4.15 ENERGY

This section describes the supply and use of energy in unincorporated Yuba County (the County), as well as local actions to conserve energy and use it more efficiently.

The California Environmental Quality Act (CEQA) Guidelines (Appendix F) require that EIRs analyze energy conservation consistent with Public Resources Code section 21100(b)(3). According to the Guidelines, energy impacts that have already been analyzed need not be repeated in later EIRs and that EIRs do not need to address "lifecycle emissions," such as those embedded in the production of building materials used in projects. Lifecycle emissions under CEQA would normally represent "emissions beyond those that could be considered indirect effects of a project as that term is defined in section 15358 of the State CEQA Guidelines" (Natural Resources Agency 2009).

The energy impacts of land use development and related activities that could occur under the 2030 General Plan are important to analyze under CEQA since motor vehicle use, energy production, land development, and other human activities result in direct and indirect emissions and elevated concentrations of greenhouse gases (GHGs) in the atmosphere. See section 4.7 – Climate Change of this EIR, which comprehensively addresses GHG emissions impacts attributable to the 2030 General Plan.

The County's energy conservation goals are closely related to local economic development strategy in the 2030 General Plan (see the Natural Resources Element for details). The 2030 General Plan establishes that the County intends, through energy conservation policies and programs, to reduce ongoing household and business energy costs and create advantages for local employment development activity. During the 2030 General Plan time horizon, the County will have the opportunity to target, attract, retain, and grow businesses whose products and services are related to renewable energy or energy conservation. The 2030 General Plan establishes that the County encourages renewable energy educational programs, construction of renewable energy production facilities, coordination with other agencies, local agricultural interests, local colleges, and other stakeholders. The County intends to promote the use of agricultural wastes for fuel and power production, particularly to support agricultural operations and agricultural industries. The 2030 General Plan also notes that the County has the opportunity to benefit from local hydroelectric energy development and use during the 2030 General Plan time horizon.

This section of the EIR analyzes energy-related impacts attributable to policies and implementation measures under the 2030 General Plan. First is a description of the existing regulatory and environmental setting, then the County's methodology and thresholds of significance, and finally, impact analysis and mitigation.

4.15.1 REGULATORY SETTING

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Federal legislation and regulations related to energy efficiency are highlighted below.

Beginning in the late 1990s, Congress introduced a tax subsidy on the production of renewable wind-generated electricity, known as the Production Tax Credit.

Congress also periodically directs federal agencies to use increasing amounts of renewable energy or otherwise aid private companies in developing wind energy. One example is the U.S. Department of Energy's Wind Powering America initiative, which, among other tasks, has created Wind Working Groups in each state with a wind resource.

National Energy Act

The National Energy Act of 1978 was a legislative response by the U.S. Congress to the 1973 energy crisis. It includes the following statutes:

- Public Utility Regulatory Policies Act (PURPA) (Public Law 95-617)
- Energy Tax Act (Public Law 95-318)
- National Energy Conservation Policy Act (NECPA) (Public Law 95-619)
- Power Plant and Industrial Fuel Use Act (Public Law 95-620)
- Natural Gas Policy Act (Public Law 95-621)

Public Utility Regulatory Policies Act (PURPA)

PURPA was passed by Congress in 1978 as part of the National Energy Act to promote greater use of renewable energy. This law created a market for non-utility electric power producers to permit independent power producers to connect to their lines and to pay for the electricity that was delivered. Although PURPA is a federal law, implementation was left to the states and a variety of regulatory regimes developed.

Energy Tax Act

The Energy Tax Act was also passed by Congress in 1978 as part of the National Energy Act. It was a response to the 1973 oil crisis and promoted fuel efficiency and renewable energy through taxes and tax credits.

National Energy Conservation Policy Act (NECPA)

NECPA is a statute signed into law in 1978 as part of the National Energy Act. NECPA requires utilities to provide residential consumers with energy conservation audits and other services to encourage slower growth of electricity demand. NECPA was amended in 1985 by the Energy Policy and Conservation Act Amendments of 1985 (Public Law 99-58).

Federal Energy Management Program

The U.S. Department of Energy's Federal Energy Management Program works to reduce the cost and environmental impact of the federal government by advancing energy efficiency and water conservation, promoting the use of distributed and renewable energy, and improving utility management decisions at federal sites.

Energy Policy Act

The Energy Policy Act of 1992, recent executive orders, and presidential directives require federal agencies to meet a number of energy and water management goals, among other requirements. Federal agencies were directed to reduce their energy use by 35% by 2010 in comparison to 1985 levels. Federal agencies rely on effective coordination and sound guidance to help meet this requirement. The Federal Energy Management Program reports agencies' progress annually, manages interagency working groups, and offers policy guidance and direction. The Energy Policy Act was amended in 2005 (Public Law 109-190) to increase the supply of energy primarily through subsidies.

Federal Energy Regulatory Commission (FERC)

FERC regulates and oversees energy industries in the economic, environmental, and safety interests of the American public. FERC is the federal agency with jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing, and oil pipeline rates. FERC also reviews and authorizes

liquefied natural gas terminals, interstate natural gas pipelines, and non-federal hydropower projects. Production of electricity is overseen by the states; however, FERC has jurisdiction over certain matters (FERC 2006).

