3.17 Energy Consumption and Conservation

This section provides background information and contains an analysis of the impacts that the General Plan Update (GPU or Plan) may have on the consumption of energy, including but not limited to the measures proposed to minimize the environmental effects of the consumption of energy that is wasteful, inefficient, and unnecessary. Energy consumption as an environmental impact is to some extent evaluated and discussed in other sections of the RDEIR, including sections 3.1 Land Use, Housing and Population; 3.3 Utilities and Services; 3.5 Transportation; and 3.13 Greenhouse Gas Emissions. This section is intended to provide an overall perspective on energy consumption to address the requirement in CEQA, Government Code section 21100 (b)(3) that an EIR include mitigation measures that are proposed to reduce the wasteful, inefficient, and unnecessary consumption of energy, and an analysis of the potentially significant energy implications appropriate and relevant to a programmatic EIR for a General Plan Update, as outlined in CEQA Guidelines, Appendix F. At this first tier programmatic level of analysis, it will necessarily be more general than the analysis that would be required for a specific development project.

3.17.1 Energy Consumption and Conservation - Environmental Setting

Energy Resources

Climate and Energy Demand. Humboldt County is a region with moderate temperatures and considerable precipitation. Average temperatures along the coast vary only about 10 degrees from summer (58°F) to winter (48°F), although a greater range is found over inland areas. Maximum temperatures on the coast typically do not exceed 80°F, while inland areas may reach 100°F or greater. Temperatures of 32 degrees or lower are experienced nearly every winter throughout the area, and colder temperatures are common in the interior. Because of its moderate summer temperatures, Humboldt County's electricity demand peaks in the winter, rather than the summer when the peak is reached in most of California.

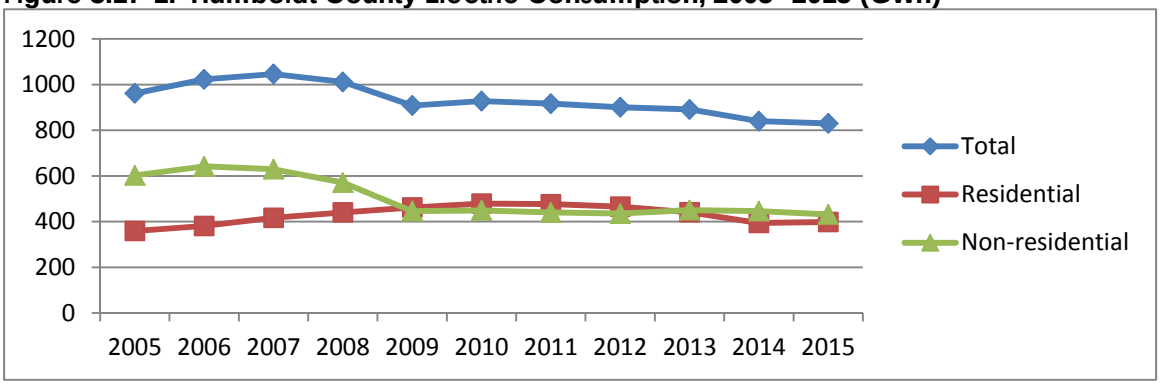
Energy Production and Use. Humboldt County is geographically isolated and is almost an energy island. The majority of petroleum-based transportation fuels are imported to the county by barge. There is only one pipeline connecting the county to the larger natural gas grid, and only two major connections to the larger electric grid. The electric transmission capacity (approximately 60-70 MW) that connects Humboldt County to the regional grid is less than half of the County's 170 MW peak electrical demand. For this reason Humboldt County generates much of its own electricity, mostly using natural gas and biomass fuels. (RePower Humboldt a Strategic Plan for Renewable Energy Security and Prosperity, Schatz Energy Research Center for the Redwood Coast Energy Authority, Page 11-Humboldt Energy Background)

According to the Humboldt County Energy Element Background Technical Report, the residential, commercial, industrial and agricultural sectors consumed 940 Gigawatt-hours (GWh) in 2003, and total peak electrical demand was 158 Megawatts (MW). This comprised approximately 0.3% of the State total (note that Humboldt County's population accounted for 0.4% of the State total). Electricity use was divided almost

evenly between the residential, commercial and industrial sectors, with a remaining 2% consumed in the agricultural sector. Electricity use per capita for Humboldt County and the State of California as a whole were both in the range of 7000 to 7500 kWh per year.

The following figures show electrical and natural gas energy use by sector between 2005 and 2015 (data from the California Energy Commission). Total residential electrical consumption ranged from a low of approximately 360 GWh in 2005 to approximately 400 GWh in 2015, peaking at almost 480 GWh in 2010. While population in the County has increased at an average annual rate of 0.27 percent, residential electrical energy consumption increased at an average annual rate of 0.77 percent. Humboldt County's per capita residential energy consumption increased at a higher rate than the rest of California during this period, due at least in part to the "suspected connection between indoor (marijuana) cultivation and a rise in residential per capita electricity consumption" (Energy Consumption and Environmental Impacts Associated with Cannabis Cultivation, Jessica M. Arnold, May 2013, Humboldt State University, Master's Thesis http://humboldt-dspace.calstate.edu/bitstream/handle/2148/1461/Arnold_Jessica_M_Sp2013-r.pdf?sequence=4).

Figure 3.17-1. Humboldt County Electric Consumption, 2005- 2015 (GWh)



Source: California Energy Commission, 2017

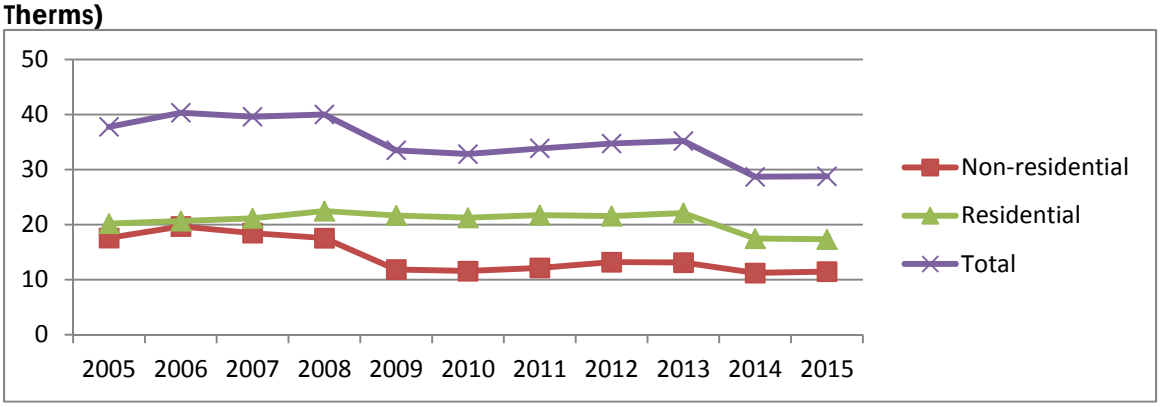
On September 13, 2016, Humboldt County adopted the Commercial Medical Marijuana Land Use Ordinance (CMMLUO), which regulates the cultivation of marijuana for medical purposes consistent with State law. These regulations specify that indoor cultivation shall only be permitted within commercial and industrial zoned property. In addition, CMMLUO regulations specify that electric power for indoor cultivation shall only be provided by renewable power or with the purchase of carbon offsets for any portion of power provided by non-renewable sources. These regulations alone do not ensure energy conservation or efficiency, but limit the likelihood that residential per capita electricity consumption will continue to rise due to indoor marijuana cultivation.

