

Energy conservation implies a wise and efficient use of energy with several methods available to obtain this goal such as: decreasing overall per capita energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy resources. In accordance with Appendix F, Energy Conservation, of the CEQA Guidelines, potentially significant energy implications of a project should be considered in an EIR. Impacts may include:

- Project life cycle energy consumption
- Effects of the project on local and regional energy supplies
- Effects of the project on peak and base period energy demand
- The degree to which the project complies with existing energy standards
- Effects of the project on energy resources
- The project's transportation energy use requirements and its overall use of efficient transportation alternatives

4.1 ENVIRONMENTAL SETTING

This section discusses the current state of energy use in California and Sonoma County.

4.1.1 Energy Use

Pacific Gas & Electric (PG&E) is the local provider of both natural gas and electricity to the project site. The project site currently has 12 kilovolt (kV) overhead electrical lines as well as a 3-inch natural gas line. PG&E obtains its energy supplies from power plants and natural gas fields in northern California and from energy purchased outside its service area and delivered through high voltage transmission lines. PG&E imports both natural gas and electricity from the western states and Canada (CEC 2009a).

Total energy use statewide was estimated to be 8,420.4 trillion British thermal units (BTU) in 2006. BTU describes not only electrical energy but other energy uses such as heating with natural gas and transportation with petroleum products. The majority of this energy consumption is in the form of petroleum products, which account for 47 percent of total statewide energy use. Motor vehicles consume 57 percent of all petroleum. Only a small amount of both the petroleum and natural gas used in the state is produced locally, necessitating California to be a significant importer of fuels. **Table 4-1** shows where California obtains its petroleum and natural gas.

Table 4-1. Sources of Fuel

Location	Petroleum	Natural Gas
In State	38.1%	12.9%
Foreign	48.5%	NA
Alaska	13.4%	NA
Southwest	NA	40.8%
Canada	NA	22.1%
Rocky Mountains	NA	24.2%
Total	100%	100%

Source: CEC 2009a

Electricity used in the state comes from a number of sources. Natural gas power plants are the largest source of electricity in California; however, renewable energy sources make up a significant portion of the state's energy portfolio. Based on a 2009 report compiled by the CEC, California uses approximately 285,070 Gigawatt hours of electricity. **Table 4-2** shows the breakdown of electricity production by type.

Table 4-2. Electricity Production by Type

Natural Gas	46.5%
Coal	15.5%
Hydroelectric	13.1%
Nuclear	14.9%
Geothermal	5.1%
Biomass	2.2%
Solar/Wind	2.7%
Total	100.0%

Source: CEC 2009a

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. The average annual usage of electricity is roughly 13 kWhr/square foot for all commercial buildings but would be higher for hospitals since they are in continuous use.

The electrical grid within California is a complex grid that combines the local generation with power produced as far away as Canada. In 2001 the energy demand at the peak was higher than that available and rolling blackouts were instituted throughout the state. Since that time new local power sources have come on line and improvements to the statewide energy grid have been

constructed to prevent future blackouts. The demand for energy varies by sector. Of the end use sectors, transportation was the largest user of energy, accounting for 40 percent of all energy use. The remaining end use sectors, industrial, commercial and residential, all used a similar amount of electricity (23, 19, and 18 percent, respectively). Demand for electricity and natural gas in Sonoma County also varies by end users. **Table 4-3** shows the total amount demanded by each sector in the county.

Table 4-3. Sonoma County Electricity and Natural Gas Consumption 2007

User	Electricity	Natural Gas
Residential Users	1,264 Million kWh	37.27 Million Therms
Non-Residential Users	1,583 Million kWh	76.15 Million Therms
Total	2,847 Million kWh	113.42 Million Therms

Source: CEC 2009b

4.2 REGULATORY SETTING

This section describes the applicable regulatory environment within both California and Sonoma County. The project is either required or advised to comply with the following regulatory standards and programs.

California Environmental Quality Act

Appendix F of the CEQA Guidelines describes the energy conservation information and analyses that should be included in an EIR. Energy conservation is defined in terms of decreased reliance on natural gas and oil, decreased per capita energy consumption and increased reliance on renewable energy sources. An EIR should include a discussion of potentially significant energy impacts of the proposed project, with emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

California Energy Commission (CEC)

The CEC implements a number of programs that are designed to increase the efficiency of statewide energy utilization. With regard to electricity, the CEC has been actively funding local electricity efficiency-improvement and demand-side management programs for many years. Recent efforts have included funding to support the installation of more energy-efficient lighting in public buildings and schools as well as implementation of energy-efficiency standards for new buildings. These programs are expected to continue to reduce the rate of demand growth. As technology improves and equipment becomes more energy efficient, Sutter may be able to use Commission funds to update their buildings to incorporate the most energy efficient equipment, further decreasing their energy demand.

