# 5.6 Energy

## 5.6.1 Environmental Setting

### Electricity and Natural Gas

Electricity and gas services in Shasta County are provided by three primary regulated utilities:

- **Pacific Gas and Electric Company (PG&E):** PG&E provides electricity in the city of Anderson and unincorporated areas of the region. PG&E also provides natural gas service in northern and central California. All Shasta County customers have a choice of supplier for natural gas and thus may procure their gas from competing suppliers.
- **City of Shasta Lake:** The electric utility owned by the City of Shasta Lake provides services within the city limits and certain adjacent areas. The City also owns and operates two small solar installations, the largest being 10 kilowatts.
- **City of Redding:** The City of Redding owns its own utility through Redding Electric Utility, thereby allowing them to make deals with industry partners. Redding Electric Utility operates 50 percent green energy generated through hydroelectric, wind, and solar facilities. The City-owned electric utility is equipped to offer industrial rates 30 to 40 percent lower than investor-owned utilities in California, and 99.9997 percent reliability. (EDC 2018)

According to the California Energy Commission (CEC), Shasta County's electricity consumption in 2017 was 1,604 gigawatt-hours, with approximately 49 percent consumption from non-residential users. In contrast, non-residential customers used approximately 46 percent of the natural gas consumption in Shasta County (CEC 2018).

### Renewable Energy

Important renewable energy sources in Shasta County include solar, hydroelectricity, biomass, and cogeneration. Hydroelectricity is a renewable energy technology that uses flowing water to spin a turbine connected to a generator that produces electricity. Biomass contains stored energy from the sun that, when burned, releases as heat. Many different types of biomass such as wood chips and corn can be utilized to produce electricity. Cogeneration is the combination use of a heat engine or power station to generate electricity and useful heat at the same time. Shasta County also has potential for development of wind energy.

**Solar.** The sun is an abundant energy source in most of Shasta County. Solar energy is used directly for space and water heating and for industrial process heating. The high summer temperatures in the upper Sacramento Valley result in a high seasonal peak demand for electricity for space cooling and refrigeration.

**Hydroelectricity.** Existing U.S. Bureau of Reclamation electrical generation facilities at Shasta Lake, Keswick, and Whiskeytown Reservoirs provide the bulk of hydroelectricity produced in the county. PG&E produces a significant amount of hydroelectric power from the Pit River and Battle Creek watersheds. Shasta County has utilized the most efficient sites for hydroelectric projects; hence, future hydroelectric projects appear to be limited.

**Biomass.** The use of biomass for direct heating and electrical generation is important in Shasta County. Biomass primarily involves the use of wood for residential space heating and waste wood and other wood products for electrical generation.

**Cogeneration.** Several wood products firms in Anderson, Burney, and Redding utilize cogeneration. The use of cogeneration technology and processes does not allow these firms to be energy self-sufficient; however, the system can generate enough energy to supply a major portion of plant needs during peak demand periods.

### Transportation-related Energy

The majority of Shasta County relies on gasoline- and diesel-powered vehicles to transport people and goods. The low-density residential development in the South Central Region makes the development of alternative transportation modes such as public transit, bicycles, and walking much more difficult and expensive than in other parts of the state. Shasta County has documented that a combination of low-density residential development and continued reliance on gasoline-powered vehicles for transportation results in increased energy use. Thus, residential pockets of the South Central Region are continuing to develop in a low-density urban residential pattern. (Shasta County 2004)

## 5.6.2 Regulatory Setting

### Federal

**Federal Energy Regulatory Commission.** The Federal Energy Regulatory Commission (FERC) is an independent agency that regulates the transmission and sales of electricity, natural gas, and oil in interstate commerce. FERC also licenses hydroelectric projects and regulates the sale of interstate transmission.

**Federal Energy Policy and Conservation Act.** In 1975, Congress enacted the Federal Energy Policy and Conservation Act to serve the nation's energy demands and promote feasibly attainable conservation methods. This act established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the National Highway Traffic Safety Administration (NHTSA) is responsible for establishing additional vehicle standards. In 2012, new fuel economy standards were approved for model year 2017 passenger cars and light trucks at 54.5 miles per gallon. Fuel economy is determined based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the United States.

