4.15 ENERGY

4.15.1 INTRODUCTION

The purpose of this section is to evaluate the potential impacts of the Amoruso Ranch Specific Plan (ARSP or Proposed Project) associated with energy. The California Environmental Quality Act (CEQA) provides that environmental impact reports (EIRs) shall include a detailed statement on significant effects of a project and "[m]itigation measures proposed to minimize significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy" (Public Resources Code Section 21100[b][3]). *CEQA Guidelines* Section 15126.2 requires that an EIR evaluate the irretrievable commitment of nonrenewable resources associated with a project to assure that such consumption is justified. Appendix F of the *CEQA Guidelines* addresses energy conservation goals, notes that potentially significant energy implications of a project should be considered in an EIR, and contains general examples of mitigation measures for a project's potentially significant energy impacts.

The information in this section is based largely on data and reports produced by the California Energy Commission (CEC) and the Energy Information Administration of the United States Department of Energy (USDOE).

The energy analysis is based on information within the following documents:

- *City of Roseville General Plan 2025*, as amended June 2015 (City of Roseville, 2015a)
- *Creekview Specific Plan Final EIR*, April 2011 (City of Roseville, 2011a)
- *Amoruso Ranch Technical Dry Utilities Study*, September 2015 (Capitol Utility Specialists, 2015; Included in **Appendix K**)
- *Traffic Study for the Amoruso Ranch Specific Plan*, Fehr & Peers, February 2016 (Included in **Appendix M**)

The documents listed above are available for review during normal business hours (Monday through Friday, 8 a.m. to 5 p.m.) at:

City of Roseville Permit Center
311 Vernon Street
Roseville, CA 95678

In response to the Notice of Preparation (NOP; **Appendix C**), the City of Roseville (City) did not receive any comments pertaining to energy use and conservation. Refer to **Appendix C** of this EIR to view the comments received on the Proposed Project in response to the NOP.

4.15.2 ENVIRONMENTAL SETTING

Energy usage is typically quantified using the British thermal unit (BTU). As a point of reference, the approximate amount of energy contained in common energy sources are as follows: gasoline, 125,000

BTUs per gallon; natural gas, 100,000 BTUs per therm; electricity, 3,412 BTUs per kilowatt-hour (kWh; AG MRC, 2014).

Total energy usage in California was 7,640.8 trillion BTUs in 2012, which equates to an average of 201 million BTUs per capita. Of California's total energy usage, the breakdown by sector is 39 percent transportation, 23 percent industrial, 19 percent residential, and 19 percent commercial. Petroleum satisfies 44 percent of California's energy demand, natural gas 32 percent, and electricity 12 percent. Coal fuel accounts for less than 1 percent of California's total energy demand (USEIA, 2014a). The other sources are made up of renewable energy sources, includes wind power and solar, among other uses. Electric power and natural gas in California are generally consumed by stationary users, whereas petroleum consumption is generally accounted for by transportation-related energy use (USDOE, 2014).

Given the nature of the Proposed Project as a mixed-use planned community, the following discussion will focus on the three sources of energy that are most relevant to the project—namely, electricity and natural gas uses, and transportation fuel for vehicle trips generated by the Proposed Project.

Electricity

Electricity supply in California involves a complex grid of power plants and transmission lines located in the Western United States, Canada, and Mexico. In 2013, California electricity was primarily produced from power plants fueled by natural gas (44.25 percent), coal (7.8 percent), large hydro (7.75 percent), nuclear (8.83 percent), and renewable (18.87 percent) (CEC, 2014a). Electricity consumption in California increased by approximately five percent from approximately 245,000 gigawatt hours (GWh) in 1998 to approximately 259,600 GWh in 2012, and is forecast to increase another 20 percent from 2012 to approximately 325,000 GWh in 2018 (CEC, 2010; USDOE, 2014). By this time, California utilities will need to procure approximately 24,000 mega-watts (MW) of resources to replace expiring contracts and retiring power plants, and to meet peak demand, which is significantly higher than off-peak demand (CEC, 2010).