California Energy Action Plan

Administered by the California Energy Commission, the EAP was initially created in 2003 and updated in 2005. The EAP established shared goals and specific actions to ensure that adequate, reliable, and reasonably-priced electrical power and natural gas supplies are achieved and provided through policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers. Also incorporated in the EAP are specific actions reflecting the importance of transportation fuels to California's economy and the need to mitigate the environmental impacts caused by their use, as well as the importance of taking actions in the near term to mitigate California's contributions to climate change from the electricity, natural gas and transportation sectors.¹

California Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24 Building Standards)

The energy efficiency standards section of Title 24 of the California Code of Regulations Building Standards was created in response to a legislative mandate to reduce energy consumption. The Title 24 standards are intended to reduce energy bills, increase reliability of the energy delivery system and to help improve the economic conditions of the state as a whole. By creating more energy efficient buildings, fewer power generation facilities have to be constructed and as a result consumers receive savings, the energy grid can be updated to be more reliable and the economy as a whole sees the benefits of energy conservation. The CEC adopted the 2005 Standards on November 5, 2003, and the Building Standards Commission adopted them on July 21, 2004.

Leadership in Energy and Environmental Design (LEED)

LEED is an internationally recognized green building certification system, developed by the [U.S. Green Building Council \(USGBC\)](http://www.usgbc.org), providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across multiple energy efficiency metrics (<http://www.usgbc.org/Default.aspx>).

The metrics where LEED prioritizes its focus are: site location, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation in design, and regional priority. Points are awarded to buildings that meet certain criteria in each category. Out of a 110 total possible points, 40 points merits certification, 50 points merits silver certification, 60 points merits gold certification, and 80 points merits platinum certification. (U.S. Green Building Council, 2009).

Sonoma County General Plan 2020

Within the General Plan, the county set several goals, objectives and policies related to energy conservation and efficiency. The following objectives and policies are the most relevant to the project:

¹ California Energy Commission's website. http://www.energy.ca.gov/energy_action_plan/index.html, 2008.

- **Goal OSCR-14:** Promote energy conservation and contribute to energy demand reduction in the County.
- **Objective OSRC-14.1:** Increase energy conservation and improve energy efficiency in County government operations.
- **Objective OSRC-14.2:** Encourage County residents and businesses to increase energy conservation and improve energy efficiency.
- **Objective OSRC-14.4:** Reduce greenhouse gas emissions by 25% below 1990 levels by 2015.
- **Policy OSRC-14d:** Support project applicants in incorporating cost effective energy efficiency that may exceed State standards.
- **Policy OSRC-14f:** Use the latest green building certification standards, such as LEED standards for new development.

4.3 IMPACT ANALYSIS

This section describes the energy required to construct the project as well as the energy needs of the project when fully operational. For purposes of a worst case analysis, it is assumed that the project involves construction of a 162,000-square-foot Sutter Medical Center (i.e., assuming full buildout through Phase III), a 100,000-square-foot Physicians Medical Center, an 80,000-square-foot Medical Office Building, and an 11,500-square-foot Central Utility Plant.

4.3.1 Thresholds of Significance

For purposes of this analysis the project would have a significant impact regarding energy use if:

- The project would result in wasteful, inefficient and unnecessary usage of energy as identified by CEQA Section 21100(b)(3) and CEQA Guidelines Section 15126(a)(1); or
- The project would require a substantial increase in demand or transmission services which would require the construction of new or expanded energy production and supply facilities.

4.3.2 Impacts and Mitigation

4.3.2.1 Construction Energy Use

Most of the energy used during construction would be in the form of gasoline and diesel powered construction and transportation equipment, including trucks, bulldozers, cranes, and possibly pile drivers. Other equipment includes construction lighting, field services (trailers), and electrically driven equipment such as pumps and other tools. Secondary energy users, which produce the construction material required to build the project, also represent a portion of the construction energy demand.

Two alternative methods of building foundation preparation are being considered for the proposed project; soil surcharging and pile driving. Soil surcharging would require importation

of 100,000 cubic yards of fill to the site requiring approximately 9,000 total truck loads (round trips). There may also be the need in 2013/2014 to export about 30,000 cubic yards of fill from the site, 2,700 total truck loads (round trips). Even using the pile driving method, construction of the project would still require approximately 6,700 truck loads (round trips) of soil to be imported to the site for site grading. In addition, this method of construction would require energy consumption associated with driving approximately 700 piles approximately 45 feet below ground surface.