**Energy Policy Act of 2005.** The Energy Policy Act of 2005 established the first renewable fuel volume mandate in the United States. The original Renewable Fuel Standard (RFS) program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. The U.S. Environmental Protection Agency (EPA) is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel.

**Energy Independence and Security Act of 2007.** In addition to setting increased Corporate Average Fuel Economy standards for motor vehicles, the Energy Independence and Security Act of 2007 (EISA) includes other provisions related to energy efficiency, including RFS (Section 202), appliance and lighting efficiency standards (Sections 301–325) and building energy efficiency standards (Sections 411–441).

Under the EISA, the RFS program was expanded in several key ways that laid the foundation for achieving significant reductions of greenhouse gas (GHG) emissions from the use of renewable fuels, reducing imported petroleum, and encouraging the development and expansion of the United States' renewable fuels sector. The updated program is referred to as "RFS2," and it increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022, as well as expanded it to include diesel fuel. RFS2 also established new categories of

renewable fuel and set separate volume requirements for each one. Furthermore, it required the EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

**Heavy-Duty Truck and Bus Standards.** In 2011, the EPA and NHTSA announced a program to reduce GHG emissions and improve the fuel efficiency of heavy-duty trucks and buses. The program includes standards for fuel consumption and emissions for combination tractors and vocational vehicles, which include all other heavy-duty vehicles such as buses, refuse trucks, and concrete mixers; nitrous oxide and methane emissions standards applicable to all heavy-duty engines, pick-ups, and vans; and standards for leakage of hydrofluorocarbon-containing refrigerants from air conditioning systems.

**Light-Duty Vehicle Standards.** In collaboration with the NHTSA, the EPA finalized the program to reduce GHG emissions and improve fuel economy for light-duty vehicles (model years [MY] 2012 to 2016) in May 2010. The program was extended in 2012 to set more stringent standards for MY 2017 to 2025 light-duty vehicles. The revised standards are projected to reduce GHGs by approximately 2 billion metric tons and save 4 billion barrels of oil over the lifetime of MY 2017 to 2025 vehicles. Standards include fuel economy targets and improvements in vehicle technologies, including improved vehicle aerodynamics, reduced vehicle weight, lower tire rolling resistance, and expanded production of electric and hybrid vehicles.

## State

**Warren-Alquist Energy Resources Conservation and Development Act 1994 as amended.** The Warren-Alquist Act gives statutory authority to the CEC as California's principle energy policy and planning organization. The CEC regulates energy resources by encouraging and coordinating research into energy supply and demand problems to reduce the rate of growth of energy consumption.

**Assembly Bill 1493 – Pavley.** In 2002, the California legislature adopted regulations to reduce GHG emissions in the transportation sector, the state's largest source of GHG emissions. In September 2004, pursuant to Assembly Bill (AB) 1493, the California Air Resources Board (CARB) approved regulations to reduce GHG emissions from new motor vehicles beginning with the 2009 model year. In September 2009, CARB adopted amendments to the Pavley regulations to reduce GHG from 2009 to 2016. CARB, the EPA, and the NHTSA have coordinated efforts to develop fuel economy and GHG standards for model 2017–2025 vehicles.

**California Governor's Executive Order B-16-2012.** Executive Order B-16-2012 (March 2012) specifically focuses on reducing emissions from California's vehicle fleet and directs that California achieve a 2050 target for GHG emission reductions from the transportation sector equaling 80 percent less than 1990 levels. This would be accomplished by achieving benchmarks by 2020 and 2025 for advancements of zero-emission vehicle infrastructure and technology advancement.

**California Air Resources Board Heavy-Duty On-Road and Off-Road Vehicle Regulations.** In 2004, CARB adopted the Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling to reduce public exposure to diesel particulate matter emissions (Title 13 California Code of Regulations Section 2485). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given location. While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation also results in energy savings in the form of reduced fuel consumption from unnecessary idling.

