
4.17 ENERGY

This section was prepared pursuant to Appendix F of the CEQA Guidelines, which require that EIRs include a discussion of the potential energy impacts of a project, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. The information in this section is based largely on data and reports produced by the California Energy Commission (2009) and the Energy Information Administration of the U.S. Department of Energy (2009).

Implementation of the proposed project would contribute to overall California energy consumption; however, the proposed project site is within the Cottonwood Community Plan boundary (i.e., a designated suburban development area), and project design includes a passive solar design program to reduce annual energy use by 15 percent or more, as well as Class I Bikeways. The site location and site design elements would reduce impacts related to energy consumption to a less-than-significant level. No mitigation is required.

4.17.1 ENVIRONMENTAL SETTING

Energy consumption is analyzed in an EIR because of the environmental impacts associated with its production and usage. Such impacts include the depletion of nonrenewable resources (e.g., oil, natural gas, coal, etc.) and emissions of pollutants during both the production and consumption phases.

ENERGY USAGE

Energy usage is typically quantified using the British Thermal Unit (Btu). As points of reference, the approximate amount of energy contained in a gallon of gasoline, a cubic foot of natural gas, and a kilowatt hour (kWh) of electricity are 123,000 Btu's, 1,000 Btu's, and 3,400 Btu's, respectively.

Total energy usage in California was 8,420 trillion Btu's in 2006 (the most recent year for which this specific data is available). Of California's total energy usage in 2006, the consumption breakdown by sector was 1,553 trillion Btu for residential uses (18%), 1,583 trillion Btu for commercial uses (19%), 1,941 trillion Btu for industrial uses (23%), and 3,342 trillion Btu for transportation (40%). (Energy Information Administration, 2009)

Given the nature of the proposed project (i.e., a Planned Development in Shasta County), the remainder of this discussion will focus on the three most relevant sources of energy: electricity, natural gas, and gasoline for vehicle trips associated with residential uses.

Electricity

Electricity usage in California for differing land uses varies substantially by the type of uses in a building, type of construction materials used in a building, and the efficiency of all electricity consuming devices within a building. That said, the average annual usage of electricity is roughly 6,500 kWh/residence.

Electricity supply in California involves a complex grid of power plants and transmission lines located in the Western United States, Canada, and Mexico. The issue is complicated by market forces that have become prominent since 1998, which is when a new regulatory environment commonly referred to as "deregulation" took effect in California. Supply is further complicated by the fact that the peak demand for electricity is significantly higher than the off-peak demand. For example, in August 2004, peak electric demand—due in large part to hot weather—reached a record high of 44,497 megawatts, which is almost double the lowest demand period.

In 2000-2001, electric demand exceeded supply on various occasions, which required utilities to institute systematic rotating outages to maintain the stability of the grid and to prevent widespread blackouts. Since that time, additional generating capacity has come on-line and upgrades to various transmission lines are occurring.

Natural Gas

In 2007, California used almost 2.4 trillion cubic feet of natural gas. The natural gas was used to produce electricity (44%), in industrial uses (23%), in commercial uses (10%), and in residential uses (22%) (California Energy Commission, 2009).

Natural gas usage in California for differing land uses varies substantially by the type of uses in a building, type of construction materials used in a building, and the efficiency of all gas-consuming devices within a building. That said, the average annual usage of natural gas is roughly 45,000 cubic feet/residence.

Gasoline for Motor Vehicles

The primary factors contributing to increasing gasoline consumption are: (1) population growth; (2) declining per-mile cost of gasoline; (3) land use patterns that have increased the distance between jobs and housing; and (4) a shift in consumer preferences to larger, less fuel efficient motor vehicles.

The average fuel economy for the fleet of light-duty vehicles (autos, pickups, vans, and SUVs) steadily increased from about 12.6 miles-per-gallon (mpg) in the mid-1970s to the current 20.7 mpg. However, no further improvements in the average fuel economy for the overall fleet are projected through the year 2020. This conclusion is based on the fact that projected increases in the number of fuel efficient cars (e.g., hybrids) will be offset by projected increases in the number of SUVs, pickups, and vans.

Although no new refineries have been constructed in California since 1969, supply has kept pace with demand through a combination of refinery upgrades/modernizations and out-of-state imports.

REGULATORY SETTING

An overview of existing and proposed *Shasta County General Plan* land use classifications and *Shasta County Zoning Plan* designations for the project site is provided in Section 3.4: Panorama Planned Development Regulatory Setting. A discussion of state and local regulations related to energy, as well as objectives and policies in the *Shasta County General Plan* that are pertinent to the energy analysis for the project, are included below.