Construction of the proposed project would use electricity and gas as a short-term consequence (up to 48 months) of construction of the project. Construction of the proposed project would be similar in the consumption level of electricity and gas to any project of this size. Energy consumption associated with construction activities is not anticipated to result in local energy demand exceeding the capacity of PG&E and gasoline/diesel fuel suppliers.

Construction activities are not anticipated to result in an inefficient use of energy, as construction contractors would purchase their own gasoline and diesel fuel from local suppliers and would conserve the use of their supplies to minimize costs to the project. In addition, mitigation measures stipulated in Section 3.4, Air Quality, to reduce construction-related emissions, such as minimizing idling time, using local sources for fill material, maintaining properly tuned and serviced equipment would also help minimize construction-related energy use.

It is assumed that secondary facilities, such as those that would produce construction materials for the Proposed Project would utilize all reasonable energy conservation practices in order to minimize the costs associated with energy use. As such, it can be assumed that construction-related energy consumption by secondary facilities during the construction of the Proposed Project would not result in a wasteful, inefficient and unnecessary usage of energy; or placement of a significant demand on regional energy supply or requirement of substantial additional capacity with regards to energy consumption during the construction phase.

For the above reasons and because of the temporary nature of construction activities, this effect would be a less than significant impact.

4.3.2.2 Operational Energy Use

Based on worst case estimates from the applicant's mechanical engineers (Sutter Energy Conservation Report, March 2009), the three facilities that will be power consumers will use a combined 6,520,577 kilowatt hours per year (kWh/yr) at full buildout.

Although operation of the proposed project would result in the consumption of large quantities of energy (typical for a project of this type and size), several aspects of the project would help manage the amount and efficiency of energy consumption and would ensure that energy consumption is not inefficient, wasteful, or unnecessary, or place a significant demand on regional energy supplies. Consistent with Title 24 building standards, a number of energy reduction and efficiency measures are being incorporated into the project to reduce energy consumption. In addition, all facilities are proposed to be LEED certified and as a result would use many of the best energy reduction and efficiency measures available. See Section 4.4.2 below for a discussion of measures proposed to be incorporated into the project.

With compliance with Title 24 building standards and the incorporation of LEED-certified energy reduction and conservation methods into facility design increases in energy demand associated with the new medical facilities would not represent a wasteful use of energy. The new hospital building and Physicians Medical Center will replace the existing, less energy-efficient medical facilities on Chanate Road. While the buildings on Chanate will likely be occupied by other uses, the new uses are unlikely to involve 24-hour-a-day operations like the existing hospital use, and therefore would likely consume less energy. .

The project would meet all the relevant General Plan energy conservation policies (Section 4.2.2) and would help Sonoma County meet its desired energy conservation goals and objectives.

4.3.2.3 Operational Impact on Energy Supplies

In 2008 PG&E customers purchased 74,783 million kWh/yr of which 51,100 million kWh/yr needed to be purchased by PG&E from other utilities to meet demand (PG&E 2008). The new project represents an increase in the demand for electricity in Sonoma County. Sonoma County uses 2,847 million kWh/yr. The project is expected to require 6,521 thousand kWh/yr, or approximately 0.23 percent of all the electricity used in Sonoma County. This small increase would not represent a significant increase in the electricity usage within Sonoma County and it is within PG&E capabilities to provide it without additional infrastructure. PG&E has indicated it has adequate electricity to serve the proposed project. Therefore the project would not require the construction of additional electrical generation capacity.

Impacts to natural gas would be similar to that of electricity. The proposed project's natural gas usage is estimated to be approximately 109,337 therms per year. Natural gas usage in Sonoma County is approximately 113,400,000 therms per year. Therefore, the proposed project would use approximately 0.096 percent of the current Sonoma County natural gas use. This small increase in natural gas use by the proposed project will not represent a significant increase in the natural gas usage within the county.

4.3.2.4 Operational Impact on Peak and Base Demand for Electricity

Typically peak demand occurs when a large number of users concurrently demand such a large amount of electricity that it puts a strain on the electrical grid. The most common time for this to occur is during weekday afternoon hours during the summer when air conditioning units at both offices and homes are running.

