

3.6. ENERGY

This section addresses energy use related to transportation and to electrical and natural gas services. Below is a brief overview of State and local laws and regulations pertaining to energy. The analysis considers the primary uses of energy for the proposed project; the benefit of existing regulations that require energy-efficient construction and operation; the location, design, and mix of uses of the proposed project relative to energy use; the degree to which the proposed project would create physical environmental effects related to the construction or expansion of existing transmission facilities; and the potential for the proposed project to result in the wasteful, inefficient, and unnecessary consumption of energy.

3.6.1 ENVIRONMENTAL SETTING

ELECTRICAL SERVICE

In 2014, the total system power for California was 293,268 gigawatt hours (GWh) of electricity, of which approximately 198,973 GWh of electricity was generated in-state (California Energy Commission [CEC] 2015b).

The Sacramento Municipal Utility District (SMUD) generates, transmits, and distributes to approximately 1.5 million customers within its estimated 900-square-mile service area, which covers Sacramento County, (including the city of Elk Grove), and a small portion of Placer County (SMUD 2015). SMUD is one of 46 publicly owned utilities in the state and in 2014 it was the fifth largest utility in California (CEC 2016a). In 2014, SMUD generated approximately 10,573 million kilowatt-hours (kWh) of electricity within its service area (CEC 2016b). Table 3.6-1 shows SMUD’s average historic electrical consumption and forecasts of future consumption. The average annual growth rate of electrical consumption is expected to decrease over time with energy conservation efforts, even though electric vehicle use is expected to increase electricity consumption within SMUD’s service area by nearly 100 GWh in the mid demand case by 2022 (CEC 2012b).

Year	Consumption (GWh) ²
1990	8,361
2000	9,502
2010	10,354
2011	10,486
2015	11,082
2020	11,812
2022	12,109

Notes: SMUD = Sacramento Municipal Utility District; GWh gigawatt hours; CEC = California Energy Commission
¹ Based on the 2011 Final–Mid Forecast
² Gigawatt equals 1 million kilowatts.
Source: CEC 2012b:96

Electricity Sources

Electricity is generated through a combination of nuclear power plants; natural gas-fired power plants; renewable energy sources, such as wind, solar, geothermal, and small hydroelectric facilities; and additional energy purchased from other energy suppliers. SMUD receives power through varied sources, including hydropower,

natural-gas-fired generators, renewable energy from solar and wind power, and power purchased on the wholesale market (which may include one or more of the other sources listed above). As shown in Table 3.6-2, in 2014, SMUD received 25 percent of its electricity from natural gas-fired power plants; 0 percent from nuclear generation; 27 percent from eligible renewable resources, such as biomass, solar, wind, geothermal, and small hydroelectric power plants that generate 30 megawatts (MW) or less of electricity; 10 percent from large hydroelectric power plants; and 23 percent from other unspecified power sources (i.e., electricity that is not traceable to specific generation sources by any auditable contract) (SMUD 2015b).¹

Electrical Sources	Percent
Natural Gas	25
Nuclear	0
Renewable ¹	27
Large Hydroelectric	10
Other Unspecified ²	23

Notes:
¹ Renewable energy sources include biomass & waste, geothermal, solar, wind, and small hydroelectric power plants that generate 30 MW or less of electricity. These energy sources are considered eligible to meet California's renewable portfolio standard of 33 percent renewable energy generation by 2020.
² Other unspecified sources refer to electricity that is not traceable to specific generation sources by any auditable contract.
Source: SMUD 2015b

Energy Conservation and Renewable Energy Programs

SMUD has a number of energy-efficiency programs. The Home Performance Program allows customers a low cost appraisal of the overall energy efficiency of their homes and provides incentives for home energy improvements through a grant from the U.S. Department of Energy. Additionally, SMUD offers tools for home and business owners to track their energy use and identify ways to conserve energy through energy-efficient upgrades.

SMUD's voluntary "Greenergy" green pricing program began in 1997, which supports reducing electricity generated by fossil fuels. Greenergy is a voluntary program where customers may elect to obtain 100 or 50 percent, respectively of their electricity from a renewable source by paying a monthly fee (SMUD 2015c). Residential customers also have the option of selecting renewable energy supply for 50 percent of their electricity and offsetting the carbon footprint with special purchases in carbon offset projects.

SMUD's RPS program was approved by SMUD's elected board one year before the state RPS program was approved by the legislature and governor. The RPS program was implemented to support renewable energy generation and reduce the need to generate energy from fossil fuels. To meet its annual renewables goals, SMUD both contracts for renewable electricity from independent power producers and builds and owns renewable energy power plants. SMUD met its renewable energy supply goals of 24 percent for 2011 (20 percent RPS + 4 percent Greenergy in 2011). SMUD has chosen to meet or exceed the state requirements and anticipates meeting the 2020 goal of 37 percent (33 percent RPS plus 4 percent Greenergy) (SMUD 2015c).

¹ Renewable energy sources for the purposes of California's renewable portfolio standard of 33 percent renewable energy generation by 2020 include biomass, solar, wind, geothermal, and small hydroelectric power plants that generate 30 MW or less of electricity.

NATURAL GAS SERVICE

Natural gas service in Sacramento County is provided by Pacific Gas and Electric Company (PG&E) through portions of PG&E's approximately 46,000 miles of natural gas distribution pipelines. In 2014, PG&E delivered approximately 4,386 million therms (MM therms) of natural gas throughout its service area (CEC 2016c). Of this total, the County of Sacramento received 272 MM therms, which accounted for 6 percent of the total natural gas deliveries within the PG&E service area (CEC 2016d). Table 3.6-3 shows PG&E's average historic natural gas consumption and forecasts of future consumption. The average annual growth rate of electrical consumption is expected to decrease over time with energy conservation efforts. All construction and maintenance activities for natural gas facilities are the responsibility of PG&E.