In addition to limiting exhaust from idling trucks, CARB also promulgated emission standards for off-road diesel construction equipment greater than 25 horsepower such as bulldozers, loaders, backhoes, and forklifts, as well as many other self-propelled off-road diesel vehicles. The In-Use Off-Road Diesel-Fueled Fleets regulation adopted by CARB on July 26, 2007, aims to reduce emissions by encouraging installation of diesel soot filters and retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models (13 California Code of Regulations Section 2449). The compliance schedule requires full implementation by 2023 in all equipment for large and medium fleets and by 2028 for small fleets. While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation has shown an increase in energy savings in the form of reduced fuel consumption from more fuel-efficient engines.

**Senate Bill 1078, Senate Bill 107, and Executive Order S-14-08.** The State of California has adopted standards to increase the percentage that retail sellers of electricity, including investor-owned utilities and community choice aggregators, must provide from renewable sources. The standards are referred to as the RPS and require 33 percent by 2020 and 50 percent by 2040.

**Senate Bill X1 2.** On April 12, 2011, Governor Jerry Brown signed Senate Bill (SB) X1 2 in the First Extraordinary Session, which expands California's RPS by establishing a goal of 20 percent renewable energy of the total electricity sold to retail customers in California per year by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020, and in subsequent years. Under this bill, a renewable electrical generation facility is one that uses one or more of the following sources: biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements pertinent to its location. In addition to the retail sellers covered by SB 107, SB X1 2 adds local publicly owned electric utilities to the RPS. The statute also requires that the governing boards for local publicly owned electric utilities establish the same targets, and the governing boards would be responsible for ensuring compliance with these targets. The California Public Utilities Commission (CPUC) is responsible for enforcement of the RPS for retail sellers, while the CEC and CARB enforce the requirements for local publicly owned electric utilities.

**Senate Bill 1368.** On September 29, 2006, Governor Arnold Schwarzenegger signed into law SB 1368. The law limits long-term investments in base load generation by the state's utilities to power plants that meet an emissions performance standard jointly established by the CEC and the CPUC. The CEC has designed the following regulations:

- Establish a standard for base load generation owned by, or under long-term contract to, publicly owned utilities of 1,100 pounds of carbon dioxide per megawatt-hour. This will encourage the development of power plants that meet California's growing energy needs while minimizing their emissions of GHGs.
- Require posting of notices of public deliberations by publicly owned utilities on long-term investments on the CEC website. This will facilitate public awareness of utility efforts to meet customer needs for energy over the long term while meeting the state's standards for environmental impact.
- Establish a public process for determining the compliance of proposed investments with the emissions performance standard.

**Assembly Bill 32.** AB 32, also known as the California Global Warming Solutions Act of 2006, was established to mandate the quantification and reduction of GHGs to 1990 levels by the year 2020. The law establishes periodic targets for reductions and requires certain facilities to report emissions of GHGs

annually. The legislation authorizes CARB to reduce emissions from certain sectors that contribute the most to statewide emissions of GHGs.

**Assembly Bill 32 Scoping Plan.** The AB 32 Scoping Plan identifies the strategies for achieving the maximum technologically feasible and cost-effective GHG reductions by 2020, and for maintaining and continuing reductions beyond 2020. The scoping plan includes a range of GHG emission reduction actions, which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as cap and trade, and a cost of implementation fee to fund the program. The initial scoping plan was approved at the CARB hearing on December 12, 2008. CARB approved the First Update to the Scoping Plan in May 2014.

**Senate Bill 375 – Sustainable Communities Strategy.** In 2008, SB 375 was adopted to achieve the GHG reduction targets established in the Climate Change Scoping Plan for the transportation sector through local land use decisions that affect travel behavior. Pertinent to this IS/MND, SB 375 requires CARB to set regional targets for GHG emission reductions from passenger vehicles and light duty trucks.

## Local

**Shasta County General Plan.** The study area for the proposed project is located within the area covered by the Shasta County General Plan (SCGP) and, therefore, would be subject to applicable policies and measures of the SCGP. The Energy Element of the SCGP includes policies related to energy that apply to the proposed project, as described below. The Circulation Element of the SCGP includes a general provision related to energy that applies to the proposed project.