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California's Renewable Portfolio Standards (RPS), established in 2002 by Senate Bill (SB) 1078 (Chapter 516, Statutes of 2002), requires electricity providers to procure an annual increase of at least 1% of their electricity supplies from renewable resources so as to achieve a 20% renewable mix by no later than 2017. The Energy Action Plan, approved by California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the California Power Authority (CPA), accelerated the 20% target date to 2010.

State CEQA Guidelines

Section 15126.4 (a)(1) of the CEQA Guidelines states that an EIR shall describe feasible measures which could minimize significant adverse impacts, including, where relevant, inefficient and unnecessary consumption of energy.

CEQA Guidelines Appendix F, Energy Conservation, provides guidance for EIRs regarding potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing the inefficient, wasteful, and unnecessary consumption of energy. In addition, though not described as thresholds for determining the significance of impacts, Appendix F seeks inclusion of information in the EIR addressing the following environmental impacts:

- 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.
- The effects of the project on local and regional energy supplies and on requirements for additional capacity.
- The effects of the project on peak and base period demands for electricity and other forms of energy.
- The degree to which the project complies with existing energy standards.
- The effects of the project on energy resources.
- The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

California Energy Commission (CEC)

Established in 1974 by the Warren-Alquist Act (Public Resources Code Section 25000 et seq.), CEC is the state's primary energy policy and planning agency. The commission has five major responsibilities: forecasting future energy needs and keeping historical energy data, licensing thermal power plants 50 megawatt (MW) or larger, promoting energy efficiency through appliance and building standards, developing energy technologies and supporting renewable energy, and planning for and directing the state response to an energy emergency.

California offered generous tax subsidies in the early 1980s for renewable power development. The state also ordered utilities to not only buy electricity from independent power generators, but also directed utilities to set a price and offer standard contracts. California's subsidies and the standard offer contracts launched the commercial wind industry in the country.

In 2003, the CEC released a report on renewable resource development summarizing technical potential and projected development from 2003 to 2017 (CEC 2005d). The goal was to provide some preliminary statewide estimates for increasing renewable generation based on new resource assessments. The renewable resource report

summarizes accelerated renewable energy needs to meet the statewide Energy Action Plan RPS goal of 20% by 2010, although it does not account for infrastructure improvements or operational enhancements needed to increase the use of renewable resources.

Title 24 (California Energy Code)

The California Energy Code (Title 24, Part 6, of the California Code of Regulations, California's Energy Efficiency Standards for Residential and Nonresidential Buildings), provides energy conservation standards for all new and renovated commercial and residential buildings constructed in California. The Code applies to the building envelope, space-conditioning systems, and water-heating and lighting systems of buildings and appliances.

The Code provides energy conservation standards for all new and renovated commercial and residential buildings constructed in California. The Code provides guidance on construction techniques to maximize energy conservation. Minimum efficiency standards are given for a variety of building elements, including appliances; water and space heating and cooling equipment; and insulation for doors, pipes, walls and ceilings. The Code emphasizes saving energy at peak periods and seasons, and improving the quality of installation of energy-efficiency measures.

California Green Building Standards Code

The California Building Standards Code is published in its entirety every three years by order of the California Legislature. The California Legislature delegated authority to various State agencies, boards, commissions and departments to create building regulations to implement the State's statutes. These building regulations or standards have the same force of law, and generally apply to all new building construction in California. A city, county, or city and county may establish more restrictive standards reasonably necessary because of local climatic, geological or topographical conditions.

On July 17, 2008, the California Building Standards Commission adopted the California Green Building Standards Code for all new construction statewide. A voluntary implementation period was intended to give builders, local governments, and communities' time to adapt to the new rules. The Code sets targets for energy efficiency; water consumption; dual plumbing systems for potable and recyclable water; diversion of construction waste from landfills, and use of environmentally sensitive materials in construction and design, including eco-friendly flooring, carpeting, paint, coatings, thermal insulation, and acoustical wall and ceiling panels.

Updates to the California Green Building Standards Code in 2010 take effect on January 1st, 2011. The updated Code sets minimum standards for all new structures as part of a broad effort to significantly reduce California's carbon emissions. Key mandatory measures for residential buildings include:

- Reducing indoor water use within buildings by 20 percent.
- Diverting 50 percent of construction waste from landfills.
- Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA Phase II emission limits where applicable. Woodstoves, pellet stoves and fireplaces shall also comply with applicable local ordinances.
- Using building finish materials that emit low levels of volatile organic compounds.

Key mandatory measures for nonresidential buildings include:

- using building finish materials that emit low levels of volatile organic compounds;

- increasing a structure's system efficiencies by using building commissioning;
- if the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 100 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack;
- for buildings with over 10 tenant-occupants, provide secure bicycle parking for 5 percent of motorized vehicle parking capacity, with a minimum of one space;
- reducing indoor water use within buildings by 20 percent;
- reducing wastewater by 20 percent;
- diverting 50 percent of construction waste from landfills; and
- provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics and metals.

The updated Code also has a two-tiered system for jurisdictions that wish to adopt codes that go beyond the State mandatory provisions for energy use and potable water use, parking for clean-air vehicles, cool roofs, construction waste diversion, recycling, and other topics.

