking on key roadways to increase capacity (where capacity could not be increased by other design solutions);
- Provision of traffic signals that are properly spaced and interconnected (i.e., properly phased) in order to maximize progression and minimize acceleration/deceleration;
- Establishment of speed restrictions that relate to the design and operational characteristics of roadways;
- Minimization or elimination of conflicting traffic movements, such as turning lanes and curb parking, as well as traffic conflicts along roadway, collector, and/or arterial streets;
- Provision of new roadways and/or intersections; and
- Encourage the implementation of Transportation Demand Management (TDM) programs to reduce traffic volumes.

In summary, these measures would be developed to ensure that all new development is served by roadways and intersections of adequate capacity and design to provide reasonable vehicular access.

Alternate Mitigation Measure 12-1: As an alternative to Mitigation Measure 12-1, above, prior to or concurrent with the transfer of title for Bundles 1, 2, 4, 6, 7, 10, 11, 13, 16, and 18, there shall be recorded against the Project Lands within the Land Areas specified in Mitigation Measure 12-1 conservation easements running with the land and (in a form and substance approved by the CPUC) precluding any further land use development of such lands.

4.12.8.8 Impact 12-1: Level of Significance After Mitigation

Implementation of Mitigation Measure 12-1 would reduce the impact to a *less than significant* level. Alternatively, implementation of Alternate Mitigation Measure 12-1 would eliminate the impact altogether.

4.12.9 IMPACT 12-2: IMPACT, ANALYSIS, AND MITIGATION MEASURES

Impact 12-2: The project could restrict vehicular access across Project Lands, resulting in the potential disruption of existing travel patterns.

A system-wide qualitative approach was used to assess traffic and circulation impacts that could result from the restriction of vehicular access opportunities across Project Lands. The possibility exists that a new owner of Pacific Gas and Electric Company's facilities could restrict access across Project Lands, potentially disrupting existing travel patterns. While disruption of access opportunities could eliminate certain trips that would otherwise occur (due to the physical inability to reach a destination point), on a system-wide basis there could also be an increase in vehicle miles traveled (VMT) resulting from trips that would not be eliminated, but would be forced to travel via an alternate, and more lengthy, route. A review of detailed topographic maps (DeLorme, 1998 and 2000) identifying central and northern California back roads with maps of Project Lands (PG&E Co., 2000f) revealed that several roads, if closed, could disrupt existing travel patterns.

4.12.9.1 Shasta Regional Bundle

Based on the significance criteria identified in Section 4.12.5, seven roads (three in Bundle 1, and one for each of Bundles 2, 3, and 4) in the Shasta Regional Bundle could potentially disrupt travel patterns if closed, which would cause significant access related impacts. See Table 4.12-12 for roads within the Shasta Regional Bundle that could disrupt travel patterns.

4.12.9.2 DeSabra Regional Bundle

Based on the significance criteria identified in Section 4.12.5, four roads (all in Bundle 5) in the DeSabra Regional Bundle could potentially disrupt travel patterns if closed, which would cause significant access related impacts. See Table 4.12-13 for roads within the DeSabra Regional Bundle that could disrupt travel patterns.

4.12.9.3 Drum Regional Bundle

Based on the significance criteria identified in Section 4.12.5, five roads (two in Bundle 10 and 3 in Bundle 11) in the Drum Regional Bundle could potentially disrupt travel patterns if closed, which would cause significant access related impacts. See Table 4.12-14 for roads within the DeSabra Regional Bundle that could disrupt travel patterns.

4.12.9.4 Motherlode Regional Bundle

Based on the significance criteria identified in Section 4.12.5, one road (in Bundle 13) in the Motherlode Regional Bundle could potentially disrupt travel patterns if closed, which would cause significant access related impacts. See Table 4.12-15 for roads within the Motherlode Regional Bundle that could disrupt travel patterns.

4.12 Transportation

Table 4.12-12 Roads That Could Disrupt Travel Patterns in the Shasta Regional Bundle