Between 2005 and 2015, non-residential electrical consumption dropped from approximately 600 GWh in 2006 to roughly 430 GWh in 2015, an average annual decrease of -3.54 percent. According to California Forestry Association (Calforests), a statewide trade association, nine lumber mills in Humboldt County were closed or consolidated between 2000 and 2012. In addition, the Samoa Pulp Mill permanently closed in 2010 and the California Redwood Company Korbel Sawmill closed in 2015, which, when combined with the other mill closures during this period, could account for the significant decrease in non-residential electric consumption.

For natural gas, the total amount consumed was estimated at 93.9 million therms, which makes up approximately 0.34% of the State total. Almost half that amount was burned to generate electricity, and the remainder was used primarily in the residential (22%), industrial (18%) and commercial (10%) sectors. The peak demand for natural gas occurs in the winter months. Lighting and refrigeration accounted for the majority of electricity consumption, whereas space heating and water heating account for the majority of natural gas consumption. Electricity use in the industrial sector is primarily in saw mills (2003), with a small amount used in food and kindred products and durable and non-durable goods industries. Similarly, natural gas use in the industrial sector is almost entirely associated with saw mills (for drying wood), with the remainder being used in the food and kindred products and non-durable goods industries.

Residential natural gas consumption exceeds non-residential in Humboldt County. While non-residential natural gas consumption declined after a peak in 2006, residential consumption peaked in in 2008 and remained generally stable until 2013 and then declined thereafter. It should be noted that natural gas is not available outside of the greater Humboldt Bay area (south to Scotia).

Figure 3.17-2. Humboldt County Natural Gas Consumption, 2005 - 2015 (Millions of Therms)



Source: California Energy Commission, 2017

While the majority of electricity (73%) is generated within the County, a large portion of this locally generated electricity is generated using natural gas (the new PG&E Humboldt Bay Generating Station that began operation in September- 2010), and the natural gas is primarily imported (89%). The generating station provides 163 MW of total output, which can serve approximately 120,000 homes. The rest of locally generated electricity is primarily produced from biomass (Pacific Lumber and Fairhaven Power), with the remainder coming from local hydroelectric facilities and a very small amount from distributed rooftop solar electric and wind energy systems.

In 2003, diesel/gasoline for transportation comprised 49% of the energy used in the County. Gasoline and diesel consumption in Humboldt County in 2003 was about 71 million gallons. Between 1997 and 2003, gasoline consumption rose at 1.5% per year, according to the Humboldt County Energy Element Background Technical Report. The use of transportation fuels is closely linked to the number of vehicle miles traveled (VMT). Because it is rural, Humboldt County has a higher average VMT than many more densely populated areas.

The *Humboldt County General Plan 2025 Draft Energy Element* prepared by the Redwood Coast Energy Authority in 2005 for consideration in the update of the

Humboldt County General Plan presents the following energy consumption data for Humboldt County:

Table 3.17-1. Consumption of Local Versus Imported Energy Sources.

Energy Resource	% imported	% local
Gasoline	100%	0%
Diesel	100%	0%
Natural gas	89%	11%
Electricity	27%	73%
Biomass	0%	100%
Propane	100%	0%

Source: Humboldt County General Plan 2025 Draft Energy Element Technical Report, Table 4, Consumption of Local versus Imported Energy Sources.

Energy Development Potential. Table 3.17-2 below shows the potential to develop and enhance energy resources in Humboldt County varies by resource. For example, there are many potential opportunities to capture solar energy in the County. However, while

Table 3.17-2. Potential Local Energy Resources for Humboldt County.

Resource	Potential	Technology Status	Geographic Location	Comments
Wind Electricity	Large 400 MW, 1000 GWh/yr	Mature	Cape Mendocino, other	Good resource, need transmission access, few viable sites
Wave Electricity	Large 500-1000 MW, 2500-5000 GWh/yr	Early Development	Coastline	Good resource, technology too new to assess
Biomass Electricity	Medium ≥60 MW, 300-400 GWh/yr	Mature	Variable	Already developed, may be opportunity for growth
Natural Gas	Medium >1 million MCF/yr	Mature	Eel River Basin	Existing, further development underway, non–renewable
Hydroelectricity	Medium 20-40 MW, 80-160 GWh/yr	Mature	Rivers	Existing, more potential but environmental barriers including high costs, regulatory hurdles, lack of financing, siting and transmission access issues , and lack of public support
Solar Electricity	Medium 10-30 MW, 10-30 GWh/yr	Mature	Dispersed	Many small systems
Solar Water Heating	Medium	Mature	Dispersed	Many small systems
Solar Space Heating	Small	Mature	Dispersed	Hard to retrofit
Biogas Fuels	Small	Mature	WW Treatment Landfill, Dairies	Existing, opportunity for growth
Biodiesel Fuel	Small 40,000-80,000 gal/yr	Mature	Variable	Existing, opportunity for growth

Source: Redwood Coast Energy Authority, Table 5, Potential Local Energy Resources for Humboldt County, 2005.

there are several producing natural gas wells currently in operation, such as in the Tompkins Hill and Grizzly Bluff areas; further development is limited by the availability of gas resources. The background reports for the General Plan Update assessed the potential of developing Humboldt County's local energy resources.

Biomass. Biomass energy generally refers to the combustion of plant and plant-derived material for heat and power generation. Biomass fuel from forest and mill residues can be associated with wood waste from mill operations, as well as forest slash left over from timber harvest operations and other forest residue fuel reduction programs aimed at minimizing forest fire hazards. Timberlands located throughout the county are the primary source of biomass fuels.

Biomass energy has been used in Humboldt County for many years. The Pacific Lumber Company in Scotia has produced steam and electricity for the mill and the town since 1931. In the early 1980's there were three mills (LP Samoa, PALCO, Simpson Paper Co.) generating electrical power from wood waste in Humboldt County. Their total capacity was approximately 75 MW. Much of the power was consumed on site, with the remainder supplied to the town of Scotia or sold to PG&E. The Ultrapower facility in Blue Lake is the newest facility in the County and was originally brought online in 1985.

Today there are two operating wood waste fired plants in Humboldt County, the combined heat and power plant in Scotia and the Fairhaven plant, with a total electrical capacity of 48 MW. The Blue Lake Power facility (13.8 MW), formerly Ultrapower, suspended operation in 1999, and was in the process being brought back on-line; however, these efforts were suspended in 2011. The two operating plants provided approximately 30% of Humboldt County's total electricity needs (including their on-site loads), or about 13% of the rest of the county's needs (excluding their on-site loads) in 2003.

Natural Gas. Natural gas deposits represent a significant underdeveloped energy resource in Humboldt County. Natural gas deposits also exist offshore but have not been developed locally to date. Active gas wells in Humboldt County are concentrated in the Tompkins Hills Gas Field of the Lower Eel River planning watershed. As of 2008, there were 39 gas wells in the County, 31 of which are currently producing and eight are considered shut in, meaning they cannot produce gas at their current depths and are sealed off in order to maintain the pressure on remaining deposits. In 2000, net gas production was 1,337,796 million cubic feet (mcf); this represents a 31 percent decrease in gas production since 1992, when net production was 1,927,787 mcf. Also in 1992, 34 gas wells were in production and five were shut in.