State of California Energy Action Plan

In 2003, the three key energy agencies in California— the CEC, the CPA, and the CPUC— jointly adopted an Energy Action Plan (EAP) that listed goals for California's energy future and set forth a commitment to achieve these goals through specific actions. In 2005, the CPUC and the CEC jointly prepared the EAP II to identify the further actions necessary to meet California's future energy needs. EAP II describes the priority sequence for actions to address increasing energy needs, also known as "loading order." The loading order identifies energy efficiency and demand response as the state's preferred means of meeting growing energy needs. After cost-effective efficiency and demand response, the state is to rely on renewable sources of power and distributed generation, such as combined heat and power applications. To the extent that efficiency, demand response, renewable resources, and distributed generation are unable to satisfy increasing energy and capacity needs, the EAP II supports the use of clean and efficient fossil-fired generation. The plan recognizes that concurrent improvements are required to the bulk electricity transmission grid and distribution facility infrastructure to support growing demand centers and the interconnection of new generation, both on the utility and customer side of the meter. The EAP II identifies key actions to be taken in all of these areas in order to meet the state's growing energy requirements.

California Global Warming Solutions Act of 2006 (Assembly Bill 32)

In September 2006, Governor Schwarzenegger signed Assembly Bill (AB) 32 (Chapter 488, Statutes of 2006) which enacted Sections 38500–38599 of the California Health and Safety Code. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in greenhouse gas (GHG) emissions and a cap on statewide GHG emission, requiring the reduction of statewide GHG emissions to 1990 levels by 2020, enforceable by a statewide cap on GHG emissions phased in, starting in 2012. The regulatory and reporting mechanisms contained in AB 32 are relevant to subsequent regulations that affect the content and use of EIRs, such as Senate Bill (SB) 375 (described below).

To implement the cap, AB 32 directs the Air Resources Board (ARB) to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 requires a quantified cap on GHG emissions representing 1990 emissions levels and the changes needed to get to the cap. AB 32 also includes guidance to

institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Senate Bill 375

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and fair-share housing allocations under state housing law. The State's policies on land use and transportation are important for this EIR section because, as noted in the 2030 General Plan, "transportation accounts for …the largest energy-consuming sector by far…and…[t]ransportation and land use planning techniques that reduce vehicle miles traveled (VMT) represent a tremendous opportunity for Yuba County to decrease energy use… Energy efficiency measures incorporated into new construction and retrofitting of existing structures can also conserve energy and save money for households, businesses, and civic uses throughout the County" (see Natural Resources Element for County's energy policies).

SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) to address GHG reduction targets in the context of that MPO's Regional Transportation Plan (RTP). ARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. The reduction targets for the Sacramento region, which includes Yuba County, are 7 percent by 2020 and 16 percent by 2035. ARB is charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

This bill also extends the minimum time period for the Regional Housing Needs Allocation (RNHA) cycle, which establishes regional and local housing planning objectives, to create a closer match with the timelines for revising RTPs (for the MPOs affected by the bill). Revisions to CEQA create process streamlining advantages for certain projects that are consistent with an approved SCS or APS. Residential or mixed-use projects consistent with the SCS/APS and that incorporate mitigation measures from relevant prior CEQA documents are not required to reference, describe, or discuss growth-inducing impacts or impacts of cars and light-duty truck trips on climate change or on the regional transportation network.

"Transit priority projects," as defined in this legislation, and future RTPs would be exempt from CEQA review. Transit priority projects that do not qualify for a complete exemption could be subject to environmental review under a Sustainable Communities Environmental Assessment (SCEA), which is envisioned to be similar to the process under CEQA for a negative declaration.

4.15.2 ENVIRONMENTAL SETTING

The generating capacity of a unit of energy is expressed in megawatts (MW) or kilowatts (kW). One MW provides enough energy to power roughly between 750 and 1,000 California homes, depending on location, energy source, and energy efficiency of the homes being served, among other factors. Generation is typically measured in megawatt-hours (MWh), kilowatt-hours (kWh), or gigawatt-hours (GWh).[1]

ELECTRICITY USE

California uses 265,000 GWh of electricity per year. Consumption is growing at a rate of two percent annually. Since the early 1970s, electricity consumption per capita in California has stayed nearly constant, while rising steadily for the US as a whole. California consumes 40% less electricity per person compared to the national average. (Sudarshan et. al. 2008).

[1] MWh = 1,000kWh and GWh = 1,000 MWh).

ELECTRICITY SOURCES

Natural gas is the main source for electricity generation in California. Natural gas-fired power plants account for about 47 percent of California's electricity generation, followed by coal (16 percent), nuclear (15 percent), hydroelectric (10 percent), and renewable (14 percent). The State uses 2 trillion cubic feet of natural gas per year. Eighty-five percent of natural gas consumed in California is provided from sources outside the state. Roughly 10 to 20 percent of the State's energy is provided by hydroelectric power that is subject to significant annual variations.