The proposed project would increase the peak demand on the electrical grid by demanding more power at the same time as other users. However, compliance with Title 24 building standards, as well as the measures proposed by Sutter, including the LEED certification, would make the energy use by the hospital at peak periods an efficient use of energy. Further, the electrical generation and supply industry at the whole has responded to the energy issues encountered in 2000-2001 and has brought online many new generation facilities as well as developed a better delivery system. With these significant improvements the industry is more prepared now for peak demand increases than they were in 2000 and 2001.

4.3.2.5 Operational Transportation Energy Use

The new location is adjacent to US 101 and is a more easily accessible site for both transit and individuals than the current Chanate Road site. The current hospital on Chanate Road is located in a residential neighborhood several miles off the freeway. There are numerous stop lights and stop signs between the freeway exit and the hospital.

The proposed project site is near a freeway exit which will provide easier access for ambulances and other traffic approaching from US 101. The proposed project would construct an additional exit lane to be used by emergency vehicles only. The proposed project site would provide better access from fast-growing areas north of Santa Rosa. In addition, transit service to existing service areas would be maintained or improved. A review of the bus schedule for the Roseland area, a low income neighborhood of Santa Rosa, shows that a trip to the Sutter Chanate campus takes approximately 45 minutes. From the same location, a bus trip to Old Redwood Highway/Mark West Springs Road near the proposed project site takes approximately 34 minutes (Sonoma County Department of Health Services 2009). It is likely that transit lines and stops will be adjusted to improve service to the proposed project site if more bus riders want to go there.

One of the objectives of the proposed project is to locate on the same site facilities that link inpatient, outpatient, and physician office visits (see Section 2.1, Project Objectives). In terms of energy consumption related to vehicle use, the co-location of the medical services in the proposed project would focus the destination of vehicle trips and benefit fuel consumption. The proposed mix of medical services would encourage multipurpose trips and reduce fuel consumption by reducing the number of trips some people might otherwise make between different medical facilities.

Also, as discussed in Section 4.4.2 below, the Traffic Demand Management (TDM) plan proposed for the project includes numerous measures to reduce vehicle use and increase efficiencies by having fewer cars on the road.

Therefore, project operation would not result in a wasteful or inefficient use of transportation energy.

4.4 PROPOSED METHODS TO REDUCE ENERGY USE

Mandatory compliance with both state and county building and energy standards are required for the project before operations can begin. The energy reduction measures recommended and suggested in this EIR will help decrease energy use during both project construction and operation. Two of the energy reduction methods discussed below are mitigation measures to reduce air pollution impacts. The remaining energy reduction methods have been proposed by the project applicant as possible methods to be used to obtain LEED certification.

4.4.1 Air Quality Mitigation Measures Identified in this EIR

The following mitigation measures have already been discussed in the air quality Section 4.4. While these mitigation measures shall be implemented in order to minimize air quality impacts they also will assist in preventing inefficient energy usage and promote conservation of energy

resources. The following mitigation measures reduce both air quality impacts as well as reduce energy inefficiencies:

- **Mitigation AIR-1: Reduce Length of Haul Truck Trips, Restrict Idling**
 - a) Preference for material to be imported to the site should be given to sources closest to the project site;
 - b) Enforce state idling restrictions that apply to large trucks and construction equipment by posting clearly visible signs at the haul truck entrances that clearly state the restrictions (no idling for greater than 5 minutes at any location)
- **Mitigation AIR-2b: Include Measures to Reduce Criteria Pollutant Exhaust From Construction Equipment**
 - a) Properly tune and maintain equipment for low emissions.
- **Mitigation AIR-7: Develop project with the project design features and emissions reduction measures**

The project shall be developed with the project design features and emissions reduction measures set forth in Appendix C-6:

- a) Incorporate energy conservation measures, including Leadership in Energy and Environmental Design (LEED) or equivalent standards in the design and construction of the new campus. Such measures to be incorporated to the extent feasible include passive energy conservation designs, green roof designs, low flow and waterless fixtures, and low impact development practices. Participate in PG&E's Energy by Design program or the equivalent to optimize solar to the extent feasible (see **Section 4.4.2** for more details).
- b) Include measures to reduce vehicle trips and encourage transit, such as coordinating with Sonoma County Transit, providing bus stops adjacent to the hospital, providing priority parking for vanpools and carpools, and recharge stations or similar facilities for electric vehicles or other alternate fuel vehicles. Where feasible, use low emission of alternate fuel vehicles in the campus service fleet (see **Section 4.4.2** for more details).
- c) Provide sidewalks/pedestrian paths to encourage walking; provide bicycle parking, and develop off peak hour work shifts to the maximum extent feasible
- d) Reduce water usage and associated energy demands by maximizing use of on-site water (rainwater or grey water) where appropriate, utilizing high performance fixtures and equipment, and drip irrigation and high efficiency irrigation control on any new landscaping. (The project's wastewater offset program will also reduce water usage).
- e) Monitor the efforts of CARB and other state agencies charged with reducing the state's contribution to global climate change and implement any applicable strategies adopted through promulgated regulations.