Electricity usage for differing land uses varies substantially by the type of uses in a building, the type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. Electricity used in California is consumed by the commercial sector (47 percent), residential sector (35 percent), and industrial sector (approximately 18 percent) (USDOE, 2014). The average annual usage of electricity is approximately 538 kWh and 33.75 therms per month per household (PG&E, 2014).

In 2000–2001, electricity demand exceeded supply on various occasions, which required utilities to institute systematic rotating outages to maintain the stability of the grid and prevent widespread blackouts. In addition, the power shortages were exacerbated by inadequate transmission capacity between northern and Southern California. Since that time, additional generating capacity has come online and upgrades to various transmission lines are being constructed. According to the CEC's *2013 Integrated Energy Policy Report*, average annual electricity demand growth from 2012-2024 is expected to range from 0.88 to 1.82 percent (CEC, 2013b).

In an effort to minimize power shortages, the CEC and California Public Utilities Commission (CPUC) have initiated a number of programs to increase supplies and reduce demand for electricity. On the demand side, they are strongly encouraging reductions in electricity demand through energy-efficiency and demand reduction measures, particularly those that provide peak-demand savings. For example, Senate Bill (SB) 1307 requires all electric utilities to meet their unmet resource demands first through energy efficiency and demand reduction. In addition, the Governor's Green Building Initiative (Executive Order [EO] S-20-04) sets a goal of reducing energy use in state-owned buildings by 20 percent by 2015, and directs the CEC to refine Title 24 energy efficiency standards for building to meet the same goal (CEC, 2014b).

In September 2006, the governor signed Assembly Bill (AB) 32, The Global Warming Solutions Act of 2006, which directs the California Environmental Protection Agency (Cal EPA) to work with state agencies to implement a cap on greenhouse gas (GHG) emissions (primarily carbon dioxide) from stationary sources such as electric power generation facilities, and industrial, commercial, and waste disposal sectors. Since carbon dioxide emissions are directly proportional to fossil fuel consumption, the cap on emissions is expected to have the incidental effect of forcing a reduction in fossil fuel consumption from these stationary sources.

On the supply side, the CEC and CPUC are actively promoting alternative energy sources such as solar, wind, and bioenergy (including "transformation" or waste-to-energy, which converts agricultural by-products such as animal waste to usable energy) (CEC, 2011). In January 2006, the CPUC approved the California Solar Initiative, under which the CEC will manage a program of financial incentives, involving cash rebates, for installation of solar electricity systems in new residential construction (CEC, 2014c).

The CEC's Energy Action Plan II, adopted in 2005, identifies a number of other initiatives for increasing supply and reducing demand. One example involves the reduction of peak energy demand for the state's water supply infrastructure, which comprises almost 20 percent of the state's electricity consumption (CEC, 2005b).

Roseville Electric

As described in **Section 4.12.5**, **Public Utilities – Electricity, Natural Gas, and Telecommunication Services**, the City of Roseville Electric Department (Roseville Electric) provides electrical service to customers within the City limits and would be the service provider for the Proposed Project. Roseville Electric serves an estimated 55,600 customers. The City purchases wholesale electrical power from both the Western Area Power Administration (WAPA) and from other members of the Northern California Power Agency (NCPA), a joint powers agency, and distributes it through transmission and distribution lines. The source of power purchased through WAPA is the federal government's Central Valley Project, which produces 100 percent hydroelectric energy and consists of a system of dams, reservoirs, and power plants within central and northern California. The term of the City's existing contract with WAPA extends through December 31, 2024. NCPA's power plants have a mix of geothermal, hydroelectric, and natural gas resources that are approximately 50 percent GHG emission-free (NCPA, 2015). Roseville Electric provides 25 percent renewable and 14 percent hydroelectric energy (refer to **Table 4.12.5-1**). For comparison, the Sacramento Municipal Utility District (SMUD) supplied more than 24 percent of its retail sales with renewable energy sources including solar, wind, and hydroelectric in 2010 (SMUD, 2015), and

the Los Angeles Department of Water and Power (LADWP) provided 20 percent of the City of Los Angeles' power from renewable energy sources such as wind, solar, hydroelectric, geothermal, and biomass energy in 2010 (LADWP, 2013).