Yuba County receives its electricity from Pacific Gas & Electric Company (PG&E), a natural gas and electric utility. PG&E receives 39 percent of its electricity from natural gas-fired power plants, 22 percent from nuclear, 16 percent from hydroelectric, 14 percent from renewable resources, and 8 percent from coal (Table 4.15-1). PG&E operates the Narrows I Powerhouse at Englebright Dam, capable of generating 50 MW of electricity, which can then be distributed to PG&E customers.

Table 4.15-1
Electricity Sources for PG&E and California (Percentages)

Electricity Sources	PG&E	California
Natural Gas	39	47
Nuclear	22	15
Large Hydroelectric	16	10
Coal	8	16
Renewable	14	14

Sources: PG&E 2010; CEC 2010

In 2008, PG&E's retail customers purchased 81,935 GWh of electricity. Of that amount, 25,481 GWh were generated by PG&E's own natural gas, hydroelectric and nuclear facilities, as well as small amounts of fuel oil, diesel and solar energy. The remainder was purchased under contracts or from the open market.

According to the CEC's Energy Consumption Data Management System, a total of 504 million kWh of electricity was consumed in Yuba County in 2009 (including incorporated and unincorporated areas) (CEC 2010). This is an increase of 2.4% from 2006, when a total of 492 million kWh of electricity was consumed.

ELECTRICITY GENERATION

Yuba County contains facilities for generating electricity, primarily hydroelectric facilities. In addition to PG&E's Englebright Dam facility (providing 50 MW of electricity), public agencies operate electric-generation facilities, but none of them supply electricity to customers: all of the electricity generated at each of these facilities is wholesaled to PG&E, which then distributes electricity to customers within Yuba County.

The Yuba County Water Agency (YCWA) owns four powerhouses on the Yuba River Watershed. The powerhouses and their generation capacity include (YCWA 2010):

- New Colgate – 340 MW,
- Narrows 2 – 55 MW,
- Deadwood Creek – 2 MW, and
- Fish Release – 150 kW.

The South Feather Water and Power Agency (SFWPA) also own and maintain electric-generation facilities. SFWPA facilities are capable of generating up to 120 megawatts (MW) of electricity with the following components: Woodleaf Powerhouse, Forbestown Powerhouse, Kelly Ridge Powerhouse, and Kelly Ridge Photovoltaic Facility, all located on the South Fork Feather River, and Sly Creek Powerhouse, located on Sly Creek.

Browns Valley Irrigation District also operates a hydroelectric facility capable of generating one MW of electricity ~~per year~~at a constant head of water on an annualized basis at Virginia Ranch Dam at Collins ~~Lake~~Reservoir. The actual amount of power that BVID is able to generate in any given year depends on the amount of water stored in Collins Reservoir that BVID is able to run through the Virginia Ranch Dam Powerhouse.

NATURAL GAS USE

According to the CEC's Energy Consumption Data Management System, a total of 13 million therms of natural gas was consumed in Yuba County in 2009 (including incorporated and unincorporated areas) (CEC 2010). This is a decrease of approximately 6% from 2006, when a total of 14 million kWh of natural gas was consumed.

4.15.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

METHODOLOGY

Energy consumption in the County is a direct product of land use patterns, employment patterns, building energy efficiency, individual habits, and various environmental factors. This impact analysis examines the effect of land use patterns, building construction, and building operations envisioned in the 2030 General Plan on energy consumption and examines the increased energy demand and need for additional energy infrastructure to serve future population growth with implementation of the proposed 2030 General Plan.

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following applicable thresholds of significance have been used to determine whether implementing the proposed project would result in a significant impact. These thresholds of significance are based on Appendix F of the State CEQA Guidelines. An impact on energy resources or energy conservation is considered significant if implementation of the proposed project would do any of the following:

- Develop land uses and patterns causing wasteful, inefficient, and unnecessary consumption of energy; or
- Result in the need for new systems or substantial alterations to electrical, natural gas, or communication systems infrastructure, the construction or operation of which would have significant impacts.

IMPACT ANALYSIS

IMPACT 4.15-1 Effects on Energy Consumption from Land Use Locations and Patterns. *Implementation of the 2030 General Plan would result in an increased demand for energy. New residential, commercial, industrial, and civic uses will increase local energy demands. However, the policies and actions of the General Plan that guide growth and development are designed to avoid wasteful, inefficient, and unnecessary consumption of energy. This impact would be* ***less than significant****.*

Although implementation of the 2030 General Plan would result in an increase in demand for energy, the General Plan itself contains many policies and actions to increase energy efficiency and reduce the energy demand from what it would be with more traditional, less energy-efficient development patterns. Land use patterns can significantly affect energy consumption in either a positive or negative manner. The transportation sector makes

up the single largest consumer of energy in California, accounting for 41 percent of the state's total energy demand, and nearly all of this energy is provided by petroleum (CEC 2007a). The location, density, mix of land uses, and quality of the multi-modal transportation system is directly related to the amount of travel and transportation-related energy demands. The high levels of VMT in California are often attributed to the distribution of land uses and development patterns, which have more separation between different types of land uses (CEC 2007b). When land uses are not mixed and development patterns have lower densities, people usually become dependent on automobiles for access to jobs and services (U.S. EPA 2001). Compact development can also greatly reduce transportation-related energy demands by locating residences near shopping and work centers and providing multiple transportation opportunities (e.g., bike, foot).