Year	Consumption (MM Therms)
1990	5,275
2000	5,291
2010	4,643
2015	4,862
2020	5,035
2022	5,081

Notes: PG&E = Pacific Gas and Electric Company; MM therms = million therms; CEC = California Energy Commission
¹ Based on the 2011 Final –Mid Forecast
 Sources: CEC 2012a:62

ENERGY USE FOR TRANSPORTATION

Transportation is, by far, the largest energy consuming sector in California, accounting for more than 38 percent of all energy use in the state (U.S. Energy Information Administration 2014). Since transportation accounts for more energy consumption than heating, cooling, and powering of buildings, powering industry, or any other use, travel demand is very important for consideration in an assessment of energy efficiency (Lawrence Berkeley National Laboratory 2013).

The regional per-capita VMT in 2020 is estimated to be 25.6 miles per day, with the 2036 VMT estimated to be 24.2 per day (Sacramento Area Council of Governments [SACOG] 2016, Chapter 5B, page 79). The decrease in per-capita VMT can be attributed to several factors, including alternate modes of transportation in proximity to land uses within the region. Because per-capita VMT would decline, the use of transportation fuels is projected to become more efficient.

The City of Elk Grove Transit Services has a Transportation Demand Management Program (TDM) which promotes and encourages the use of alternative commuter transportation within the City of Elk Grove. The City is working closely with employers to address local transportation and air quality issues. Some of the services provided include:

- ▶ Promotion of alternative transportation (walking, biking, public transit or ridesharing) to all residents;
- ▶ Outreach to employers about alternative transportation;
- ▶ Ridematching (Carpool/Vanpools/Bicycling); and

- ▶ Travel Training where residents are taught how to ride public transit, use bicycle and pedestrian trails in the City, to telecommute or rideshare in a car or van.

Successful implementation of this program could help reduce the city-wide, per-capita VMT.

3.6.2 REGULATORY FRAMEWORK

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Energy Policy and Conservation Act of 1975

The Energy Policy and Conservation Act of 1975 established the first fuel economy standards for on-road motor vehicles sold in the United States. The National Highway Traffic and Safety Administration (NHTSA) is responsible for establishing vehicle standards and revising existing standards. The Corporate Average Fuel Economy (CAFE) program was created to determine vehicle manufacturers' compliance with the fuel economy standards. The U.S. Environmental Protection Agency (U.S. EPA) administers the testing program that generates the fuel economy data.

National Energy Act of 1978

The National Energy Act of 1978, including the Public Utility Regulatory Policies Act (Public Law 95-617), Energy Tax Act (Public Law 95-318), National Energy Conservation Policy Act (Public Law 95-619), Power Plant and Industrial Fuel Use Act (Public Law 95-620), and the Natural Gas Policy Act (Public Law 95-621), is a broadscale, national energy conservation of renewable energy initiative.

The intent of the National Energy Act was to promote greater use of renewable energy, provide residential consumers with energy conservation audits to encourage slower growth of electricity demand, and promote fuel efficiency. The Public Utility Regulatory Policies Act created a market for nonutility electric power producers to permit independent power producers to connect to their lines and to pay for the electricity that was delivered.

The Energy Tax Act promoted fuel efficiency and renewable energy through taxes and tax credits. The National Energy Conservation Policy Act required utilities to provide residential consumers with energy conservation audits and other services to encourage slower growth of electricity demand.

Energy Policy Acts

The Energy Policy Act of 1992 (EPAct) was developed to reduce dependence on imported petroleum and improve air quality by addressing all aspects of energy supply and demand, including alternative fuels, renewable energy, and energy efficiency. EPAct requires certain federal, state, and local government and private fleets to purchase alternative fuel vehicles. The act also includes definitions for "alternative fuels," and includes fuels such as ethanol, natural gas, propane, hydrogen, electricity, and biodiesel.

The Energy Policy Act of 2005 was signed into law on August 8, 2005. The Energy Policy Act set federal energy management requirements for energy-efficient product procurement, energy savings performance contracts, building performance standards, renewable energy requirements, and alternative fuel use. The Energy Policy Act also amends existing regulations, including fuel economy testing procedures.

Energy Independence and Security Act of 2007

Signed into law in December 2007, the Energy Independence and Security Act was passed to increase the production of clean renewable fuels; increase the efficiency of products, buildings, and vehicles; improve the energy performance of the federal government; and increase U.S. energy security, develop renewable fuel production, and improve vehicle fuel economy. The Energy Independence and Security Act included the first increase in fuel economy standards for passenger cars since 1975. The act also included a new energy grant program for use by local governments in implementing energy-efficiency initiatives, as well as a variety of green building incentives and programs.

Executive Order 13514

On October 5, 2009, the President signed Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance (3 CFR 13514). The Executive Order set sustainability goals for federal agencies and focuses on making improvements in their environmental, energy, and economic performance. The Executive Order requires agencies to meet a number of energy, water, and waste reduction targets, including:

- ▶ 30 percent reduction in vehicle fleet petroleum use by 2020;
- ▶ 26 percent improvement in water efficiency by 2020;
- ▶ 50 percent recycling and waste diversion by 2015;
- ▶ 95 percent of all applicable contracts will meet sustainability requirements;
- ▶ Implementation of the 2030 net-zero-energy building requirement;
- ▶ Implementation of the stormwater provisions of the Energy Independence and Security Act of 2007, section 438; and
- ▶ Development of guidance for sustainable federal building locations in alignment with the Livability Principles put forward by the Department of Housing and Urban Development, DOT, and USEPA.

Executive Order 13693

On March 19, 2015, the President signed Executive Order 13693, Planning for Federal Sustainability in the Next Decade. The Executive Order sets a goal of reducing federal agency greenhouse gas (GHG) emissions by 40 percent over the next decade. The Executive Order sets agency GHG reduction targets and sustainability goals, including:

- ▶ Percentage reduction targets must be proposed by each federal agency, including FHWA, FTA, and Federal Railroad Association (FRA), for agency-wide GHG emissions reductions by the end of fiscal year 2025 relative to a fiscal year 2008 baseline.
- ▶ Sustainability goals for each federal agency, including:
 - Promoting building energy conservation, efficiency, and management;