The City has historically entered into long-term purchases to hedge electricity costs, and enters into various fixed-price purchase or sale contracts on the open market at various times to meet its power supply requirements. The City also typically enters into seasonal and short-term purchases for varying terms from a number of power suppliers. The City expects that it will obtain additional resources from market purchases or investment in generation facilities, either independently, through NCPA or other agencies. In accordance with recent legislation, the City expects that future energy purchases will increasingly be made from renewable energy sources.

In addition, approximately 52 percent of the City's power during fiscal year 2013/2014 was generated at the City-owned Roseville Energy Park (REP), which went into service in October 2007. The REP is a 160-megawatt natural-gas-fired power plant that utilizes a state–of-the-art combined cycle gas turbine technology. The City operates the REP during periods where the alternative cost of supplying customer loads is higher, and idles the plant when alternative electric purchases are less expensive than REP operations. On September 1, 2010, the City assumed full title and ownership of the 48 MW-capacity NCPA Combustion Turbine Project No. 1 (referred to as Roseville Power Plant 2) to meet reserve and capacity requirements. Roseville Power Plant 2 is connected to the Roseville electric distribution system, provides capacity and reserves for the City, and is used for peaking energy and limited high-value economic dispatch.

For fiscal year 2012/2013, the City's electrical consumption was approximately 1,194,183 mega-watt hours (MWh). The City's estimated electrical consumption for fiscal year 2013/2014 was 1,183,100 MWh. It is expected that the residential and commercial sectors will experience higher consumption growth than the industrial sector. By the year 2018, the City's annual electrical consumption is projected to rise to 1,200,000 MWh. A peak demand of 343 MW was reached on July 24, 2006 (City of Roseville, 2015a). The City currently encourages energy conservation by providing information regarding rebate programs for energy efficiency investments and education programs for residents and businesses, as well as requirements for new development projects.

Natural Gas

In 2012, California consumed 2,313 billion cubic feet of natural gas (USDOE, 2014). The natural gas was used for residential (21 percent), industrial (25 percent), and commercial uses (9 percent), natural gas vehicles (1 percent), and electric power (45 percent) (CEC, 2014d). As noted, natural gas is used to generate approximately 45 percent of electricity used in California. This results in peak seasonal demands for natural gas not only during the winter months for heating but also during the peak electricity-demand period in summer when cooling needs are greatest (CEC, 2005c). 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.

The state's highest priority is in promoting efforts to reduce demand. Reductions in natural gas use in residential and non-residential buildings have been implemented since 1978 through California's Energy

Efficiency Standards for Residential and Non-Residential Buildings (Title 24) and since 1977 by the Appliance Efficiency Regulations (Title 20), which are updated regularly to reflect policy mandates and advances in feasible technologies. As noted above, the governor's Green Building Initiative mandates a 20 percent overall reduction in energy consumption in buildings by 2015. Reductions in natural gas usage are also expected through increased efficiencies in the generation of electricity, and through efforts to increase the use of alternative sources of power (LA Times, 2008).

Transportation Fuel

California is the third highest producer of transportation fuels in the nation, with a crude oil distillation capacity of approximately 1,954,971 barrels per day (USEIA, 2014b). According to the CEC's *2013 Integrated Energy Policy Report*, California is experiencing a downward trend in sales of gasoline, diesel, and jet fuel. It is expected that gasoline consumption will decrease in the future largely due to high fuel prices, efficiency gains, competing fuel technologies, and mandated increases of alternative fuel use. As a consequence of improved vehicle efficiency, California should experience a 2-billion-gallon decline in gasoline consumption from 14.6 billion gallons per year in 2012 to 12.7 billion gallons per year by 2022 (CEC, 2013b).

The average fuel economy for the fleet of light-duty vehicles (autos, pickups, vans, and SUVs) steadily increased from about 13.1 miles-per-gallon (mpg) in the mid-1970s to the 24.1 mpg (estimated 2013 rate) (EPA, 2014). At this rate, driving 12,000 miles in a year would equate to an annual gasoline usage of approximately 570 gallons. The Energy Independence and Security Act (EISA), which mandates a national fuel economy standard of 35 miles per gallon by 2020, was passed in 2007 (EPA, 2007).

Project Site Setting

Currently, energy consumption within the project site is limited to activities associated with the Ranch house and associated buildings in the northeast corner of the site. The amount of energy consumed is unknown, but is considered to be an extremely small quantity.