The 2030 General Plan's land use strategy of focusing development primarily within the Valley Growth Boundary and promoting infill, mixed-use development, and a multi-modal circulation system that facilitates walking, biking and transit use, all are factors that relate very closely to energy efficiency and avoiding the wasteful, inefficient, and unnecessary consumption of energy.

The 2030 General Plan Land Use Diagram calls for development to be focused within the Valley Growth Boundary on undeveloped land, as well as infill and redevelopment in areas already developed. Limited development could occur outside of the boundary in rural communities. The majority of new development under the 2030 General Plan would occur within the Valley Growth Boundary. The County expects the following benefits of the Valley Growth Boundary:

- Support development patterns that can be provided cost-effective infrastructure and public facilities;
- Protect important natural resources, rural landscapes, air and water quality, farmland, and other important open space;
- Promote urban and suburban revitalization;
- Stimulate development patterns that support walking, biking, & public transit; and,
- Help eliminate leapfrog and incomplete, piecemeal-type developments by allowing for comprehensive planning.

Compliance with energy efficient components of the California Building Code would also increase energy efficiency of projects constructed under the 2030 General Plan. All development would be required to comply with the current energy performance standards found in Title 24, resulting in reductions in energy demand.

Relevant Policies and Actions of the 2030 General Plan

According to Appendix F of the CEQA Guidelines, energy related mitigation may include siting, orientation, and design to minimize energy consumption; transportation energy measures; water conservation; solid-waste reduction; alternate fuels (particularly renewable ones); and renewable energy systems. The 2030 General Plan includes these types of measures and others, promoting efficient land use that would reduce transportation-related energy use, requiring energy conservation measures in building design and site planning, and addressing both environmental and economic effects of energy development and use:

- **Policy NR7.1.** New developments shall address energy conservation in landscaping methods, materials, and design.
- **Policy NR7.2.** New buildings shall meet state standards for energy efficiency and should provide for renewable energy development and use, to the greatest extent feasible.

- **Policy NR7.3.** New developments should be designed to take advantage of passive or natural summer cooling and winter solar access.

- **Policy NR7.4.** New developments should provide street and lot orientation and lot dimensions that facilitate the use of solar energy.

- **Policy NR7.5.** New developments within the Valley Growth Boundary should orient the majority of buildings so that the longer axis of the building, also known as the ridge line, is oriented east-to-west, in order to maximize the potential for passive solar heating in the winter and to minimize heat gain from the afternoon summer sun.

- **Policy NR7.6.** New developments should consider energy conservation in building-site orientation and construction, with articulated windows, roof overhangs, appropriate insulation materials and techniques, and other architectural features that improve passive interior climate control.

- **Policy NR7.7.** Shade trees or other appropriate plantings should be used in new developments to protect buildings from unwanted solar gain in summer months. Using deciduous trees on the southern side of structures is encouraged to allow cooling in the summer and solar gain in winter. Short front setbacks are encouraged to allow shade trees planted in the public right-of-way to provide summertime shading.

- **Policy NR7.8.** New buildings should emphasize passive and natural lighting systems in architectural design to conserve electricity.

- **Policy NR7.9.** New developments proposing parking lots shall incorporate shade trees or shade structures to provide a minimum of 50 percent shading (at maturity, where trees are used).

- **Policy NR7.10.** The County will seek regional, state, and federal funding for energy efficiency improvements in existing buildings and the public realm.

- **Policy NR7.11.** The County and Yuba County Water Agency should explore opportunities related to future access to hydroelectric power, energy provision, strategic use of local energy resources for employment development, and other programs that have dual environmental-economic benefits.

- **Policy NR7.12.** The County will encourage financing programs designed to facilitate the installation of renewable energy systems, including those that establish a benefit district and allow property owners to repay over the long term through a special assessment on the property tax bill.

- **Action NR7.1. Energy Efficiency Retrofits in Buildings and the Public Realm**. The County will proactively track and apply for regional, state, and federal funding to be used for energy efficiency improvements and renewable energy systems installation in existing buildings and the public realm (public rights-of-way, etc.). The County will seek funding for energy efficient systems, energy-efficient appliances, insulation, energy-efficient doors and windows, and other improvements. The County will also consider the feasibility of using fees or actions required to meet County greenhouse gas efficiency policies on a fair-share basis to fund energy efficiency improvements and renewable energy systems in existing developed buildings and the public realm.

  The County will update zoning and development standards, as well as permit processes to encourage the use of renewable energy systems that are sited and designed to ensure public safety and reduce aviation conflicts.