4.4.2 Energy Reduction Methods

The following energy conservation measures shall be implemented in order to minimize inefficient energy usage and promote conservation of energy resources throughout the life of the project. The energy reduction methods proposed by the project applicant are:

Daylighting of All Buildings 100,000 Square Feet or Greater

Each interior public space with access to daylight shall be equipped with a “daylighting system” to reduce use of electricity for area lighting. The daylighting system shall include switching mechanisms to automatically and continuously dim all lights as the daylight contribution increases through use of properly placed windows and skylights.

Night Dimming

Each interior public corridor shall be equipped with an automatic switching system to dim lighting within the corridor to between 60 percent and 70 percent illumination between the hours of 10:00 PM and 7:00 AM (standard time).

Energy Efficient HVAC Systems

All mechanical equipment provided for the purpose of heating and cooling interior public spaces shall satisfy all California title 24 requirements; in addition, all such equipment shall achieve a minimum EER (energy efficiency ratio) of rating of 10.0 or equivalent.

Central Energy Management for All Buildings 100,000 Square Feet or Greater

Each campus building as identified on the approved development plan shall be equipped with energy management systems. The direct digital control system for the campus buildings will be networked and meet the typical requirements of an “energy management system.”

Water Heating for All Buildings 100,000 Square Feet or Greater

Waste heat shall be captured in order to preheat water for uses requiring heated water, where feasible.

Cool Roofs

All flat roof surfaces (excluding decorative architectural elements and canopies) shall be provided with a high albedo membrane roof, also known as a cool roof. The solar reflectivity of such roof membrane systems are intended to lower interior cooling loads in the Sonoma County climate zone by roughly 10%, compared to conventional roofing. Solar reflectivity on roofs also reduces the amount of conversion of UV rays to infrared heat, possibly reducing the heat island effect created by most large, developed parcels of land.

Interior Lighting Systems

All interior public spaces shall be provided with lighting systems that utilize high efficiency T-8 or T-5 fluorescent lamps and electronic ballasts, or approved equivalent systems. Fluorescent lamps shall be of the “low-mercury” variety.

LED Interior Signage Illumination for All Buildings 100,000 Square Feet or Greater

Light emitting diode (LED) lighting, or an approved equivalent, shall be used for all internally illuminated building signage. LED lighting technology is recognized as consuming substantially

less electricity than fluorescent or other illumination sources. In addition, the longer lamp life afforded by LED technology substantially reduces need to manufacture and dispose of fluorescent lamps.

Savings by Design

The project will participate in PG&E's Savings by Design program, which offers rebates and lower rates to building owners who purchase and design their buildings to be energy efficient. This cost savings will make it more economical for energy efficiency measures to be incorporated into the project.

Alternative Transportation Methods

The Traffic Demand Management (TDM) (Sutter Energy Conservation Report, March 2009) proposed for the project includes on-site bike and shower facilities, telecommuting, flexible schedules, off- and on-site paths and sidewalks, bikeways, priority for vanpools, carpools, recharge stations for electric vehicles (and possibly natural gas) and convenient public transit (including an upgraded bus stop adjacent to the site). All of these measures will help to reduce vehicle use and increase efficiencies by having fewer cars on the road.

4.5 CUMULATIVE IMPACTS

The EIR for the Sonoma County General Plan 2020 determined that energy use from development in the County would represent a significant cumulative increase in the demand for energy. Sonoma County uses 8,175 million kWh annually while the proposed project is expected to require 6,521 thousand kWh a year or roughly 0.23% of all the electricity used in Sonoma County. Similarly the proposed project would only require 0.096% of the current natural gas used within Sonoma County. These small increases would add incrementally to energy usage but would not represent a significant increase in the energy usage within Sonoma County, as the new hospital would replace an old, less efficient facility located at a greater distance from US 101. Further, the project's compliance with Title 24 building standards and incorporation of additional energy saving techniques during construction and operation would help ensure the project does not make a cumulatively considerable contribution to an increased energy demand.