- Requiring the use of renewable and alternative energy for electric and thermal energy in federal buildings by up to 25 percent by fiscal year 2025;
- Requiring the use of renewable and alternative energy for total building energy consumption in federal buildings by up to 30 percent by fiscal year 2025;
- Improving federal agency water efficiency and management to reduce water consumption by 36 percent by fiscal year 2025;
- Improving federal agency vehicle fleet efficiency and management to reduce GHG emissions by 30 percent by fiscal year 2025;
- Promoting sustainable acquisition and procurement practices; and
- Advancing waste prevention and pollution prevention by diverting at least 50 percent of non-hazardous solid waste.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

California Energy Commission Plans and Programs

The California Energy Commission (CEC) is the state’s primary energy policy, planning, and energy efficiency standards regulatory agency. The CEC collects and analyzes energy-related data, prepares statewide energy policy recommendations and plans, promotes and funds energy efficiency programs, and adopts and enforces appliance and building energy efficiency standards. The CEC has five major responsibilities: (1) forecasting future energy needs and keeping historical energy data, (2) licensing thermal power plants 50 MW or larger, (3) promoting energy efficiency through appliance and building standards, (4) developing energy technologies and supporting renewable energy, and (5) planning for and directing the state response to an energy emergency.

Last updated in 2008, the State of California Energy Action Plan establishes goals and specific actions to ensure adequate, reliable, and reasonably priced electrical power and natural gas supplies, initiatives for increasing supply and reducing demand, in the context of global climate change (CEC 2008).

The CEC conducts assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery, and distribution. The CEC adopts the Integrated Energy Policy Report (IEPR) every two years and an update every other year. The 2014 IEPR is the most recent report and provides a summary of energy issues, outlining strategies and recommendations to further California’s goal of ensuring reliable, affordable, and environmentally responsible energy sources (CEC 2015a).

California Public Utilities Commission

The CPUC has authority to set electric rates, regulate natural gas utility service, protect consumers, promote energy efficiency, and ensure electric system reliability. The California electricity market, regulated by the CPUC, serves 11.5 million customers with 32,698 miles of transmission lines and 239,112 miles of distribution lines for a total economic value of \$23.7 billion (CPUC 2015a).

The CPUC has established rules for the planning and construction of new transmission facilities, distribution facilities, and substations. Utility companies are required to obtain permits to construct certain power line facilities or substations. The CPUC also has jurisdiction over the siting of natural gas transmission lines.

The CPUC regulates distributed generation policies and programs for both customers and utilities. This includes incentive programs (e.g., California Solar Initiative) and net energy metering policies. Net energy metering allows customers to receive a financial credit for power generated by their on-site system and fed back to the utility. The CPUC is involved with utilities through a variety of energy procurement programs, including the Renewable Portfolio Standard program.

In 2008, the CPUC adopted the Long Term Energy Efficiency Strategic Plan, which is the roadmap to achieving maximum energy savings in California through 2020 (CPUC 2015b). Consistent with California's energy policy and electricity "loading order", the Energy Efficiency Strategic Plan indicates that energy efficiency is the highest priority resource in meeting California's energy needs. The CPUC also adopted energy goals for all new residential construction in California to be zero net energy (ZNE) by 2020. The ZNE goal means new buildings must use a combination of improved efficiency and distributed renewable energy generation to meet 100 percent of their annual energy need (CEC 2015b). In addition to the ZNE goals for residential buildings by 2020, the CPUC has adopted goals that all new commercial construction in California will be ZNE by 2030 and 50 percent of existing commercial buildings will be retrofit to ZNE by 2030.

Renewable Portfolio Standard

In 2002, state law established the basic policy framework to increase the use of renewable energy resources in California, also known as the Renewable Portfolio Standard (RPS). In 2011, SB X1-2, was signed to require all retail suppliers of electricity to procure at least 33 percent of annual retail sales from eligible renewable energy sources by 2020. This requirement applies to all electricity retailers in the state, including publicly-owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. On October 15, 2015, SB 350 was signed by Governor Brown expanding the RPS to 50 percent by the end of 2030.

Performance Standard for Baseload Power Generation

SB 1368 (Chapter 598, Statutes of 2006) required the California Public Utilities Commission (PUC) to establish a GHG emissions performance standard for "baseload" generation from investor-owned utilities of 1,100 lbs. CO₂/Megawatt hour. The CEC established a similar standard for local publicly owned utilities. All electricity provided to California, including imported electricity, must be generated from plants that meet or exceed this standard.

Senate Bill 1 (Chapter 132, Statutes of 2006)

The California Solar Initiative (Senate Bill 1, Chapter 132, Statutes of 2006), also known as the "Million Solar Roofs" legislation, set a goal of installing 3,000 megawatts of new solar capacity by 2017.

Title 24 Energy Standards

Energy Conservation Standards for new residential and nonresidential buildings were first adopted by the CEC in June 1977 and were most recently revised in 2013 (Title 24, Part 6 of the California Code of Regulations [Title 24]). Title 24 governs energy consumed by commercial and residential buildings in California. This includes the

heating, ventilation, and air conditioning (HVAC) system; water heating; and some fixed lighting. Non-building energy use, or “plug-in” energy use, is not covered by Title 24. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. California's Building Energy Efficiency Standards are updated on an approximate 3-year cycle. The most recent update was in 2013. The 2013 Title 24 standards went into effect July 1, 2014, and improve on the 2008 Title 24 standards. 2016 Title 24 standards have been drafted and will supersede the 2013 standards by going into effect January 1, 2017.

Appliance Efficiency Regulations

California’s 2009 Appliance Efficiency Regulations (20 CCR 1601–1608) were adopted by the CEC on December 3, 2008, and approved by the California Office of Administrative Law on July 10, 2009. The regulations include standards for both federally regulated appliances and non-federally regulated appliances.

Green Building Standards

First adopted in 2010 (and taking effect in 2012), the California Green Building Standards Code (24 CCR Part 11 [CALGreen]) is the State’s primary sustainability code. The CALGreen code was updated in 2013 (and took effect January 1, 2014), with a supplement effective July 1, 2015. These comprehensive regulations will achieve major reductions in GHG emissions, energy consumption, and water use. CALGreen will require that every new building constructed in California reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills, and install low-pollutant-emitting materials. The code also requires separate water meters for non-residential buildings’ indoor and outdoor water use, with a requirement for moisture-sensing irrigation systems for larger landscape projects and mandatory inspections of energy systems (e.g., heat furnace, air conditioner, and mechanical equipment) for nonresidential buildings larger than 10,000 square feet to ensure that all are working at their maximum capacity and according to their design efficiencies. ARB estimates that the mandatory provisions will reduce GHG emissions from buildings by approximately 3 MMT CO₂e in 2020 in comparison with GHG emissions without implementation of the Green Building Standards (ARB 2014).