  - Related Goals: Goal NR2, Goal NR7, Goal CD15, Goal HS5
  - Agency/Department: Administrative Services

- Funding Source: Grant funding, low-interest loans, impact fees, General Fund, and other appropriate funding sources
- Time Frame: Ongoing, as funding is available

- **Policy CD1.1:** Urban and suburban development in the unincorporated County not related to agriculture, mining, or some natural or cultural resource-oriented purpose is prohibited in valley areas outside the Valley Growth Boundary.
- **Policy CD1.3:** ~~General Plan~~ Urban land use designation/s will not be assigned within the Planning Reserve area unless the County determines that these lands are needed to fulfill either the County's regional housing needs allocation or accommodate job-generating developments needed to achieve the County's jobs-housing goals.
- **Policy CD1.4:** ~~Projects~~ New developments proposing urban land uses will not be approved within the Planning Reserve area until the County assigns the appropriate General Plan land use designation/s and approves zoning and development standards consistent with the Community Development Element.
- **Policy CD2.1:** The County will encourage infill development and redevelopment of vacant and underutilized properties within existing unincorporated communities.
- **Policy CD2.2**: The County will support specific plans, redevelopment plans, corridor plans, and community plans that promote infill development and reinvestment.
- **Policy CD2.3:** The County will support reinvestment in Linda and Olivehurst that increases local shopping, job, and housing opportunities.
- **Policy CD2.4:** The County will maintain flexible development standards, infrastructure standards, and impact fees that promote infill development and promote lot consolidation for redevelopment, where necessary.
- **Policy CD2.5:** The County will ~~direct~~ prioritize public spending on infrastructure ~~to~~ within infill areas in order to induce reinvestment, remove blight, and reduce poverty.
- **Policy CD4.1:** Employment and Commercial Centers shall be developed in coordination with local transit provider/s to ensure proper placement and design of transit stops and accommodate public transit for both employees and patrons.
- **Policy CD4.2:** Employment and Commercial Centers shall be designed to provide convenient and safe pedestrian and bicycle access from surrounding developed and planned neighborhoods.
- **Policy CD5.1:** Valley Neighborhoods should provide for most daily and weekly destinations, including a mix of commercial retail and services, schools, parks, and other civic uses.
- **Policy CD5.2:** Valley Neighborhoods should provide compact development patterns that conserve land and place homes in close proximity to destinations.
- **Policy CD5.4:** New developments within the Valley Growth Boundary shall provide a highly connected travel network that supports all local travel modes.
- **Policy CD7.3:** The County will encourage – through entitlement, streamlining, flexibility in development standards, fee structures, and other incentives – infill development in vacant or underutilized sections of Mixed-Use Corridors.

- **Policy CD7.4:** Developments in Mixed-Use Corridors should have pedestrian-friendly property frontages with buildings built close to the street frontage.

- **Policy CD8.1:** New developments should be designed to provide direct and convenient access to nearby parks, trails, commercial and public services, and transit stops.

- **Policy CD8.2:** Valley Neighborhood developments and residential portions of Employment Village areas shall provide relatively short block lengths and continuity of streets in order to facilitate convenient pedestrian, bicycle, and vehicle movement.

- **Policy CD17.1:** New developments shall be designed to facilitate safe and convenient travel by pedestrians, bicyclists, transit users, and drivers.

- **Policy CD17.2:** The County will coordinate approval of projects and plans with local transit providers to ensure that transit service is provided for work, shopping, school, and other types of trips within the Valley Growth Boundary.

- **Policy CD17.3:** The County will coordinate with Yuba College to provide housing and commercial services within walking and bicycling distance of the Linda campus and plan for convenient and safe pedestrian, bicycle, and transit options for students attending Yuba College.

- **Policy CD17.4:** The County will provide incentives to businesses that sponsor transit routes or create their own travel demand management programs, which may include, but are not limited, to streamlined permitting, and reduction of parking requirements.

- **Policy CD19.1:** The County will promote mixed-use, infill development and redevelopment in order to reduce dependence on the private automobile.

- **Policy CD19.~~5~~4:** The County will plan its investments and condition new developments to provide pedestrian, bicycle, and transit facilities designed to provide multi-modal connections within neighborhoods, within unincorporated communities, and between communities and cities in the County.

- **Policy CD19.~~6~~5:** New developments shall include the construction or pro-rata funding of transportation infrastructure that includes a connected and integrated system of bicycle and pedestrian facilities.

- **Policy CD19.~~7~~6:** New development shall accommodate safe and frequent crosswalks along roadways, with more frequent crossings in areas expected to have higher pedestrian traffic.

- **Policy CD19.~~14~~10:** The County will collaborate with Yuba-Sutter Transit and other regional transit providers to ensure transit stops are accommodated in the context of new development and redevelopment.

- **Policy CD20.2:** New developments in the Valley Growth Boundary shall arrange roads in an interconnected block pattern, so that local pedestrian, bicycle, and automobile traffic do not have to use Arterials to circulate within the neighborhood. The maximum average block length in new subdivisions approved in the Valley Growth Boundary should be approximately 450 feet. Smaller block sizes should be used around Neighborhood Centers, Community Centers, and Employment Centers.

- ~~**Policy CD20.9:** Destination land uses in new developments shall be located and designed so that people may conveniently reach these destinations by foot, bicycle, car, or bus.~~

- **Policy CD20.~~10~~7:** The County will seek frequent street and trail connections between new residential developments and established Valley Neighborhoods.

Conclusion

With the energy efficient design elements and energy conservation measures included in the 2030 General Plan, including ongoing cooperation with PG&E and local agencies the produce or manage renewable energy production, and with implementation of State building and energy efficiency standards, development under the 2030 General Plan would not result in inefficient, excessive, or unnecessary consumption of energy. The impact is **less than significant**.