Wind. Since the publication of the California Wind Atlas by the California Department of Water Resources in 1985, portions of Humboldt County have been rated as having "excellent" or "good" wind energy generation potential. All of the areas rated as "excellent" with mean annual wind speeds above 14 mph are near Cape Mendocino in the Cape Mendocino Planning Watershed. Additional areas rated as "good" with mean annual wind speeds from 10 to 14 mph include more areas near Cape Mendocino, an area northeast of Loleta in the Lower Eel River Planning Watershed, Patrick's Point and Big Lagoon in the Trinidad Planning Watershed, Schoolhouse Peak in the Redwood Creek and Lower Klamath Planning Watersheds, and an area in the Trinity Alps in the Lower Trinity Planning Watershed. A wind resource assessment for Northwestern California presented in the California Wind Atlas focuses on Bear River Ridge (Cape Mendocino Planning Watershed) and estimates a potential wind power generation capacity of 425

MW for the 60 miles of ridgeline with 14-16 mph average annual wind speed. There are several small scale wind turbines in use in Humboldt County, including three turbines located at dairies in the Lower Eel River Valley and a turbine at the Bear River Rancheria.

Hydroelectric. Hydroelectric power systems convert the energy in flowing water into electrical energy by spinning a turbine. Federal law and the State of California define "small hydroelectric" as having a capacity of 30 MW or less, which the State of California further defines as a renewable energy source. Small hydroelectric systems typically use small dams or employ run-of-the river techniques where only a portion of the river flow is diverted so that fish passage is not blocked.

There are currently six small hydroelectric facilities that serve Humboldt County. These facilities have a combined rated capacity of 11.5 MW. All but one of these systems is run-of-the-river type. The Mathews Dam facility at Ruth Lake, located in Trinity County and operated by the Humboldt Bay Municipal Water District (HBMWD), does not employ run-of-the-river techniques. Similarly, the Kekawaka Creek project is just over the county line in Trinity County; however, PG&E lists the Kekawaka unit as serving the Humboldt area. There are also many, (likely 100 or more), micro-hydroelectric systems in Humboldt County that serve off-grid homes. The total capacity of these systems is unknown, but it is likely rather small (i.e. less than a few hundred kW cumulative capacity).

Solar. Solar electric, or photovoltaic (PV), systems convert sunlight directly into electricity. Grid-connected systems are comprised of PV modules, often roof mounted, and an inverter that converts DC electricity to AC electricity. No batteries are required. Instead, these systems effectively use the electrical grid for energy storage. When excess power is produced, it is fed out to the larger electrical grid and consumed by a neighboring customer. When the PV power production is less than what is required onsite (e.g., at night) electrical power is drawn from the grid to meet the onsite loads.

California is one of the leading states in the U.S. in PV installations. Since 1998, the California Energy Commission has offered installers of small (< 30kW) PV systems a substantial rebate that has covered as much as half of the installed system cost. The interest in PV in Humboldt County has been even greater than for the state as a whole. Between 1998 and 2010, the residents of Humboldt County have installed over twice as many grid-connected solar electric systems, per capita, compared to the State of California as a whole. The total grid-connected capacity in 2010 was 1.44 MW from 428 systems (Humboldt County as a Renewable Energy Secure Community, Resource and Technology Assessment, Final Draft, March 2013, Schatz Energy Research Center). Humboldt County also features a strong solar installer/supplier network, one that has been developed over the last 25 years.

Humboldt County also has a significant number of off-grid solar electric systems, many of them in the southern part of the county. In the mid-1980's one of the largest distributors of off-grid PV systems was Alternative Energy Engineering in Redway, and most of the systems they sold were installed in Humboldt County. It is estimated that well over 1,000 off-grid PV systems are installed in the county, representing perhaps 1.0 MW or more of capacity (Humboldt County Energy Element Background Technical Report, 2005).

Wave Energy. Wave Energy Conversion (WEC) devices capture energy in ocean waves and convert it to electrical power. Because this technology is still in the early stages of development, its potential is uncertain. The primary wave energy resource sites for Humboldt County coastline were estimated to have a total theoretical potential

capacity of 3,910 MW. Primary sites for the southern Humboldt and northern Mendocino coastlines (an 81 mile stretch) were estimated to have a total theoretical potential capacity of 3,709 MW, approximately half of which falls within Humboldt County's coastline.

In 2009, PG&E proposed an ocean wave energy pilot study to be conducted off the coast of Humboldt County, the Humboldt WaveConnect™ Pilot Project. This study was intended to give WEC manufacturers the opportunity to test their devices on a common site and facilitate the development of wave energy technology. The wave energy was to be captured by the WECs and transferred through a sub-sea power cable to land, where the energy would be fed to the electrical grid. In 2011, PG&E suspended permitting efforts on the Humboldt WaveConnect™ Project, stating that the decision was made after several major challenges caused the project to be unviable at its proposed configuration and location.

Other Energy Resources. The first production oil well drilled in California was located in Humboldt County in 1861 (Oil and Gas Production History in California, State of California Department of Conservation, 2003). This well was unsuccessful, like numerous other Humboldt County wells drilled between 1861 and 1864. Humboldt County contains three inactive oil wells and has not produced oil in the past decade or more. There is no record of geothermal production in Humboldt County.

Electric and Natural Gas Transmission and Distribution

Electricity. According to Humboldt County as a Renewable Energy Secure Community - Resource and Technology Assessment Report, Schatz Energy Research Center August 2012 (CEC-500-2013-005), the Humboldt area electrical grid covers about 3,000 square miles and is connected to the bulk PG&E transmission system by four transmission circuits, each ranging from 31 to 115 miles in length. Electricity imports are primarily transmitted through two 115kV circuits originate near the community of Cottonwood in the Central Valley and follow a route roughly parallel to Highway 36 and Highway 299 to the Humboldt County coast. Lower capacity circuits include a 60 kV circuit coming from the south between the Bridgeville and Garberville areas (roughly parallel to Highway 101) and a second 60 kV line coming from Trinity County to the east that connects to the 115 kV lines. The total electrical transmission capacity into Humboldt County through the existing lines is 60 to 70 MW, less than half of the county's current peak demand. Therefore, local electrical generators are critical to meeting local electricity needs.

According to the Community Infrastructure and Services Technical Report, electric service for most of the unincorporated area is provided by PG&E. PG&E is an investor owned utility regulated by the California Public Utilities Commission (CPUC). The CPUC establishes rules for operation, customer rates, and PG&E's rate of return. The PG&E electric distribution system serving the County is largely in place, and PG&E is obligated to provide service to users within its service area. New service requests, or requests for additional service, are generally governed by CPUC approved Rule 15 (Distribution Line Extensions) and Rule 16 (Service Extensions). Among other things, the line extension rules specify the allocation of construction cost between PG&E and the customer.