***Chapter 6.4 Energy Element***

*The SCGP Energy Element has four primary objectives: (1) promoting energy savings; (2) increasing utilization of renewable energy resources; (3) promoting energy education and information to the public; and (4) conserving nonrenewable energy resources, specifically raw materials, transportation fuels, and resource land areas.*

***Policies***

*E-f. Recycling and integrated waste management goals that are designed to promote energy efficiency shall be encouraged and promoted. .*

*E-k. Encourage and promote increased telecommunication activities for both private and public sector employees in order to help decrease energy use and reduce air quality impacts.*

***Chapter 7.4 Circulation Element***

***General Provision***

*The use of the circulation system is dominated by motor vehicles that consume fossil fuels. The direct costs of relying on automobiles are still relatively inexpensive. The low-density land uses limit options to the automobile rather than other transportation modes.*

## Regional Transportation Plan and Sustainable Communities Strategy

In October 2018, the Shasta Regional Transportation Agency adopted the most recent Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), as required by SB 375. The RTP/SCS strives to reduce air emissions from passenger vehicle and light-duty truck travel by better coordinating transportation expenditures with forecasted development patterns and, if feasible, help meet CARB GHG targets for the region. In particular, the 2018 RTP/SCS has identified the following measures (at minimum) that could be implemented to reduce short-term emissions during construction of future transportation improvement and land use pattern projects (although the proposed project is not a

transportation or land use project, it would involve similar construction activities, vehicles, and equipment):

- Use of diesel construction equipment that meets CARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and complies with the State Off-Road Regulation;
- Use of on-road heavy-duty trucks that meet CARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation;
- Use of alternatively fueled construction equipment on site where feasible, such as compressed natural gas, liquefied natural gas, propane, or biodiesel, in place of diesel-powered equipment for 15 percent of the fleet; and
- Use of materials sourced from local suppliers. (SRTA 2018)

## 5.6.3 Environmental Impacts and Mitigation Measures

This section describes the methodology used in conducting the California Environmental Quality Act (CEQA) impact analysis for energy resources for the proposed project; the thresholds of significance used in assessing impacts on energy resources; and the assessment of impacts on energy resources, including relevant mitigation measures.

### Methodology

This analysis assesses the incremental energy consumption due to construction and operation and maintenance of 15.3 miles of shielded fiber-optic telecommunications cable. Construction activities related to the proposed project would consume energy through the operation of off-road equipment, trucks, and worker vehicles. Maintenance activities would consume energy though the use of light-duty vehicles for routine maintenance inspections. Both the construction and maintenance/operations phases were considered; however, because the construction phase could result in physical changes to the environment, analysis of construction phase effects warranted a more detailed evaluation. Energy consumption anticipated to occur from operation of the proposed project would be negligible, primarily resulting from occasional truck trips for maintenance, connecting or disconnecting customers, and inspecting or potentially repairing equipment. Fuel use from these vehicle trips would represent an insignificant portion of daily mobile source consumption in Shasta County.

Energy consumption from the proposed project was estimated using commonly accepted techniques. Construction equipment fuel consumption calculations were based on the equipment lists generated by the applicant using the California Emissions Estimator Model (CalEEMod) default values and input from the project applicant (horsepower, usage hours, and load factors). Information about fuel consumption rates from construction equipment was obtained from the OFFROAD 2017 statewide database.

Fuel consumption from vehicle trips was estimated based on the number and class of vehicles and approximate vehicle miles traveled used by the applicant in the CalEEMod estimates, assuming distances from workers and vendor locations. The fuel consumption data were estimated by multiplying the proposed project's estimated vehicle miles traveled by fuel consumption factors available in the EMFAC2017 statewide database.