Another update to the energy efficiency standards for 2016 will become effective January 1, 2017. The 2016 update to the Building Energy Efficiency Standards will improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The most significant efficiency improvements to the residential standards include improvements for attics, walls, water heating, and lighting. The new standards address non-residential development, as well, and build on the energy efficiency progress made within previous iterations.

Executive Order B-18-12

Executive Order B-18-12 orders all new State buildings and major renovations beginning design after 2025 be constructed as Zero Net Energy facilities. The Executive Order sets an interim target for 50 percent of new facilities beginning design after 2020 to be Zero Net Energy. It directs State agencies to take measures toward achieving Zero Net Energy for 50 percent of the square footage of existing State-owned building area by 2025.

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

City of Elk Grove Climate Action Plan

In 2013, the City of Elk Grove Climate Action Plan (CAP) was adopted by the City Council, along with the Sustainability Element of the City of Elk Grove General Plan. This planning document identifies sources of GHG emissions within the city boundary and identifies measures to reduce emissions, including measures that would also reduce energy use. The City estimates that implementation of the CAP will achieve a 15 percent reduction in emissions below 2005 levels by 2020. The CAP includes the following policy topics for emission reduction strategies: An innovative and Efficient Built Environment, Resource Conservation, Transportation Alternatives and Congestion Management, and Municipal Programs. Table 3.6-4 presents applicable energy-related measures.

Reduction Measures		Policy Topic
BE-6	Building Stock: New Construction. Adopt CALGreen Tier 1 standards to require all new construction to achieve a 15% improvement over minimum Title 24 CALGreen Energy requirements.	Built Environment
BE-7	Building Stock: Appliances and Equipment in New Development. Encourage the use of energy-efficient appliances and equipment in new buildings that maximize efficiency.	Built Environment
BE-10	On-Site Renewable Energy Installations. Promote voluntary installations of on-site solar photovoltaics in new and existing development, and revise standards to facilitate the transition to solar water heaters and solar photovoltaics in new development.	Built Environment
BE-11	Off-Site Renewable Energy. Encourage participation in SMUD's off-site renewable energy programs, which allow building renters and owners to choose locally produced cleaner electricity sources.	Built Environment
RC-2	Water Conservation. Reduce the amount of water used by residential and nonresidential uses.	Resource Conservation
TACM-1	Local Goods. Promote policies, programs, and services that support the local movement of goods in order to reduce the need for travel.	Transportation Alternatives & Congestion Management
TACM-2	Transit-Oriented Development. Support higher-density, compact development along transit by placing high-density, mixed-use sites near transit opportunities.	Transportation Alternatives & Congestion Management
TACM-3	Intracity Transportation Demand Management. The City shall continue to implement strategies and policies that reduce the demand for personal motor vehicle travel for intracity (local) trips.	Transportation Alternatives & Congestion Management
TACM-4	Intracity Transportation Demand Management. The City shall support and contribute to regional efforts to reduce demand for intercity (regional) personal vehicle travel.	Transportation Alternatives & Congestion Management
TACM-5	Pedestrian and Bicycle Travel. Provide for safe and convenient pedestrian and bicycle travel through implementation of the Bicycle and Pedestrian Master Plan and increased bicycle parking standards.	Transportation Alternatives & Congestion Management
TACM-6	Public Transit. Continue to improve and expand transit services for commuters and non-commuters traveling within Elk Grove and regionally, providing the opportunity for workers living in other areas of Sacramento County to use all forms of public transit - including bus rapid transit and light rail - to travel to jobs in Elk Grove, as well as for Elk Grove residents to use public transit to commute to jobs outside the City.	Transportation Alternatives & Congestion Management
TACM-7	Jobs/Housing Balance. Continue to improve Elk Grove's jobs/housing ratio and seek to achieve sufficient employment opportunities in Elk Grove for all persons living in the City.	Transportation Alternatives & Congestion Management
TACM-9	Efficient and Alternative Vehicles. Promote alternative fuels and efficient vehicles throughout the community.	Transportation Alternatives & Congestion Management

Reduction Measures		Policy Topic
TACM-10	Car Sharing. Promote the use of vehicles and transportation options other than single-occupant vehicles.	Transportation Alternatives & Congestion Management
TACM-11	Safe Routes to School. Implement SACOG's Safe Routes to School Policy.	Transportation Alternatives & Congestion Management
TACM-12	Traffic Calming and Anti-Idling. Improve traffic flow and reduce unnecessary idling through use of traffic calming devices and enforcement of idling restrictions.	Transportation Alternatives & Congestion Management
MP-2	Municipal Facilities. New. All City facilities shall incorporate energy-conserving design and construction techniques.	Municipal Programs
MP-7	Municipal Water Use. Improve the efficiency of municipal water use through retrofits and employee education.	Municipal Programs

City of Elk Grove General Plan

The City of Elk Grove 2030 General Plan includes policies that promote energy conservation and reduction strategies.

- ▶ **CI-1:** Circulation planning for all modes of travel (vehicle, transit, bicycle, pedestrian, etc.) shall be coordinated with efforts to reduce air pollution.
- ▶ **CI-3:** The City's efforts to encourage alternative modes of transportation will therefore focus on incentives to reduce vehicle use, rather than disincentives (which are generally intended to make driving and parking less convenient, more costly, or both). Incentives may include:
 - Preferential carpool and vanpool parking,
 - Bus turnouts, and
 - Pedestrian-friendly project designs
- ▶ **CI-4:** Specific Plans, Special Planning Areas, and development projects shall be designed to promote pedestrian movement through direct, safe, and pleasant routes that connect destinations inside and outside the plan or project area.
- ▶ **CI-5:** The City shall encourage the use of transportation alternatives that reduce the use of personal motor vehicles.
 - **CI-5-Action 1:** Funding for development, operations, and maintenance of facilities for mass transit, bicycle, pedestrian modes of transportation shall be given appropriate priority in the City's budgeting process.
 - **CI-5-Action 2:** Implement policies and actions in the Conservation/Air Quality Element which seek to encourage non-vehicle transportation alternatives in Elk Grove.
 - **CI-5-Action 3:** The City will support positive incentives such as carpool and vanpool parking, bus turnouts, and pedestrian-friendly project designs to promote the use of transportation alternatives.