In the Shelter Cove area electricity is provided by Resort Improvement District No. 1, which is the entity that establishes rates and provides electric service to multiple privately owned properties. Unlike PG&E, Resort Improvement District No. 1 is a government entity and is not subject to regulation by the CPUC. The Resort Improvement District No. 1 is

regulated by the locally elected district Board of Directors and establishes rates, charges, and standards for service. PG&E transmission facilities extend to a substation in Shelter Cove. Resort Improvement District No. 1 operates and maintains the substation as well as its own distribution facilities that serve the residents of the district. Resort Improvement District No. 1 also maintains three 500 kW diesel generators that provide backup service within the district when there are problems with PG&E service.

Natural Gas. According to Humboldt County as a Renewable Energy Secure Community - Resource and Technology Assessment Report, Humboldt County is remotely located at the end of the electrical and natural gas supply grids. PG&E owns the natural gas and electricity transmission and distribution systems in Humboldt County. There is one major natural gas supply line that comes from a compressor station in Gerber in the Central Valley and follows a route roughly parallel to Highway 36. This pipe is between two and 12 inches in diameter and according to PG&E is capable of transporting enough natural gas to meet current local needs. There are no gas storage fields in the local area, though there are some native gas fields in the Eel River Valley. It is estimated that approximately 65 to 70 percent of households in Humboldt County have access to the natural gas grid

Natural gas service provided by PG&E is regulated in a manner similar to electric service. Natural gas is generally available to residents of the broader Humboldt Bay area communities and as far south as Scotia. As with electricity, PG&E is obligated to provide service to users proximate to its natural gas facilities. New service requests or requests for additional service are generally governed by Rule 15 (Gas Main Extensions) and Rule 16 (Gas Service Extensions). Where natural gas is not available, residents can purchase propane for cooking and heating, from a variety of suppliers.

3.17.2 Energy Consumption and Conservation - Regulatory Setting

Federal Laws and Programs for Energy Consumption and Conservation

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, licensing of hydroelectric projects, and oversight of related environmental matters. The setting and enforcing of interstate transmission sales is also regulated by FERC.

Fuel Economy Standards. The national program for greenhouse gas emissions (GHG) and fuel economy standards for light-duty vehicles (passenger cars and trucks) was developed jointly by U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA). The standards were established in two phases: Phase 1 - Model years 2012 - 2016; and Phase 2 - Model years 2017 - 2025. Together the final standards are projected to: result in reductions of 6 billion metric tons of GHG over the lifetimes of the vehicles sold in model years 2012-2025; achieve an average industry fleetwide fuel consumption of 54.5 miles per gallon (mpg) by model year 2025, save families more than $1.7 trillion in fuel costs; and reduce America's dependence on oil by more than 2 million barrels per day in 2025 (https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-greenhouse-gas-emissions-passenger-cars-and#annual).

State Laws and Programs for Energy Consumption and Conservation

Greenhouse Gas Emissions. The State of California established legal framework for GHG emission reductions has come about through Executive Orders, legislation, regulations, and court decisions. The State's GHG emissions reductions standards are heavily reliant upon "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is on commercial personal transportation in the state" (Assembly Bill 1493, January 1, 2005), which would clearly also have the benefit of reducing fuel consumption. Section 3.13 Greenhouse Gas Emissions, contains a detailed discussion of State regulations relating to greenhouse gas emissions that would also improve energy efficiency and reduce energy consumption, including: Lighting Efficiency and Toxics Reduction Act; and various fuel efficiency standards.

California Senate Bill 1037 and Assembly Bill 2021. In 2003 (and updated in 2005 and 2008), the CPUC and the California Energy Commission (CEC) adopted an Energy Action Plan that prioritized resources for meeting California's future energy needs, with energy efficiency identified as the highest priority. Since then, this policy has been codified as SB 1037 and AB 2021 into statute through legislation that requires electric utilities to meet their resource needs first with energy efficiency. This policy also set new targets for statewide annual energy demand reductions of 32,000 GWh and 800 million therms from business-as-usual—enough to power more than 5 million homes or replace the need to build about ten new large power plants (500 MW each).

Building Energy Efficiency Standards. Title 24, Part 6, of the California Code of Regulations (CCR), was established in 1978 in response to a legislative mandate to reduce California's energy consumption. Also known as the Title 24 of the Building Code, these regulations apply to energy consumed for heating, cooling, ventilation, water heating and lighting in new residential and non-residential buildings. The CEC updates these standards periodically, with the most recent update in 2013. The next update is slated for December 2016.

2010 California Green Building Standards Code. The Green Building Standards Code includes the following provisions that would reduce waste and energy consumption and increase the efficiency of building, including: 20 percent mandatory reduction in indoor water use; mandatory periodic inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies. The intent of this code to achieve more than a 15 percent reduction in energy use when compared to existing standards, to reduce indoor potable water demand by 20 percent, to reduce landscape water usage by 50 percent, and to reduce construction waste by 50 percent. It should be noted that public water and wastewater pumping and treatment systems involve significant electrical service demand, so that water conservation can also contribute to electrical energy conservation.

Local Laws and Programs for Energy Consumption and Conservation

Humboldt County General Plan. The Humboldt County Housing Element contains Implementation Measure H-IM18, Encourage Energy and Water Conservation, which directs the County to support changes to the County's tax code (likely to Division 5, Assessment of Property, of Title VII - Finance, Revenue and Taxation, of the County Code) to encourage new alternative energy systems, such as solar, wind and hydroelectric energy systems, among other water related items. This measure is intended to limit increases to a property's assessed value for property tax purposes when any of the above improvements are made and is to be fully implemented by April 30, 2018.

Redwood Coast Energy Authority (RCEA). In 2003, the Redwood Coast Energy Authority (RCEA) was formed as a joint powers authority (JPA), representing seven municipalities (the cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Trinidad, and Rio Dell) and Humboldt County. As a JPA, RCEA is governed by a board composed of a representative from each jurisdiction. RCEA's mission statement is to develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient, and renewable resources available in the region.

The RCEA adopted the Comprehensive Energy Action Plan (CAPE) in September 2012, which is intended to foster, coordinate, and facilitate countywide strategic energy planning, implementation, and education. The CAPE does not directly regulate land use or energy use; instead it contains energy efficiency and conservation strategies and programs that could be implemented by RCEA, its member agencies, and others. The CAPES's broad strategies that are intended to achieve the above objectives include: coordinated strategic energy planning within Humboldt County; energy reliability and security programs; support for the development of emerging energy technologies; support for energy efficiency and renewable energy retrofits in existing buildings. A proposed revision to the CAPE is currently under development by RCEA.

The following is a list of non-regulatory support programs administered by RCEA relating to energy efficiency for homes, businesses, and other facilities that are intended to help reduce energy cost and consumption for existing and new development.

- **Community Choice Energy program**, (also known as Community Choice Aggregation) where the Redwood Coast Energy Authority is the default electricity provider for Humboldt County and provides an alternative means of procuring electricity by offering electricity consumers a choice in their service, with the option to purchase cleaner electricity at competitive prices (http://cce.redwoodenergy.org/).
- **Property Assessed Clean Energy (PACE),** funding program includes unincorporated area properties in the California Statewide Communities Development Authority (CSCDA) Open PACE programs that provide 100 percent upfront financing to residential and commercial property owners for a wide range of eligible property improvements, such as renewable energy, energy efficiency, water efficiency, electrical vehicle charging, and other such improvements, with flexible repayment terms ranging from five to twenty years. The improvements are financed by the issuance of bonds that are secured by a voluntary assessment on the property. Repayment is made in annual installments through a county property tax bill.(http://www.cscda.org/getdoc/205a5831-

d67d-40e8-b726-086edfae2358/Open-PACE-Property-Assessed-Clean-Energy-Program).