State Regulations

California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24). The Energy Efficiency Standards for Residential and Nonresidential Buildings were established in 24 CCR Part 6 in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The current California Energy Commission standards were adopted in January 2008 (California Energy Commission, 2008), and implemented in January 2010.

Local Regulations

Shasta County General Plan. The *Shasta County General Plan* includes various objectives and policies related to energy. The objectives and policies most applicable to the proposed project are summarized as follows:

Objectives

E-2 Increase utilization of renewable energy resources by encouraging development of solar, hydroelectric, biomass, waste-to-energy, and cogeneration sources.

Policies

E-b Encourage development patterns which reduce the number of miles driven in personal vehicles through consideration of higher density and mixed land uses, transit- and pedestrian-oriented developments, and increased jobs-to-housing balance. At the community level, the County shall adopt land use plans which reduce the need to travel outside the community for basic commercial services.

E-c The County should develop energy thresholds and standards which assist applicants for development projects in designing conservation features into their proposals. Energy threshold standards could also be used to assist in the evaluation of potential energy consumption impacts which may be environmentally significant.

E-g Revision or development of landscaping and tree protection standards should provide consideration to improving building energy efficiency and shading of streets and parking areas during the hot summer season.

- E-h Subdivision design review should include standards for street and building orientation which allow appropriate solar access as well as landscape shading for cooling and heating in urban and town centers.

4.17.2 THRESHOLDS OF SIGNIFICANCE

Criteria for determining the significance of impacts related to energy consumption were based on the Appendix F of the State CEQA Guidelines. An impact related to energy is considered significant if it would:

- Use fuel or energy in a wasteful manner.
- Result in a substantial increase in demand upon energy resources in relation to projected supplies.

4.17.3 ENVIRONMENTAL IMPACTS AND MITIGATION

Impact ENE-4.17-1 Use Fuel or Energy in a Wasteful Manner (*Less-than-Significant Impact*)

The Panorama Planned Development project would include approximately 430 dwelling units. Energy would be consumed during both the construction and operational phases of development. The construction phase would require energy for the manufacture and transportation of building materials, preparation of the various sites (e.g., grading), and the actual construction of the buildings and infrastructure. The operational phase would consume energy for multiple purposes including, but not limited to, building heating and cooling, lighting, appliances, and electronics. Operational energy would also be consumed during each vehicle trip associated with residents of the proposed development.

Rough estimates of operational energy usage by the proposed Panorama Planned Development are provided in Table 4.17.1. It is important to note that actual energy usage could vary substantially depending upon factors such as the actual miles driven by future residents/employees, and the degree to which energy conservation measures are incorporated into the development.

Table 4.17.1
Estimated Average Annual Energy Usage

Energy Type	Usage/Unit	Project Build-out	Annual Energy Use
Electricity	6,500 kWh/du/year	430 du	2.8 million kWh
Natural Gas	45,000ft ³ /du/year	430 du	19.3 million ft ³
Gasoline	0.048 gallons/mile	41,150 miles/day*	721,000 gallons

* Source: KD Anderson & Associates, Inc., 2008; Energy Information Administration, 2009.

The estimated operational energy usage shown in Table 4.17.1, while a small percentage of the total energy consumed in California as a whole, would nonetheless contribute to overall energy usage in California. However, the project includes several energy-efficient design standards, including a passive solar design, as well as other features to ensure that project buildings provide 15 percent greater energy efficiency than required under the Title 24 regulations (California Energy Commission) in effect at

the time of construction, and an 8-foot-wide Class 1 public bikeway that would connect Locust Road to Balls Ferry Road through the project site. Further, the project site is located within the *Cottonwood Community Plan* area, which has been designated by Shasta County as an area to accommodate higher residential densities and provide commercial/urban services. Given the site location and County designation, implementation of these design features would reduce energy consumption to a less-than-significant level.

No mitigation measures are necessary for the above less-than-significant impact.

Impact ENE-4.17-2 Result in a Substantial Increase in Demand upon Energy Resources in Relation to Project Supplies (*Less-than-Significant Impact*)

See analysis under Impact ENE-4.17-1 above.

No mitigation measures are necessary for the above less-than-significant impact.

4.17.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The project would have less-than-significant impacts related to energy. No mitigation is required.

End of Section.