- **CI-5-Action 4:** The City shall participate in the preparation and implementation of a Congestion Management Plan (CMP) consistent with legal requirements which gives priority to air quality goals, alternatives to automobile travel, and the development of demand reduction measures over additional road capacity.
- **CI-5-Action 5:** The City shall develop and implement Pedestrian and Bikeway Master Plans to provide safe and convenient pedestrian and on- and off-street bicycle facilities throughout the City.
- ▶ **CI-6:** The City shall require that transit service is provided in all areas of Elk Grove, including rural areas, so that transit dependent residents of those areas are not cut off from community services, events, and activities.
 - **CI-6-Action 1:** The City shall require that RT or any other local or regional transit agency serving Elk Grove include bus service to the rural areas of Elk Grove.
- ▶ **CI-7:** The City shall encourage an approach to public transit service in Elk Grove which will provide the opportunity for workers living in other areas of Sacramento County to use all forms of public transit—including bus rapid transit and light rail—to travel to jobs in Elk Grove, as well as for Elk Grove workers to use pub Policy CI-8. The City shall encourage the extension of bus rapid transit and/or light rail service to the planned office and retail areas north of Kammerer Road and west of Hwy 99.
- ▶ **CI-9:** Light rail service in Elk Grove should be designed to serve major employment centers and the regional mall at Kammerer Road/Hwy 99. The City of Elk Grove encourages the development of light rail which will bring workers and shoppers to Elk Grove, while also serving as part of a coordinated, regional transportation network.
 - **CI-9-Action 1:** Using the City’s preferred alignment, work with Regional Transit to select a final alignment for the extension of bus rapid transit and/or light rail into Elk Grove, and to develop final station and/or park-and-ride locations along the entire transit corridor in Elk Grove. As necessary, update this Circulation Element to reflect the final alignment.
 - **CI-9-Action 2:** The City shall require irrevocable offers of dedication of rights- of-way and station sites along the City’s preferred light rail alignment. Offers of dedication shall be required as part of the approval of any tentative map or other discretionary approvals as appropriate.
- ▶ **CI-17:** The City shall regulate truck travel as appropriate for the transport of goods, consistent with circulation, air quality, congestion management, and land use goals.
 - **CI-17-Action 1:** The City shall on an as-needed basis review existing truck routes within Elk Grove and designate routes consistent with the need to reduce traffic, noise and other impacts, and negative effects on residential areas.
- ▶ **CI-18:** To the extent possible, major traffic routes for residential areas should be separate from those used by the city’s industrial areas, with the purpose of avoiding traffic conflicts and potential safety problems.
- ▶ **CI-19:** The circulation system serving the city’s industrial areas should be designed to safely accommodate heavy truck traffic.

- ▶ **CI-21:** The City shall require the installation of traffic pre-emption devices for emergency vehicles (police and fire) at all newly constructed intersections, and shall seek to retrofit all existing intersections to incorporate these features.
- ▶ **CAQ-26:** It is the policy of the City of Elk Grove to minimize air pollutant emissions for all City facilities and operations to the extent feasible and consistent with the City’s need to provide a high level of public service.
 - **CAQ-26-Action 1:** The City shall encourage all its employees to use transportation alternatives such as public transit, bicycling, walking, and carpooling for commute and other work-related trips. The City shall provide information on these and other applicable programs to all employees.
 - **CAQ-26-Action 2:** All City facilities shall incorporate energy-conserving design and construction techniques.
 - **CAQ-26-Action 3:** The City shall encourage City contractors and vendors to reduce emissions from their operations (such as by using low emission vehicles), and shall consider including a preference for low emission contractors and vendors in City requests for proposals where appropriate.
- ▶ **CAQ-27:** The City shall promote energy conservation measures in new development to reduce on-site emissions and power plant emissions. The City shall seek to reduce the energy impacts from new residential and commercial projects through investigation and implementation of energy efficiency measures during all phases of design and development.
 - **CAQ-27-Action 1:** Provide information to the public and builders on available energy conservation techniques and products.
 - **CAQ-27-Action 2:** Encourage the use of trees planted in locations that will maximize energy conservation and air quality benefits. Encourage the use of landscaping materials which produce lower levels of hydrocarbon emissions.
 - **CAQ-27-Action 3:** During project review, City staff shall consider energy conservation and, where appropriate, suggest additional energy conservation techniques.
 - **CAQ-27-Action 4:** During project review, ensure that “Best Available Control Technology” is properly used and implemented.
 - **CAQ-27-Action 5:** Encourage new commercial uses to limit delivery hours to non-peak hours.

3.6.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

METHODOLOGY

Evaluation of potential energy impacts was based on a review of the following documents and regulations pertaining to the SOIA Area and surrounding area:

- ▶ California Energy Demand 2010–2020, Adopted Forecast (CEC 2012a; CEC 2012b);

- ▶ City of Elk Grove 2030 General Plan (City of Elk Grove 2015);
- ▶ City of Elk Grove Climate Action Plan (City of Elk Grove 2013); and
- ▶ Title 24 of the California Code of Regulations, including the 2013 California Green Building Code (Part 11, Title 24)

Future energy demand was calculated based on the conceptual land use scenario as described in Section 3.3, “Air Quality,” and modeling conducted by AECOM for the greenhouse gas inventory using the California Emissions Estimator Model (CalEEMod) Version 2013.2.2 (see Section 3.3, “Air Quality,” for further discussion of CalEEMod). Impacts related to energy that would result from implementation of the proposed project were identified by comparing existing capacity against future demand.