- **Redwood Coast Energy Watch (RCEW)**, in partnership with PG&E, provides a wide set of in-house no/low cost resources based services to drive energy efficiency investment in the residential, commercial and public sectors (https://www.pge.com/en_US/residential/save-energy-money/savings-programs/home-upgrade/home-upgrade.page), and non-resource based support that are referred to as Strategic Energy Resource (SER) activities. Activities are either considered in alignment with the CPUC's Strategic Plan Menu Items or innovative pilots (http://eecoordinator.info/wp-content/uploads/2012/08/JBattis-LG-SP-Update-9-2014-9_23_2014.pdf, http://eecoordinator.info/2011-ee-strategic-plan-updates/)
- **Grid Alternatives**, a non-profit organization that provides local job training and solar at no-cost for families with limited or fixed incomes (http://www.gridsolar.org/)
- **USDA Rural Energy Assistance Program (REAP) Renewable Energy Systems and Energy Efficiency Improvement Loans and Grants**, provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses for renewable energy systems or to make energy efficiency improvements (https://www.rd.usda.gov/programs-services/rural-energy-america-program-renewable-energy-systems-energy-efficiency)
- **Low-Income Programs**, income qualified services through the Redwood Community Action Agency (http://rcaa.org/division/energy-services) including: Weatherization Assistance Program; Energy Assistance Program; Energy Education, and PG&E's Energy Saving Assistance Program, which accesses federal dollars and PG&E accesses ratepayer dollars under the auspices of the CPUC (https://www.pge.com/en_US/residential/save-energy-money/help-paying-your-bill/energy-reduction-and-weatherization/energy-savings-assistance-program/energy-savings-assistance-program.page)
- **PG&E Programs**:
    - **PG&E 3rd Party Programs**, several distinct programs that assist our customers' efforts towards saving energy (https://www.pge.com/en_US/business/save-energy-money/contractors-and-programs/find-partner-programs/find-partner-programs.page)
    - **PG&E Core Rebates,** Any ratepayer can access PG&E's core rebates to offset the incremental cost of an eligible energy efficiency measure (https://www.pge.com/en_US/business/save-energy-money/business-solutions-and-rebates/product-rebates/product-rebates.page)
    - **PG&E Customized Retrofit Incentives,** a program for non-residential customers based on calculated energy savings and permanent peak demand reduction (https://www.pge.com/pge_global/common/pdfs/save-energy-money/facility-improvements/custom-retrofit/Customized-Policy-Procedure-Manual.pdf)
    - **Above Code Support,** services to building designers and owners intended to exceed California's Title 24 energy-efficiency standards (https://www.pge.com/en_US/business/save-energy-money/facility-improvements/savings-by-design/savings-by-design.page)

3.17.3 Energy Consumption and Conservation - Standards of Significance

This analysis uses the significance criteria from the CEQA Guidelines Appendix F:

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials maybe discussed;
2. The effects of the project on local and regional energy supplies and on requirements for additional capacity;
3. The effects of the project on peak and base period demands for electricity and other forms of energy;
4. The degree to which the project complies with existing energy standards;
5. The effects of the project on energy resources; and
6. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

Based on the above topics, the proposed General Plan Update may result in a significant impact related to energy, if the General Plan Update would:

a) Land uses or development patterns cause wasteful, inefficient, or unnecessary consumption of energy;
b) Land Uses require or result in the construction of new or expanded energy production or transmission facilities, the construction of which could cause significant environmental effects

Item "a" is discussed in Impact 3.17.4.1, Land uses or development patterns cause wasteful, inefficient, or unnecessary consumption of energy. Item "b" is discussed in Impact 3.17.4.2, Land Uses require or result in the construction of new or expanded energy production or transmission facilities, the construction of which could cause significant environmental effects.

3.17.4 Energy Consumption and Conservation - Impacts and Mitigation Measures

Impact 3.17.4.1: Land uses or development patterns cause wasteful, inefficient, or unnecessary consumption of energy

Residential and commercial development generated by population growth during the General Plan Update planning period could cause wasteful, inefficient, or unnecessary consumption of energy that have an adverse physical effect on the environment.

This impact analysis addresses item "a" of the significance standards listed in Section 3.9.2 above and is based on Appendix F of the CEQA Guidelines. Pursuant to these standards, the proposed General Plan Update would have a significant impact if it resulted in land uses or development patterns that cause wasteful, inefficient, or unnecessary consumption of energy.

Approximately 1,721 new housing units and 3,130,717 square feet of commercial and industrial buildings are projected to be constructed during the General Plan Update planning period. During construction and following the occupancy of homes and commercial spaces, energy would be consumed in the form of fossil fuels and electricity, including for transportation, which could have an adverse physical effect on the environment.

The current pattern of development within the County is not expected to change substantially during the General Plan Update planning period. In addition, the plan establishes new policies and programs to support mixed uses in developed areas, placing homes near business, thereby reducing travel distances associated with commutes and shopping trips. According to Section 2.4 of the Project Description, the GPU land use maps and land use policy are intended to:

- Generally maintain the characteristics of existing communities.
- Apply land use designations that support mixed-use development and other techniques to increase efficiency of land utilization, including the use of alternative subdivision standards, density bonuses, second unit incentives, live-work commercial centers, etc.
- Maintain current planned residential densities outside of community planning areas and facilitate opportunities for second residential units.
- Increase available resource production land protections using a range of planning tools such as, clustered development incentives, open space standards, conservation easements and regulatory reform.

In April 2017, RCEA and Environmental Indicator Accounting Services staff prepared energy consumption forecasts for population, households, employment, commercial and industrial building square feet, and vehicle miles travelled. Forecasts, using actual values from 2005, based on population and employment growth levels for the years 2010, 2016, 2028, 2030, and 2040 during the General Plan Update planning period. See Appendix U, Humboldt County Energy Consumption Forecast- Calculation Methodology, for additional detail regarding forecasts of unincorporated area energy consumption during the General Plan Update planning period.

Energy consumption results from the 2005 County-Wide Community GHG Inventory were converted to MMBtu (Million British Thermal Units) to enable aggregating consumption across different fuel types. The MMBtu results were used from the following sectors: Residential, Commercial, Industrial, and Transportation. Using the MMBtu totals from the Inventory as a baseline, estimated energy consumption for years during the General Plan Update planning period was forecast using compound annual growth rates developed using specific growth metrics.

To forecast energy consumption for the requested years, sector-specific compound annual growth rates were calculated for the periods of 2005-2010, 2010-2016, 2016-2028, 2028-2030, and 2030-2040. Compound annual growth rates were calculated using data provided by the County for 2010, 2028, and 2040, and then extrapolating/interpolating for 2005, 2016, and 2030. Because the County requested compound annual growth rates that reflect projected growth for Unincorporated County, the following data was either provided by the County for Unincorporated County, or a calculation was applied to County-Wide data to estimate the fraction attributable to Unincorporated County.