Road Location and Description	Project Land	Provides Access to	Miles on Project Lands	Additional Miles of Travel ^a	Significant Impact?
Bundle 1: Hat Creek					
Cassel Fall River Road, SE of SR 299 and SR 89 Jct.	PG&E Watershed	Pratville Road to the east and SR 299 to the NW	0.75	9	No
Access Road at the south end of McCloud Reservoir	PG&E FERC	Big Bend Road to the SE	1	1	No
Access Road at the south end of Iron Canyon Reservoir	PG&E FERC	Big Bend Road and Cove Road to the SE	0.5	11	Yes
Access Road from eastern finger of Iron Canyon Reservoir	PG&E FERC	Big Bend Road and Cove Road	0.5	5	No
Big Bend Road near Little Roaring Creek	PG&E Watershed	Cove Road and SR 299	8	>20	Yes
Cove Road near Little Roaring Creek	PG&E Watershed	SR 299	2.5	>20	Yes
Bundle 2: Pit River					
Pit River Access Road at Bush Bar to Lake Britton	FERC and Watershed Land	Big Bend Road, Lake Britton, and SR 89	8	>20	Yes
McCarther Road, two miles south of Rainbow Spring	PG&E Watershed	SR 89 to the west and 299 to the east.	0.25	3	No
Bundle 3: Kilarc-Cow Creek					
Whitmore Road East of Fern Spring	PG&E Watershed	Bateman Road to the east and SR 44 to the SW	0.5	10	Yes
Undeveloped Roads in Fluhart Basin	PG&E Watershed	From Cow Creek Road to Inwood Road	0.5	5	No
Bundle 4: North Battle Creek					
Access road east of Battle Creek Reservoir	PG&E FERC and PG&E Watershed	Provides access to SRs 89 and 44 to the east and SR 44 to the south	2.5	2	No
Grace Resort Road at Grace Lake	PG&E Watershed	Acces to Grace Lake	2.0	2	No
Manton Road near Manton School Road	PG&E FERC	SR 36 to the SW	0.25	2	No
Wildcat Road at Baldwin Creek	PG&E Watershed	Manton Road to the south, SR 44 to the north	0.25	13.0	Yes

a Additional miles of travel are approximate

4.12.9.5 Kings Crane-Helms Regional Bundle

Based on the significance criteria identified in Section 4.12.5, one road (in Bundle 18) in the DeSabra Regional Bundle could potentially disrupt travel patterns if closed, which would cause significant access related impacts. See Table 4.12-16 for roads within the Kings Crane-Helms Regional Bundle that could disrupt travel patterns.

4.12.9.6 Impact 12-2: Mitigation Measures

Mitigation Measures Proposed as Part of the Project

None.

Table 4.12-13 Roads that Could Disrupt Travel Patterns in the DeSabra Regional Bundle

Road Location and Description	Project Land	Provides Access to	Miles on Project Lands	Additional miles traveled for access ^a	Significant Impact?
Bundle 5: Hamilton Branch					
Lake Amador Road on the Southeast side of Amador Lake	PG&E Watershed	SR 36 to the north and SR 89 to the south	4	15	Yes
Prattville Butt Reservoir Road along the eastside of Butt Reservoir	PG&E FERC	SR 89 to the north and SR 70 to the south.	6	>20	Yes
Humbug Humboldt Road three Miles West of Butt Valley Reservoir	PG&E FERC	SR 70 to the south	4	>20	Yes
Butte County Road, south of Bucks Lake	PG&E FERC	SR 70 to the west and the town of Quincy to the east	1.0	16	Yes
Bundle 7: Bucks Creek					
No access related impacts					
Bundle 8: Butte Creek					
Centerville Road northwest of Paradise	PG&E FERC	SR 99 to south and Skyway to the north	0.25	0	No
Skyway, west of Paradise Lake	PG&E FERC and PG&E Watershed	Town of Paradise to the south	1.0	0	No

a Additional miles of travel are approximate

Table 4.12-14 Roads that Could Disrupt Travel Patterns in the Drum Regional Bundle

Road Location and Description	Project Lands	Provides Access to	Length on Project Lands	Additional miles traveled for access ^a	Significant Impact?
Bundle 9: North Yuba River					
No access related impacts					
Bundle 10: Potter Valley					
Elk Mountain Road, northside of Pillsbury Lake	PG&E FERC	Eel River Road to the SW and SR 20 to the south	0.5	>20	Yes
Elk Mountain Road on the north side of Eel River; Eel River Road on the south side	PG&E FERC and PG&E Watershed	Potter Valley Road to the east and Lake Pillsbury to the west	10	>20	Yes
Bundle 11: South Yuba River					
Road north of White Rock Lake	PG&E FERC	To Henness Pass Road to the north and Meadow Lake Road to the west	0.5	0	No
French Lake Road	PG&E FERC	Jackson Meadows Road to the Northeast North Bloomfield Granite Road to the west	0.5	>20	Yes
A road from Rock Lake, to Lower Rock Lake, to Lindsey Lakes	PG&E FERC	Connects to a road to the west that accesses SR 20 to the south	1.5	1	No
Road on west site of Fuller Lake	PG&E FERC	North Meadow Lake Road to the south to SR 20	0.5	>20	Yes
Road west of Spaulding Powerhouse	PG&E Watershed	North Meadow Lake Road to the south to SR 20	0.25	>20	Yes
Christian Valley Road	PG&E FERC	I-80 to the east and 49 to the west	3	<5	No
Dry Creek Road	PG&E FERC	I-80 to the east and 49 to the west	0.5	<5	No
Bundle 12: Chili Bar					
No access related impacts					

a Additional miles of travel are approximate

4.12 Transportation

Table 4.12-15 Roads that Could Disrupt Travel Patterns in the Motherlode Regional Bundle