THRESHOLDS OF SIGNIFICANCE

Appendix F of the State CEQA Guidelines provides guidance for assessing impacts related to energy supplies, focusing on the goal of conserving energy by ensuring that projects use energy wisely and efficiently including a list of six environmental impacts related to use of energy in Section II (c). For the purposes of this EIR, Energy impacts are considered significant if the proposed project would result in any of the following:

- ▶ Develop land use patterns that cause wasteful, inefficient, and unnecessary consumption of energy; or
- ▶ Require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

IMPACT ANALYSIS

IMPACT 3.6-1 **Energy efficiency.** *The project does not propose development or land use change. However, if there is future annexation of the SOIA Area to the City and if there is development of the SOIA Area in the future, this would increase demand for energy, including fuel, electricity, and natural gas. Any future development will be required to comply with existing regulations that are designed to improve energy efficiency. It is possible that future development could cause the inefficient, wasteful, or unnecessary consumption of energy. The impact is considered **significant**.*

The project does not include direct changes to land use or the City of Elk Grove General Plan goals and policies. In addition, no specific land use entitlements, development proposals, or land development activities are proposed in conjunction with the proposed SOIA. However, land use assumptions were developed for this analysis to allow LAFCo to understand possible environmental effects that could result from future development within the SOIA Area.

Construction-Related Energy Consumption

Should the SOIA Area be developed, there would be an increase in energy consumption for the duration of the construction. The primary energy demand during construction would be associated with construction vehicle fueling and short-term in nature. Energy in the form of fuel and electricity would be consumed during this period by construction vehicles and equipment operating on-site, trucks delivering equipment and supplies to the site, and construction workers driving to and from the site. There are no known project characteristics that would

necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in other parts of the city of Elk Grove or unincorporated Sacramento County. If there is development in the future within the SOIA Area, such development will be required to demonstrate consistency with policies and actions in the City of Elk Grove’s General Plan that are intended to promote more efficient use of energy. This would include actions CAQ-26-Action 2, which requires City facilities to use energy-conserving construction techniques.

Energy efficiency is a possible indicator of environmental impacts. The actual adverse physical environmental effects associated with energy use and the efficiency of energy use detailed throughout this EIR in the environmental topic-specific sections. For example, use of energy for transportation leads to air pollutant emissions, the impact of which is addressed in Sections 3.3 and 3.8 of this EIR. There is no significant impact associated with energy efficiency that is not addressed in the environmental topic-specific sections of this EIR. Thus, this impact is **less than significant**.

Development-Related Energy Consumption

Should the SOIA Area be developed, there would be an increase in energy consumption related to vehicle use, building energy demand, and other elements of potential future development. Energy consumption was modeled using a conceptual land use scenario. Table 3.6-5 provides a summary of the potential electrical and natural gas demands if the SOIA is developed. Electrical and natural gas demand for potential development could be approximately 186,609,640 kWh/year and 309,201,008 thousand British thermal units (kBtu)/year, respectively.

Location	Electrical Demand (kWh/year)	Natural Gas Demand (kBtu/year)
Multi-Family Residential	6,769,440	24,229,000
Single Family Residential	23,903,500	103,336,000
General Office Building	97,699,600	83,751,300
School	1,855,000	3,613,308
Parks/Open Space	0	0
Industrial	38,717,300	86,576,100
Commercial	17,665,100	7,695,300
Total	186,609,940	309,201,008

Notes: kWh = kilowatt-hours; kBtu = thousand British thermal unit
 Source: AECOM 2016

SMUD would provide electricity to future development. SMUD has continued to prioritize renewable energy and aims to provide dependable renewable resources for 33 percent of its load by 2020, excluding additional renewable energy acquired for certain customer programs, in compliance with SB X1-2 (SMUD 2015d). Per SB 350, SMUD must achieve 50 percent of its load by 2050. In 2014, SMUD received 25 percent of its electricity from natural gas-fired power plants; 0 percent from nuclear generation; 27 percent from eligible renewable resources, such as biomass, solar, wind, geothermal, and small hydroelectric power plants that generate 30 MW or less of electricity; 10 percent from large hydroelectric power plants; and 23 percent from other unspecified power sources (i.e., electricity that is not traceable to specific generation sources by any auditable contract) (SMUD 2015b).

If there are buildings constructed within the SOIA Area, they would require heating and cooling capabilities. All development will be required to comply with applicable building code requirements, which would include State energy efficiency provisions that are in effect at the time of construction. For example, all new development is required to comply with the Building Energy Efficiency Standards (Title 24 of the California Code of Regulations), including the 2016 Building Energy Efficiency Standards (effective January 1, 2017) or the version of building energy efficiency standards that are in effect when proposals are submitted to the City of Elk Grove. Some cities have additional, more stringent energy efficiency requirements, so if that is the case in the future for Elk Grove, such provisions would apply. Reduction Measure BE-6 from the City's Climate Action Plan suggests that the City will adopt more stringent energy efficiency requirements than the State code. Compliance with these code requirements reduces potential energy demand. The 2016 CalGreen Code (Part 11, Title 24), was developed to enhance the design and construction of buildings and sustainable construction practices through planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental air quality. The 2016 Building Energy Efficiency Standards are anticipated to reduce statewide annual electricity consumption by approximately 281 GWh per year, electrical peak demand by 195 MW, and natural gas consumption by 16 million therms per year (CEC 2015c).

If there is development in the future within the SOIA Area, such development will be required to demonstrate consistency with policies and actions in the City of Elk Grove's General Plan and reduction measures in the City's Climate Action Plan that are intended to promote more efficient use of energy. This would include reduction measures BE-6, BE-7, and BE-10, policy CAQ-27, and CAQ-27 Action 1, CAQ-27 Action 2, and CAQ-27 Action 3, which are intended to increase building energy efficiency and promote generation of renewable energy. If the City implements these provisions in the future within the SOIA Area, this could help to increase energy efficiency.

All new development will be required to comply with code requirements that would reduce total energy consumption, improve energy efficiency, and reduce peak and base demand for electricity and other forms of energy. Therefore, this impact is considered **less than significant**.