Sector-specific compound annual growth rates were calculated based on the following data:

- Residential energy consumption growth – Unincorporated household estimates
- Commercial energy consumption growth – Unincorporated commercial and industrial square footage estimates calculated using employment data. Employment data by sector was provided for Unincorporated County. The number of jobs for each sector was then multiplied by the estimated square footage per employee, as provided by the County and shown in Appendix A. Estimated square footage for each employment sector was summed to produce a total square footage estimate each year.
- Industrial energy consumption growth – Identical to estimates used for Commercial energy consumption growth.
- Transportation energy consumption growth – Unincorporated vehicle miles traveled

Table 3.17-3. Forecasts of Unincorporated Area Energy Consumption.

Sector	Fuel Type						
		2005	**2010**	**2016**	**2028**	**2030**	**2040**
Residential	Electricity	766,840	777,780	790,909	817,167	814,154	799,091
	Natural Gas	861,015	873,299	888,040	917,522	914,139	897,226
	Propane	180,753	183,332	186,426	192,616	191,905	188,355
	Wood	231,109	234,406	238,363	246,276	245,368	240,829
Commercial	Electricity	517,714	527,157	538,487	561,149	567,132	597,046
	Natural Gas	1,484,301	1,511,372	1,543,858	1,608,829	1,625,982	1,711,749
Industrial	Electricity	21,915	22,315	22,794	23,754	24,007	25,273
	Natural Gas	19,602	19,960	20,389	21,247	21,473	22,606
Transportation	Gasoline	3,648,759	3,738,804	3,846,859	4,062,968	4,054,859	4,014,315
	Diesel[2]	1,472,529	1,508,868	1,552,476	1,639,691	1,636,419	1,620,056
Total		**9,204,536**	**9,397,293**	**9,628,601**	**10,091,217**	**10,095,439**	**10,116,546**

1) Note that the number of significant figures reported do not indicate precision, but are provided for transparency in calculation results. A formal error analysis was not conducted for these projections.
2) Projected diesel consumption for 2005 in the Inventory was roughly 18% less than tracked fuel sales provided by the North Coast Unified Air Quality Management District for the year 2005. The source of this discrepancy has not been addressed. The potential impact to total MMBtu values shown here is roughly 3%.
Source: Humboldt County Energy Consumption Forecast- Calculation Methodology, Redwood Coast Energy Authority and Environmental Indicator Accounting Services, April 4, 2017.

According to Section 3.5, Transportation, of this RDEIR, vehicle miles travelled is projected to increase by 8.7% between 2010 and 2028; the year population is projected to peak during the planning period. During the same period, population is projected to increase by 4.8%. Humboldt County's average number of vehicle miles travelled is currently higher than more urban counties due to the size of the County and its rural nature (Humboldt County Energy Element Background Technical Report, July 2005, Page 1, Energy Use and Cost).

The General Plan Update seeks to reduce vehicle miles traveled per person by providing balanced transportation opportunities, whereby the needs of motorized vehicles, public

transit, bicyclists, and pedestrians are considered during land use and transportation planning. However, due to already established auto-oriented land use patterns, the private automobile would likely continue to be the dominant mode of transport in Humboldt County.

The PACE program is currently available in the unincorporated area and provides 100 percent upfront financing to residential and commercial property owners for a wide range of eligible property improvements, such as renewable energy, energy efficiency, water efficiency. This program would result in significant improvements in energy conservation and efficiency for existing and future residential and commercial building owners that implement energy or water efficiency retrofits or renewable energy installations.

RCEA administers a number of other programs focused on improving energy efficiency, including the Redwood Coast Energy Watch, which provides a wide set of in-house no/low cost resources based services to drive energy efficiency investment in the residential, commercial and public sectors; energy efficiency programs for low income programs in partnership with PG&E and the Redwood Community Action Agency; and a broad range of programs from PG&E for eligible energy efficiency measures. These programs would also result in significant improvements in energy conservation and efficiency if existing and future residential and commercial building owners were to participate.

When it is implemented in 2018, Housing Element Implementation Measure H-IM18, Encourage Energy and Water Conservation, would amend the County Code to limit increases in assessed value for property tax purposes to encourage improvements to real property such as new alternative energy systems, such as solar, wind and hydroelectric energy systems, and new water conservation measures. This program would reduce demand on the regional power generation and distribution system and, given the most water is pumped using electric motors, reduce energy consumption through water conservation. In addition, fuel economy standards specified in Federal regulations and the various fuel efficiency standards established as part of the State's legal framework for GHG emissions reduction would reduce fuel consumption associated with vehicle trips within the County by new cars and trucks.

Current state regulatory requirements for new building construction contained in the 2010 California Green Building Standards Code and Title 24 would increase energy efficiency and reduce energy demand in comparison to existing residential and commercial structures, and therefore reduce actual environmental effects associated with energy use. Programs available through RCEA and PG&E provide incentives and savings to install energy efficient light bulbs and appliances in existing structures as well as increased insulation and renewable energy systems, which will help reduce energy consumption for existing development.

Analysis of Relevant General Plan Update Policies

The General Plan Update includes a number of policies and standards in the Energy Element intended to increase energy efficiency and conservation. For example, Goal E-G2, Increase Energy Efficiency and Conservation, guides efforts to decrease energy consumption through conservation and efficiency in building, transportation, business, industry, government, water and waste management. A number of policies are intended to carry out this goal, including E-P1, Energy Conservation Standards and

Incentives, which calls for the development of incentives for building to exceed California Building Standards Code requirements for energy conservation. Although E-P1 does not specify increased energy conservation standards, Implementation Measure E-IM8, Energy Efficiency Standards, would direct the development and implementation of energy-efficiency standards that incorporate cost effective measures for subdivision, mixed use, infill, and planned unit development. Specific measures would be developed and analyzed on a project-by-project basis, so the measurable results of these measures cannot be determined at this time.

E-P10, Transportation Management Plans, requires that major commercial, business, or industrial facility developments submit a transportation management plan that addresses energy conservation measures such as connectivity to alternative transportation modes. E-P10 requirements are also intended to become incentives for projects not deemed as "major". In addition, E-M1, Alternative Energy Use, specifies the establishment of land use of regulations that eliminate obstacles to alternative energy use.

Other than those described above, the Energy Element does not have specific standards and additional requirements for energy efficiency and conservation. Examples of elective, non-mandatory, policies and programs that promote energy efficiency and conservation include: E-P13, Water Efficiency, which promotes the efficient use of water in residences, businesses, industries, and agriculture; E-P14, Incentives for Using Alternative Energy; E-IM6, Energy-conserving Landscaping, which directs the County to consider natural and drought-resistant planting materials and other measures to reduce energy demand in the preparation of the County landscaping ordinance; E-IM14, Energy Conservation, which requires the adoption of residential and commercial energy conservation for building construction and retrofit that establishes energy conservation incentives and performance standards for projects exceeding state building codes.