Mitigation

No mitigation is required.

IMPACT 4.15-2 **Increased Energy Demand and Need for Additional Energy Infrastructure.** *Implementation of the2030 General Plan would increases energy demand and would result in the need to extend services and infrastructure to new users in Yuba County. Policies of the 2030 General Plan, as well as existing regulations and project-level review would reduce energy demand. However, the future energy demand would require construction and operation of energy-related facilities that would have* ***potentially significant*** *impacts.*

Projects accommodated under the 2030 General Plan would lead to increased population, housing, non-residential development, and jobs in the unincorporated County. This land use change would, in turn, increase the need for energy and communication infrastructure. Energy demand would be anticipated to increase for the unincorporated County during implementation of the 2030 General Plan. Energy is consumed for heating, cooling, and electricity in homes and businesses; for public infrastructure and service operations; and for agriculture, resource extraction, industry, commercial, and a variety of rural uses.

PG&E, the utility that currently supplies the County with electricity and natural gas services, periodically updates its "load" forecasts to ensure the reliability of its electricity and gas services. As implementation of the 2030 General Plan would occur over a 20 year period, the projected incremental electric and gas demand would be incorporated into PG&E's forecasts.

The demand for and use of energy within unincorporated Yuba County would occur with implementation of the 2030 General Plan. Buildout under the 2030 General Plan would result in increased electricity demand from approximately 282 million kWh per year to 348 million kWh per year by 2030, or an increase of 23.4% over 2008 levels. The natural gas demand under buildout of the 2030 General plan is estimated to increase approximately 1.0 million Therms per year, or 12.5% between 2008 and 2030 (Table 4.15-2).

Table 4.15-2
Energy Demand

Energy	2008	2020	2030	% Change 2008 to 2030
Electricity (kWh per year)	282,000,000	318,000,000	348,000,000	23.4
Natural Gas (Therms per year)	8,000,000	8,000,000	9,000,000	12.5

Note: Industrial natural gas demand growth rates assumed to be the same as commercial natural gas demand growth rates.
Source: Current demand data from John Bohman, PG&E, Personal correspondence to George Lu, AECOM, March 25, 2010.
Source: Growth rates from Energy Information Administration. 2010. Pacific Region. Available: http://www.eia.doe.gov/oiaf/aeo/supplement/supref.html

Actual electricity demand would vary substantially according to the types of operations within buildings, type of construction materials used in a building, whether buildings are reused or built anew, the efficiency of all electricity consuming devices within a building, and the local climate.

Private and public purveyors of energy resources, including Pacific Gas & Electric (PG&E), which provides electricity and natural gas to Yuba County, have established energy conservation programs to encourage consumers to adopt energy conservation habits, install energy efficient appliances in their homes, and reduce energy consumption during peak demand periods.

As growth occurs in accordance with the 2030 General Plan, new development will require additional electric infrastructure including new distribution lines and transformers. Individual development projects proposed in accordance with the 2030 General Plan will be required to assess project impacts during the environmental review process to ensure that PG&E has sufficient electric supplies and infrastructure to meet demand. The size, location, and types of facilities required to serve development is not knowable at this time, but would be determined in the context of development proposals.

PG&E would also be involved with new developments and projects proposing to construct additional natural gas infrastructure as necessary to meet demand pursuant to implementation of the 2030 General Plan. Individual development projects proposed in accordance with the 2030 General Plan will be required to assess project impacts during the environmental review process to ensure that PG&E has sufficient natural gas supplies and infrastructure to meet demand. Gas mains and distribution pipelines would be required in order to serve the needs of new development. The size, location, and types of facilities required to serve development is not knowable at this time, but would be determined in the context of development proposals.

Relevant Policies and Actions of the 2030 General Plan

Policies and actions of the 2030 General Plan would assist Yuba County in providing efficient and reliable electricity and natural gas service. The 2030 General Plan includes the following policies and implementation strategy to reduce energy demand and the associated need for infrastructure extensions:

- **Policy NR7.1:** New developments shall address energy conservation in landscaping methods, materials, and design.
- **Policy NR7.2:** New buildings shall meet state standards for energy efficiency and should provide for renewable energy development and use, to the greatest extent feasible.
- **Policy NR7.3:** New developments should be designed to take advantage of passive or natural summer cooling and winter solar access.
- **Policy NR7.4:** New developments should provide street and lot orientation and lot dimensions that facilitate the use of solar energy.
- **Policy NR7.5:** New developments within the Valley Growth Boundary should orient the majority of buildings so that the longer axis of the building, also known as the ridge line, is oriented east-to-west, in order to maximize the potential for passive solar heating in the winter and to minimize heat gain from the afternoon summer sun.
- **Policy NR7.6:** New developments should consider energy conservation in building-site orientation and construction, with articulated windows, roof overhangs, appropriate insulation materials and techniques, and other architectural features that improve passive interior climate control.
- **Policy NR7.7:** Shade trees or other appropriate plantings should be used in new developments to protect buildings from unwanted solar gain in summer months. Using deciduous trees on the southern side of structures is encouraged to allow cooling in the summer and solar gain in winter. Short front setbacks are encouraged to allow shade trees planted in the public right-of-way to provide summertime shading.