Transportation-Related Energy Consumption

As noted, transportation is, by far, the largest energy consuming sector in California, and since transportation accounts for more energy consumption than heating, cooling, and powering of buildings, powering industry, or any other use, travel demand is a critical consideration in assessing energy efficiency (U.S. Energy Information Administration 2015, Lawrence Berkeley National Laboratory 2013).

Using the land use scenario developed for the purpose of analysis in this EIR, possible future development in the SOIA Area could generate 188,019 daily trips on weekdays, 130,938 daily trips on Saturdays, and 81,135 daily trips on Sundays.² This equates to an approximate total daily VMT of 910,037, which would generate an estimated annual energy demand of 1,399,106 MMBtu.^{3,4} The annual VMT for potential residential development

² This estimate of VMT is derived using default assumptions for the land use scenario from the CalEEMod air pollutant emissions model.

³ This analysis assumes diesel (heat content) is 5.825 MMBtu/barrel, that for vehicular gasoline there are 5.218 MMBtu/barrel, that there are 42 gallons/barrel, that there are 10 therms/MMBtu, and an annualization factor of 347 days/year. These assumptions are consistent with guidance provided in the California Climate Action Registry (CCAR), 2009 General Reporting Protocol Version 3.1: Table C.3.

included in the land use scenario for the SOIA Area is 108,821,820. Daily VMT for the residential uses is estimated to be approximately 298,142, which is approximately 22.3 VMT per day per capita.⁵

The Sacramento Area Council of Governments (SACOG) prepared a regional analysis of VMT and found average daily VMT for Sacramento County to be approximately 32,937,000. This travel demand is forecast to increase to 37,092,000 in 2020 and to 43,669,000 in 2036 under the Metropolitan Transportation Plan (MTP)/Sustainable Communities Strategy (SCS) (SACOG 2016). The regional VMT per capita in 2008 was estimated to be 26.2, decreasing by 2012 to 25.1 miles per day (SACOG 2016, Chapter 5B, page 79). Although regional VMT is anticipated to increase throughout the region, the VMT per capita is forecast to decline slightly during the planning horizon for the MTP/SCS (through 2036). Per-capita VMT in 2036 is estimated to be 24.2 per day, which is an 8-percent decrease from 2008 per-capita levels (SACOG 2016, Chapter 5B, page 79).

SACOG's VMT estimates include three primary categories: household-generated, commercial vehicle, and external. External VMT includes VMT generated by passenger vehicles traveling through the region. The total household-generated weekday VMT in the region was estimated to be 40,709,600 in 2012, increasing to 52,258,900 by 2036 (SACOG 2016, Chapter 5B, page 81). On a per-capita basis, weekday household VMT was estimated by SACOG to be 17.9 in 2012, decreasing by 5 percent to 17 in 2036. If the SOIA Area were to be developed in accordance with land use scenario, household-generated daily VMT could be approximately 22.3 per capita, which is 31 percent higher than the regional estimate for 2036. However, this estimate is based on default assumptions from an air pollutant emissions model based on a land use scenario for the overall SOIA Area.

If there is annexation and development in the future, the actual travel demand will depend on the density and development intensity of development, mixing of land uses, the relationship between land uses in the SOIA Area and adjacent areas, the level of pedestrian, bicycle, and transit infrastructure, parking standards, the relative affordability of housing, and other factors that are not currently known. In 2036, SACOG estimates that in 2036, 45 percent of all household-generated VMT will be associated with commuting. If development of the SOIA Area were to generate job opportunities for Elk Grove residents that are currently commuting, this could potentially shorten potential commute trips. Whether future SOIA Area residents would commute to jobs outside the city or county is unknown, but residents would likely be influenced by commute times, the price of fuel, and other social and economic factors.

The actual VMT associated with possible development of the SOIA Area in the future will depend on density, design, mixing of land uses, the connectivity of the transportation network, the quality of pedestrian and bicycle infrastructure, transit accessibility and service, and other factors that are currently unknown. The relationships between density, mix of land uses, urban design, and the quality of the non-automobile transportation network, on one hand, and VMT, on the other, is complex. Although there is extensive literature showing that VMT can be reduced with density, land use mix, a connected transportation network, access to employment and regional destinations, and transit-supportive development patterns, among other factors (see work by Reid Ewing, Robert

⁴ Trip summary information modeled in CalEEMod can be reviewed in Appendix B of this EIR.

⁵ CalEEMod generated a residential population based on the apartments low rise and the single family housing land uses, which had 4,769 and 8,581 assumed residents, respectively.

Cervero, Susan Handy, Lawrence Frank, and Gary Pivo, among others⁶), these factors have varying levels of influence on travel demand.

If there is development in the future within the SOIA Area, such development will be required to demonstrate consistency with policies and actions in the City of Elk Grove’s General Plan and reduction measures in the City’s Climate Action Plan that are intended to promote more efficient use of energy. This would include reduction measures TACM-1, TACM-2, TACM-3, TACM-4, TACM-5, TACM-6, TACM-7, TACM-9, TACM-10, TACM-11, and TACM-12; policies CI-1, CI-3, CI-4, CI-5, CI-6, CI-7, CI-9, and CI-17; and actions CI-5-Action 2, CI-5-Action 3, CI-5-Action 4, CI-5-Action 5, CI-6-Action 1, CI-9-Action 1, and CI-9-Action 2, which are intended to reduce VMT attributable to development in Elk Grove. If the City implements these provisions in the future within the SOIA Area, this could help to increase transportation-related energy efficiency. However, possible future development within the proposed SOIA Area could substantially increase transportation-related energy consumption. The impact is considered **significant**.

Please refer also to Section 3.3 of this EIR, “Air Quality,” which comprehensively analyzes and provides feasible mitigation for air pollutant emissions; Section 3.8, “Greenhouse Gas Emissions,” comprehensively analyzes and provides feasible mitigation for GHG emissions; and Section 3.12, “Noise and Vibration,” which comprehensively analyzes and provides feasible mitigation for noise and vibration impacts.