The Energy Element also contains Policy E-P5, Regional Energy Authority, and Implementation Measure, E-IM2, Comprehensive Action Plan for Energy, which recognizes RCEA as the regional energy authority for coordinating countywide energy planning and supports implementation of the Comprehensive Action Plan for Energy, or CAPE, which includes sustainable energy initiatives that reduce energy demand, increased energy efficiency, and advances the use of clean, efficient, and renewable resources available in the region. The CAPE could include recommended specific standards and requirements that could be implemented if adopted by the authority's member local governments, including the County.

For County owned buildings, E-P7, County Government Energy Consumption, specifies that the County shall reduce building and transportation energy consumption by implementing energy conservation measures and purchasing renewable energy and energy efficient equipment and vehicles whenever cost-effective. E-P8, County Building Design Standards, states that all new and renovated County-owned facilities shall be designed, constructed and operated U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED)"Silver" or better energy efficiency standards, including the installation of cost-effective conservation measures, renewable energy systems, cogeneration systems, and distributed energy systems (E-IM4. Install County Systems). In addition, E-IM3, County Energy Consumption Reduction, directs the development of a program to reduce the County's energy consumption in buildings and facilities, street lights, vehicle operation, and equipment procurement.

The Air Quality Element contains policies and programs that relate to greenhouse gas emissions, and although greenhouse gas emissions and energy efficiency and conservation are not one in the same, there is a close relationship-the less energy used, the fewer emissions produced. Policy AQ-P9, County Climate Action Plan, requires the development and implementation of a multi-jurisdictional Climate Action Plan to achieve reductions in greenhouse gas emissions consistent with the state law. This would be expected to result in increased energy efficiency and reductions in energy waste. Implementation measure AQ-IM4, County Government Greenhouse Gas Emission Reductions, specifies the components of a climate action plan for government operations that seeks emissions reductions through energy efficiency and conservation; "green building;" waste reduction and recycling; and efficient transportation. AQ-IM3, County-wide Climate Action Plan, directs the development and implementation of a climate action plan and AQ-IM5, Greenhouse Gas Emissions, directs the update to the General Plan and land use regulations to reflect the adopted countywide Climate Action Plan. Although the General Plan Update does not contain additional detail regarding the contents of the countywide Climate Action Plan, it is assumed that it will contain similar topics to the County Climate Action Plan for County government greenhouse gas emission reductions, such as energy efficiency and conservation; "green building;" waste reduction and recycling; and efficient transportation.

The Land Use Element includes policies and programs to promote mixed use development, which places higher density residential development adjacent to jobs and shopping. UL-P6, Mixed-Use Zoning, directs the application of mixed use zones in Urban Development Areas.

There are several policies in the Circulation Element that encourage modes of transportation other than automotive trips. C-P23, Public Transit Service, provides for coordination with transportation providers so that a full range of travel patterns and connectivity with other modes of transportation are provided. C-Pxx, Long Term Transit Plan, supports planning with the goal of increasing transit vs. automobile trips. C-P25, Multimodal Level of Service (LOS) and Quality of Service Standards (QOS), would consider "walkability audits" and "bikeability audits" suitable for the locality to assess and plan the multi-modal quality and capacity of county roads and intersections.

Conclusion

The General Plan Update does not include specific development projects. Rather, the Plan identifies land uses and policies to accommodate the growth that is projected to occur during the planning period. In accommodating projected growth, the General Plan Update encourages energy efficiency, maintains existing land use patterns, and promotes mixed use land use patterns in urbanized areas which would reduce vehicle trips by placing residences near services. The proposed Energy Element requires that major development submit a transportation management plan that addresses energy conservation measures such as connectivity to alternative transportation modes and proposes the use of incentives to encourage energy efficiency and conservation from other development and supports the implementation of the CAPE by RCEA and its member jurisdictions.

The Air Quality Element also specifies that a County-wide CAP be prepared and that the General Plan and land use regulations be amended to reflect that plan. Energy efficiency and conservation would be an important component of the County-wide Climate Action Plan. For new County-owned buildings, the General Plan Updates

specifies LEED "Silver" or better energy efficiency standards and the preparation of a Climate Action Plan for County government greenhouse gas emission reductions would also result in energy efficiency and conservation.

The proposed General Plan Update policies, standards and implementation measures addressing energy efficiency, greenhouse gas emission, land uses, and development patterns, combined with current laws and regulations would help to reduce the wasteful, inefficient, or unnecessary consumption of energy resulting from new development. In addition, the RCEA CAPE and the other RCEA incentives to encourage the installation of increased insulation and renewable energy systems in existing structures; and will help reduce energy consumption from existing development.

The General Plan Updates specifies the development and implementation of a County-wide Climate Action Plan that is intended to achieve reductions in greenhouse gas emissions consistent with state law. It is assumed that a County-wide Climate Action Plan that is consistent with state law would include measures to increase energy efficiency, reduce energy consumption, and reduce energy waste in new and existing development.

However, because specific information about new development projected to occur during the General Plan Update planning period is unknown at this time; the effectiveness of the soon to be updated CAPE and the yet-to-be developed CAP measures at reducing energy use or increasing energy efficiency cannot be determined; and because the County has not yet adopted GHG thresholds that would strongly influence future energy use, the degree to which General Plan Update land uses or development patterns cause wasteful, inefficient, or unnecessary consumption of energy cannot be determined. Consequently, this impact is conservatively determined to be significant. Ensuring that could cause wasteful, inefficient, or unnecessary consumption of energy that have an adverse physical effect on the environment is not feasible at this time. Therefore, this impact is considered **significant and unavoidable.**

Mitigation

None identified, beyond those to be included in the pending CAPE update and CAP.

Impact 3.17.4.2: Land Uses require or result in the construction of new or expanded energy production or transmission facilities, the construction of which could cause significant environmental effects

Projected population and job growth during the General Plan Update planning period would lead to increased housing and non-residential development in the unincorporated area. Energy demand would be expected to increase due to the use of heating, cooling, and electricity in homes and businesses; for public infrastructure and service operations; and for industry, commercial, and a variety of other uses. Energy consumption during the General Plan Update planning period may result in the need for new or expanded energy production or transmission facilities, the construction of which could cause significant environmental effects.

This impact analysis addresses item "b" of the significance standards listed in Section 3.9.2 above and is based on Appendix F of the CEQA Guidelines. Pursuant to these

standards, the proposed General Plan Update would have a significant impact if it resulted in land uses that require or result in the construction of new or expanded energy production or transmission facilities, the construction of which could cause significant environmental effects.

As described in Section 3.9.3.4 above, approximately 1,721 new housing units and 3,130,717 square feet of commercial and industrial buildings are projected to be constructed during the General Plan Update planning period. The precise location of new development is not known. Construction would likely occur throughout the County, but most development would likely occur within Community Plan Areas that are served by existing energy production or transmission facilities. Construction may occur adjacent to existing electrical and natural gas distribution facilities that are sized appropriately to accommodate the new development or may require the construction of new transmission or distribution facilities. The Humboldt Bay Generating Station has the capacity to serve 122,000 housing units, which is nearly twice the number of housing units that are currently within the entire County, although, energy produced at the Humboldt Bay Generating Station is both used locally and exported to other parts of the state. The potential need for new power generation facilities is unlikely.