Road Location and Description	Project Lands	Provides Access to	Length on Project Lands	Additional miles traveled for access ^a	Significant Impact?
Bundle 13: Mokelumne River					
Blue Lake Road, east of Blue Lake and Lower Blue Lake	PG&E FERC	SR 4 to the south and SR 88 to the north.	1.0	>20	Yes
A road on the north side of Mokelumne River approximately 3 miles west of Salt Springs Reservoir ² No	PG&E Watershed	Beaver Ellis Road and SR 88 to the north.	1.0	7	No
Pinegrove Road on the north side of Lake Tabeaud	PG&E FERC	Butte Mountain Road to SR 49 to the west.	0.5	2	No
Bundle 14: Stanislaus River					
Road north of Relief Reservoir	PG&E FERC	SR 108 to the north	1	4	No
Bundle 15: Merced River					
No access related impacts					

a Additional miles traveled for access are approximate.

Table 4.12-16 Roads that Could Disrupt Travel Patterns in the Kings Crane-Helms Regional Bundle

Road Location and Description	Project Lands	Provides Access to	Length on Project Lands	Length of additional miles traveled for access ^a	Significant Impact?
Bundle 16: Crane Valley Bundle					
No access related impacts					
Bundle 17: Kerckhoff Bundle					
Auberry Road, east end of Kerckhoff Lake	PG&E FERC	SR 168 to the south and SR 41 to the north	0.5	3	No
Bundle 18: Kings River					
Access Road west of Wishon Reservoir	PG&E FERC	Dinkey Creek to the west	0.5	1.5	No
Trimmer Springs Road	FERC	Access Road SE to Verplank Ridge	0.5	20	Yes
Bundle 19: Tule River					
Road travels north from Camp Wishon	FERC	South Fork Drive to the north and SR 190 to the south	0.5	3.0	No
Bundle 20: Kern Canyon					
No access related impacts					

a Additional miles traveled for access are approximate.

Mitigation Measures Identified in This Report

Mitigation Measure 12-2: Prior to or concurrent with the transfer of title for Bundles 1, 2, 3, 4, 5, 10, 11, 13, and 18, the Project Lands shall become burdened by recorded non-exclusive

easements requiring the new owner to allow access on roads across Project Lands as delineated below for the respective bundles:

Bundle 1: Hat Creek

- Access Road at the south end of McCloud Reservoir which provides access to Big Bend Road to the SE
- Big Bend Road near Little Roaring Creek which provides access to Cove Road and SR 299
- Cove Road near Little Roaring Creek which provides access to SR 299

Bundle 2: Pit River

- Pit River Access Road at Bush Bar to Lake Britton which provides access to Big Bend Road, Lake Britton, and SR 89

Bundle 3: Kilarc-Cow Creek

- Whitmore Road east of Fern Spring which provides access to Bateman Road to the east and SR 44 to the southwest

Bundle 4: North Battle Creek

- Wildcat Road at Baldwin Creek which provides access to Manton Road to the south, SR 44 to the north

Bundle 5: Hamilton Branch

- Lake Almanor Road on the southeast side of Amador Lake which provides access to SR 36 to the north and SR 89 to the south
- Prattville Butt Reservoir Road along the eastside of Butt Reservoir which provides access to SR 89 to the north and SR 70 to the south
- Humbug Humboldt Road three miles west of Butt Valley Reservoir which provides access to SR 70 to the south
- Butte County Road, south of Bucks Lake which provides access to SR 70 to the west and the town of Quincy to the east

Bundle 10: Potter Valley

- Elk Mountain Road, northside of Pillsbury Lake which provides access to Eel River Road to the southwest and SR 20 to the south
- Elk Mountain Road on the north side of Eel River; Eel River Road on the south side which provides access to Potter Valley Road to the east and Lake Pillsbury to the west.

Bundle 11: South Yuba River

- French Lake Road which provides access to Jackson Meadows Road to the Northeast North Bloomfield Granite Road to the west
- Road on the west side of Fuller Lake which provides access to North Meadow Lake Road to SR 20
- Road west of Spaulding Powerhouse which provides access to North Meadow Lake Road to SR 20

Bundle 13: Mokelumne River

- Blue Lakes Road, east of Blue Lake and Lower Blue Lake which provides access to SR 4 to the south and SR 88 to the north

Bundle 18: Kings River

- Trimmer Springs Road which provides access to access road southeast to Verplank Ridge

4.12.9.7 Impact 12-2: Level of Significance After Mitigation

Less than Significant.

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