Mitigation Measures

Mitigation Measure 3.6-1: Implement Mitigation Measures 3.3-2a and 3.3-2b

Significance after Mitigation

Future urbanization of the SOIA Area would increase energy demand. Should the SOIA Area ever be developed, the City of Elk Grove will require all discretionary projects (both concurrent and subsequent projects) with the potential to generate energy consumption during construction and operation will be required to comply with the City’s General Plan and Climate Action Plan. Additionally, projects will also need to incorporate energy efficient design elements and energy conservation measures included in the City’s General Plan, including those related to reducing VMT, as well as ongoing cooperation with SUMD and local agencies to support renewable energy production, in addition to the implementation of State building and energy efficiency standards. Development within the SOIA Area would be subject to policies and standards designed to improve energy efficiency and avoid inefficient, excessive, and unnecessary consumption of energy due in construction and operations. Mitigation Measure 3.3-2b would require the preparation of a bicycle, pedestrian, and transit master plan, which would implement City General Plan policies CAQ-29, CI-1, CI-3, CI-4, CI-5, and CI-7 and actions CAQ-29-Action 1 and CAQ-29-Action 2, as well as the City’s Climate Action Plan reduction measures TACM-4, TACM-5, TACM-6, and TACM-11. However, the location and intensity of future development is not known at this time. The actual adverse physical environmental effects associated with energy use and the efficiency of energy use

⁶ Reid Ewing and Robert Cervero. 2001. “Travel and the Built Environment” Transportation Research Record, 1780, Paper No. 01-3515. Robert Schneider, Kevan Shafizadeh, and Susan Handy. 2012 (December). “Methodology for Adjusting ITE Trip Generation Estimates for Smart-Growth Projects. California Smart-Growth Trip Generation Rates Study. University of California, Davis. U.S. Environmental Protection Agency. 2013 (June). Our Built and Natural Environments: A Technical Review of the Interactions among Land Use, Transportation, and Environmental Quality. Second Edition. UC Davis Institute of Transportation Studies. Richard Lee, Joshua Miller, Rachel Maiss, Mary Campbell, Kevan Shafizadeh, Deb Niemeier, and Susan Handy. 2011 (September). Evaluation of the Operation and Accuracy of Five Available Smart Growth Trip Generation Methodologies. Research Report – UCD-ITS-RR-11-12.

detailed throughout this EIR in the environmental topic-specific sections. Given the scale of possible development that could be proposed in the future, the impact would continue to be considered significant. There is no additional feasible mitigation. The impact is **significant and unavoidable**.

IMPACT 3.6-2 **New or expanded electrical and natural gas utilities.** *The proposed project does not propose development or land use change within the SOIA Area. However, if there is future annexation of the SOIA Area to the City and if there is development of the SOIA Area, new development would require construction of new on-site electrical and natural gas infrastructure. PG&E would need to provide natural gas infrastructure and SMUD would need to provide electrical infrastructure to the area, as necessary, to extend service into the SOIA Area. Existing infrastructure will likely be extended from developed areas in the vicinity that would exist in the future to serve any future development of the SOIA Area. Therefore, the impact is considered **significant**.*

As previously stated, the project does not include direct changes to land use or the City of Elk Grove General Plan goals and policies. In addition, no specific land use entitlements, development proposals, and land development activities are proposed at this time in conjunction with the proposed SOIA. However, land use assumptions were developed for this analysis to allow LAFCo to understand possible environmental effects that could result from future development within the SOIA Area.

The city of Elk Grove is served by SMUD's aboveground and underground electric transmission and distribution lines. SMUD would use existing facilities and electric transmission and distribution lines to supply the necessary service to the SOIA Area should it be annexed and developed by the City. PG&E currently provides natural gas service within the city of Elk Grove; however the natural gas lines do not currently serve the SOIA Area according to the Gas Transmission Pipeline Systems Map (PG&E 2016). The existing grid network of gas lines would have to be extended to serve the increased demand for natural gas generated by development on the SOIA Area.

Electrical demand for the proposed project would be approximately 186,609,940 kWh/year, and natural gas demand for the proposed project would be approximately 309,201,008 kBtu/year (Table 3.6-5). Based on SMUD's and PG&E's total service area and total supply of energy, the energy demands created by the proposed project are not considered substantial in relation to the total amount of existing and future energy supplied by SMUD (12,109 million kWh of electricity in 2022) and PG&E (5,081 MM therms of natural gas in 2022).

The increase in energy demand would not be substantial in relation to existing or future demands in SMUD's and PG&E's service area. However, existing infrastructure will likely be extended from developed areas in the vicinity that would exist in the future to serve any future development of the SOIA Area. Therefore, the proposed project may require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. This impact would be **significant**.

Mitigation Measures

Mitigation Measure 3.6-2: Prepare Utility Service Plans that Demonstrate Adequate Electrical and Natural Gas Supplies and Infrastructure are Available before the Annexation of Territory within the SOIA

At the time of submittal of any application to annex territory within the SOIA Area, the City of Elk Grove shall prepare utility service plans that identify the projected electrical and natural gas demands and that

appropriate infrastructure sizing and locations to serve future development will be provided within the annexation territory. The utility service plans shall demonstrate that SMUD will have adequate electrical supplies and infrastructure and PG&E will have adequate natural gas supplies and infrastructure available for the amount of future development proposed within the annexation territory. If SMUD or PG&E must construct or expand facilities, environmental impacts associated with such construction or expansion should be avoided or reduced through the imposition of mitigation measures. Such measures should include those necessary to avoid or reduce environmental impacts associated with, but not limited to, air quality, noise, traffic, biological resources, cultural resources, GHG emissions, hydrology and water quality, and others that apply to specific construction or expansion of natural gas and electric facilities projects.

Significance after Mitigation

The proposed project would not directly require the need for additional natural gas or electric infrastructure. Existing infrastructure will likely be extended from developed areas in the vicinity that would exist in the future to serve any future development of the SOIA Area any future development of the SOIA Area. If it is determined that SMUD or PG&E need to construct or expand facilities, this could result in potentially significant impacts from the construction of new natural gas, electricity, and diesel fuel facilities or the expansion of existing facilities that would be required to adequately meet projected capacity. Implementation of Mitigation Measure 3.6-2 would reduce impacts associated with the construction and expansion of natural gas and electricity infrastructure. However, it cannot be guaranteed at this time that all future project-level impacts can be mitigated to a less-than-significant level. Therefore, this impact is **significant and unavoidable**.

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