Most development would be served by PG&E electric facilities and, if located in the greater Humboldt Bay area, may be served by natural gas. PG&E is obligated to provide service to new development within its service area, subject to CPUC Rules governing the service and that also define responsibility for the cost of construction and the manner in which construction occurs. Electric transmission and distribution lines are typically located along overhead powerlines and both powerlines and underground gas lines are typically located within public rights of way. PG&E conducts periodic load forecasts to ensure the reliability of its electricity and gas service. As growth occurs during the General Plan Update planning period, PG&E would be expected to incorporate these new levels of demand into its reliability forecasts. For new development that would occur within Resort Improvement District No. 1, requirements contained in the adopted "Capacity Buy-In/Connection Costs & New Installation Fees" govern the construction of new or expanded energy production or transmission facilities for new electric service, subject to other applicable land use regulations.

Analysis of Relevant General Plan Update Policies

The General Plan Update includes the following policies and standards in the Energy Element relating to energy production and transmission facilities. Policy E-P9, Electrical Transmission, promotes PG&E funded capacity upgrades to electric distribution lines. Standard E-S5, Electrical Transmission Lines, establishes standards to reduce environmental impacts resulting from the siting and construction of electric transmission lines, including consolidating new facilities with existing facilities and within existing rights of way, minimizing visual impacts, and minimizing alterations to landform. In addition, the Conservation and Open Space Element Scenic Resources Chapter Standard SR-S3, Scenic Highway Standards, specifies standards for mapped scenic highways that would minimize the impacts of new, relocated, or existing utility distribution lines within the visual buffer areas.

The General Plan Update Energy Element Goals also encourages countywide strategic energy planning focused on self-sufficiency, the development of renewable energy resources, and energy conservation. The Energy Element contains policies and programs that are intended to protect known energy resources and encourage the development

of renewable energy. Specifically, E-P9x, Electricity Buyback, supports revisions to the electricity buyback program that encourages more distributed local generation. E-P14, Incentives for Using Alternative Energy, encourage the use of renewable energy and environmentally preferable distributed energy generation systems in the county. E-IM9, Develop Incentives for Private Sector, specifies incentives to encourage the installation of distributed generation, and solar electric and solar heating systems, in all new construction and building retrofits. E-IM13, Renewable Energy Permitting Process, would provide for a clear permitting process for distributed energy generation systems and identifies zones where distributed energy generation facilities will be allowed as a permitted use.

Policies and programs that address construction related environmental impacts to water quality, air quality, biological resources, cultural resources, and scenic resources are analyzed throughout this EIR. These analyses would also address environmental impacts relating to the construction of new or expanded energy production or transmission facilities. The following is a summary of General Plan Update policies that would reduce construction related environmental impacts from new or expanded water facilities:

- The Circulation Element contains policies to reduce traffic impacts of new and expanded wastewater facilities by utilizing traffic impact thresholds (C-P5, Level of Service Criteria) and by requiring that new development be conditioned to proportionally mitigate significant traffic impacts through construction of on- and off-site improvements and dedication of rights-of-way (C-P4. Mitigation Measures).
- The Biological Resources Chapter within the General Plan Update contains policies to reduce impacts to plants, animals, and habitat by planning land containing sensitive and critical habitats for uses for long term habitat sustainability (BR-P1, Compatible Land Use); conditioning projects to avoid impacts to critical and essential habitat where such resources are present (BR-P2, Critical Habitat); regulating development within streamside management areas to minimize adverse environmental effects (BR-P6, Development within Streamside Management Areas); and through the delineation and protection of wetlands (BR-P-7, Wetland Identification, and BR-S10 Development Standards).
- The Water Resources Element contains policies regarding critical watersheds to protect municipal water supplies from the environmental effects of development (WR-P4, Critical Municipal Water Supply Areas) and to limit the effects of development upon threatened and endangered species including Coho salmon habitat (WR-P5, Critical Watershed Areas); minimizing erosion and sediment discharge through the implementation of performance standards (WR-Px2, Mitigate Controllable Sediment Discharge Sites, WR-P8 Erosion and Sediment Discharge and WR-P36 Erosion and Sediment Control Measures); and by limiting the transmission of contaminants from parking lots to the storm water system by requiring oil water separators (WR-P35, Oil/Water Separation).
- Noise Element policies are intended to minimize short-term noise and noise from stationary sources through the application of appropriate standards (N-P1, Minimize Noise from Stationary and Mobile Sources) and through application of noise performance standards (N-S8 Short-Term Noise Performance Standards-Maximum Noise Level).
- The Safety Element contains policies to plan land use and new development to reduce hazards (S-P1, Reduce the Potential for Loss); applying state geologic and seismic standards to new development (S-P6, Structural Hazards); regulating uses around airports consistent with Airport Land Use Compatibility Plans (S-P21,

Development Compatibility and S-P22, Airport Land Use Compatibility Criteria), and by regulating land uses in flood hazard areas (S-P10, Federal Flood Insurance Program).

- Air Quality Element policies require that construction and grading dust control measures achieve local air quality standards (AQ-P4, Construction and Grading Dust Control) and air quality impacts of new development are reduced through the implementation of mitigation measure during discretionary review (AQ-P5, Air Quality Impacts from New Development).

Conclusion

Federal and state regulations and ongoing planning by PG&E consistent with its obligation to the CPUC to provide reliable power service with its service area would help to ensure that sufficient energy supplies are available to serve projected development during the General Plan Update planning period. The General Plan Update includes policies and programs to encourage distributed renewable energy production, locating renewable generation near consumption, and could reduce the need for additional energy production or transmission facilities.

Policy E-P9, Electrical Transmission, Standard E-S5, Electrical Transmission Lines, Scenic Resources Chapter Standard SR-S3, Scenic Highway Standards, are specific General Plan Update policies and standards that are intended to reduce environmental impacts from electrical transmission facilities. In addition, the proposed policies, standards, and implementation measures listed above that relate to all construction consistent with the General Plan Update would help to avoid environmental impacts associated with the construction of new or expanded energy production or transmission facilities. The Noise, Hazards and Hazardous Materials, Geology and Soils, Hydrology and Water Quality, Air Quality, Biological Resources, Cultural Resources, and Scenic Resources sections of this EIR identify existing regulations, measures contained in the General Plan Update, and additional mitigations to further reduce potential environmental impacts resulting from new or expanded energy production or transmission facilities.

However, the nature and location of any potential new or expanded energy production or transmission facilities that may be constructed by PG&E or Resort Improvement District No. 1 and that do not trigger a land use approval by the County is not known. As a result, the potential impacts of these facilities are too speculative for evaluation in this first tier programmatic EIR. If potential new or expanded energy production or transmission facilities are within the responsibility and jurisdiction of other public agencies, and not the County, appropriate mitigations can and should be adopted by such other agency, or other findings made after certification of an EIR in accordance with CEQA.

If the new or expanded energy production or transmission facilities were to be constructed as part of a subdivision map approval or other process requiring County discretionary land use approval, such as an amendment to the General Plan Land Use Map, rezone, use permit, or a special permit, the County would ensure that environmental impacts are addressed through appropriate site-specific mitigation measures and the application of the policies listed above, appropriate Zoning Regulations, and its land use authority. Therefore, with implementation of the General Plan Update policies, impacts relating to new or expanded energy production or transmission facilities or expansion of existing facilities triggered by the General Plan would be **less than significant**.

Mitigation

None required.