- **Policy NR7.8:** New buildings should emphasize passive and natural lighting systems in architectural design to conserve electricity.

- **Policy NR7.10:** The County will seek regional, state, and federal funding for energy efficiency improvements in existing buildings and the public realm.

- **Policy NR7.11:** The County and Yuba County Water Agency should explore opportunities related to future access to hydroelectric power, energy provision, strategic use of local energy resources for employment development, and other programs that have dual environmental-economic benefits.

- **Policy NR7.12:** The County will encourage financing programs designed to facilitate the installation of renewable energy systems, including those that establish a benefit district and allow property owners to repay over the long term through a special assessment on the property tax bill.

- **Action NR7.1: Energy Efficiency Retrofits in Buildings and the Public Realm**. The County will proactively track and apply for regional, state, and federal funding to be used for energy efficiency improvements and renewable energy systems installation in existing buildings and the public realm (public rights-of-way, etc.). The County will seek funding for energy efficient systems, energy-efficient appliances, insulation, energy-efficient doors and windows, and other improvements. The County will also consider the feasibility of using fees or actions required to meet County greenhouse gas efficiency policies on a fair-share basis to fund energy efficiency improvements and renewable energy systems in existing developed buildings and the public realm.

  The County will update zoning and development standards, as well as permit processes to encourage the use of renewable energy systems that are sited and designed to ensure public safety and reduce aviation conflicts

  - Related Goals: Goal NR2, Goal NR7, Goal CD15, Goal HS5
  - Agency/Department: Administrative Services
  - Funding Source: Grant funding, low-interest loans, impact fees, General Fund, and other appropriate funding sources
  - Time Frame: Ongoing, as funding is available

The 2030 General Plan includes the following policies and implementation strategy to ensure that energy infrastructure is coordinated and provided as development occurs:

- **Policy CD13.1:** Growth ~~shall~~ should be phased from developed areas and existing infrastructure outward in a logical, efficient manner, and in a way that avoids premature conversion of agricultural lands, changes in rural character, and unnecessary loss of other land-based natural resources.

- **Policy CD13.2:** The County will not induce growth by ~~providing~~ supporting the provision of services or infrastructure in areas that are not planned for development.

- **Policy CD14.1:** The County will support regional electricity, water, wastewater, water conservation, and other agreements, where cost-effective and environmentally sustainable.

- **Policy CD14.~~3~~4:** The County will coordinate with special districts, cities, LAFCO, SACOG, Caltrans, joint powers authorities, and other relevant agencies to provide efficient local and regional infrastructure, ~~and~~ public facilities, and public services.

- **Policy CD15.2:** New developments shall provide for their fair-share cost of providing infrastructure, facilities, and services to serve such development.

- **Policy CD15.3:** New developments will be required to designate lands in appropriate locations, sizes, and free of constraints to accommodate public facilities and infrastructure needed to serve such development and/or pay a fair-share fee for land acquisition.

- **Policy CD15.12:** The County will require any proposed electrical transmission lines to be located and designed in a way that reduces agricultural and other environmental impacts.

Conclusion

The policies described above would reduce local energy demand and would promote opportunities for increased production in ways that reduce the depletion of non-renewable resources. Additionally, 2030 General Plan policies would ensure that energy infrastructure is coordinated and planned as growth occurs. Federal, state, and local regulations and policies would be implemented and would ensure that sufficient energy supplies are available to serve the needs of the County. The development and operation of energy facilities would be subject to 2030 General Plan policies and actions intended to reduce aesthetics, air quality, biological, climate change, cultural, noise, hydrology, geology and soils, and other impact areas would also apply to new construction, expansion, and extension of local energy facilities. However, energy use and demand would substantially increase as a consequence of future growth associated with implementation of the 2030 General Plan. The construction of new energy facilities and the operation of energy production facilities to support 2030 General Plan development is anticipated to have **potentially significant** impacts.

Technical sections of this EIR evaluate the effects of construction activities relative to specific environmental issue areas, such as biological resources, air quality, etc., at a programmatic level of detail, as is appropriate for a general plan. These sections comprehensively address direct impacts of 2030 General Plan implementation, as well as indirect effects related to changes needed to support General Plan implementation, such as the construction and operation of new energy facilities.

The 2030 General Plan includes policies and actions, and this EIR includes mitigation measures, where necessary, to reduce or avoid impacts. Please refer to the topic-specific subsections of Section 4.0 of this EIR for more information.

The County's policies and actions referenced throughout this EIR would reduce impacts associated with construction and operation of needed energy facilities. By adhering to the policies proposed in the 2030 General Plan, as well as all applicable State and federal requirements pertaining to energy facilities construction and operation, impacts associated with construction and operation of energy facilities to meet 2030 General Plan demands would be reduced.

Despite mitigating policies and actions and the application of necessary mitigation measures, construction and operation of new or expanded energy production and delivery facilities may result in significant environmental effects.

Mitigation Measure

No mitigation beyond compliance with State and federal regulations and incorporation of 2030 General Plan policies and actions is available. The County has included throughout the 2030 General Plan all feasible measures available to mitigate such impacts. The impact is considered **significant and unavoidable**.