**Assumptions**

- The proposed buried conduits would be installed by plowing, trenching, and directional boring. The nodes (buried vaults) would be installed using a backhoe.
- Progress rates are 2 miles per day for plowing and trenching, 800 feet per day for boring (two crews working), and two nodes per day for the node installations.
- Approximately 90 percent of the plowed/trenched installations would be installed by plowing and the remaining 10 percent by trenching.
- Plowed conduit would be installed by a dozer equipped with a plow and cable reel. A second dozer may be used in tandem with the plow dozer in difficult areas.
- Trenched conduit would be installed using a backhoe or compact excavator.
- Bored conduit would be installed using a horizontal drilling rig with the assistance of a backhoe. An air compressor would be used for conduit pigging and blowing fiber through the conduit. A mud pump would be used for evacuating drilling fluid, and a backhoe would be used for digging bore pits.
- Vendor trips would include conduit, cable, and node delivery and water truck visits for dust control.
- Workers would be based in Anderson and vendors in Redding.
- Conduit and cable would be delivered at a rate of two miles per day for plowed installations and one mile per day for bored installations (two bore crews).
- Node vaults would be delivered in daily trips carrying both vaults to be installed. The water truck would apply water twice daily for all construction phases.
- All roads in the project area are paved.

## Project Energy Consumption

Table 5.6-1 shows the total projected fuel consumption during the anticipated 60- to 120-day construction period. Fuel (gasoline and diesel) from the use of construction equipment and light- and heavy-duty vehicles would be the primary source of energy construction from the proposed project. Appendix C provides detailed tables and parameters used in the fuel consumption estimates. The projected future maintenance activities would be negligible compared to the construction estimates presented in Table 5.6-1, primarily gasoline consumption from light-duty vehicles used for routine maintenance.

Table 5.6-1 Fuel Consumption from Project Construction

| Construction Phase Name | Consumption by fuel type (gallons) | | Percentage from Off-road Equipment Use |
|---|---|---|---|
| | Gasoline | Diesel | |
| Plowed/trenched conduit installation | 202 | 15 | 98% |
| Bored conduit installation | 8398 | 226 | 96% |
| Node installation | 45 | 12 | 90% |
| Total Fuel Consumption | 8,645 | 252 | 98% |

## Significance Criteria

Table 5.6-2 describes the significance criteria from Appendix G of the CEQA Guidelines' energy checklist, which the CPUC used to evaluate the environmental impacts of the proposed project.

Table 5.6-2 Energy Checklist

| Would the project result in: | Potentially Significant Impact | Less Than Significant with Mitigation Incorporation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? | ☐ | ☐ | ☒ | ☐ |
| b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? | ☐ | ☐ | ☒ | ☐ |

***a. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?***

As shown in Table 5.6-1, use of off-road construction equipment during construction of the proposed project would be the major contributor to energy consumption. Adding worker and vendor vehicle use during the 60- to 120-day construction period, the proposed project would consume up to 8,645 gallons of gasoline and 252 gallons of diesel. As the fuel consumption factors used for these estimates have been reported in the statewide databases, the values shown in Table 5.6-1 already assume the implementation of various federal and state fuel efficiency regulations, including the Low Carbon Fuel Standard, Pavley Clean Car Standards, and the Low Emission Vehicle Program.

Additionally, the proposed project would be required to implement standard mitigation measures as determined by the Shasta County Planning Division. Therefore, the proposed project would avoid the wasteful and inefficient use of fuel, and impacts would be less than significant.

**Significance: Less than significant.**

***b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?***

The proposed project would not conflict or obstruct current state or local plans for renewable energy or energy efficiency as described in Section 5.6.2. As shown in Table 5.6-1, the proposed project would involve fuel consumption from short-term construction activities. Additional minimal amounts of fuel would be used for routine maintenance during project operations. Moreover, the proposed project aims to improve telecommunications in Shasta County, which would be consistent with Policy E-k of the SCGP. As a result, the proposed project would not conflict with the policies described in Chapters 6.4 and 7.4 of the SCGP. Additionally, the proposed project would not conflict with the existing RTP/SCS approved for Shasta County.

As such, the proposed project would not conflict with or obstruct the implementation of state or local plans for renewable energy or energy efficiency. Therefore, impacts would be less than significant.

**Significance: Less than significant.**