4.15.3 Regulatory Setting

Federal

Energy Policy Act of 2005

Passed by Congress in July 2005, the Energy Policy Act includes a comprehensive set of provisions to address energy issues. The act includes tax incentives for the following: energy conservation improvements in commercial and residential buildings; fossil fuel production and clean coal facilities; and construction and operation of nuclear power plants, among other things. Subsidies are also included for geothermal, wind energy, and other alternative energy producers. It directs the USDOE to study and report on alternative energy sources such as wave and tidal power, and includes funding for hydrogen research. The act also increases the amount of ethanol required to be blended with gasoline, and extends daylight saving time (to begin earlier in spring and end later in fall) to reduce lighting requirements. It also requires the federal vehicle fleet to maximize use of alternative fuels. The Act further includes provisions for expediting construction of major energy transmission corridors, such as

high-voltage power lines, and fossil fuel transmission pipelines. These are just a few examples of the provisions contained in the act (US Congress, 2005).

Energy Independence and Security Act of 2007

Signed into law in December 2007, this broad energy bill included an increase in auto mileage standards, and also addressed biofuels, conservation measures, and building efficiency. The U.S. Environmental Protection Agency (EPA) administers the Corporate Average Fuel Economy (CAFE) program, which determines vehicle manufacturers' compliance with existing fuel economy standards. The bill amended the CAFE standards to mandate significant improvements in fuel efficiency (i.e., average fleetwide fuel economy of 35 miles per gallon by 2020, versus the previous standard of 27.5 mpg for passenger cars and 22.2 mpg for light trucks) (EPA, 2007).

Another provision includes a mandate to increase use of ethanol and other renewable fuels by 36 billion gallons by 2022, of which 21 million gallons is to include advanced biofuels, largely cellulosic ethanol, that have 50 to 60 percent lower GHG emissions. The bill also includes establishment of a new energy block grant program for use by local governments in implementing energy-efficiency initiatives, as well as a variety of green building incentives and programs, among other things (EPA, 2007).

Energy Star Program

In 1992, the EPA introduced Energy Star as a voluntary labeling program designed to identify and promote energy-efficient products to reduce GHG emissions. The program applies to major household appliances, lighting, computers, and building components such as windows, doors, roofs, and heating and cooling systems. Under this program, appliances that meet specifications for maximum energy use established under the program are certified to display the Energy Star label. In 1996, EPA joined with the Energy Department to expand the program, which now also includes qualifying commercial and industrial buildings, and homes (Energy Star, 2014).

Income Tax Credits

Federal income tax credits are available to individuals for installation of qualified energy conservation features in the home such as insulation, replacement windows, and certain high-efficiency heating and cooling equipment. Additional tax credits are available for qualified solar water heating and photovoltaic systems, and also for qualified fuel cell and microturbine systems. Tax credits are also available to buyers of designated fuel-efficient vehicles such as hybrid gasoline-electric, diesel, battery-electric, alternative fuel, and fuel cell vehicles. Builders of homes and commercial buildings that incorporate energy-efficient materials, as well as manufacturers of certain products designed to meet Energy Star standards, also qualify for tax credits (Energy Star, 2013).

State

Title 24 (California Energy Code)

The California Energy Code (Title 24, Part 6, of the California Code of Regulations [CCR], California's Energy Efficiency Standards for Residential and Nonresidential Buildings), provides energy conservation standards for all new and renovated commercial and residential buildings constructed in California. The

provisions of the California Energy Code apply to the building envelope, space-conditioning systems, and water-heating and lighting systems of buildings and appliances; they also give guidance on construction techniques to maximize energy conservation. Minimum efficiency standards are given for a variety of building elements, including appliances; water and space heating and cooling equipment; and insulation for doors, pipes, walls, and ceilings. The CEC adopted the 2013 changes to Building Energy Efficiency Standards, which emphasized saving energy at peak periods and seasons, and improving the quality of installation of energy-efficiency measures. The 2013 Title 24 standards require energy savings of 25 percent relative to the previous 2008 Title 24 standards. Compliance with Title 24 standards is verified and enforced through the local building permit process (CEC, 2014d; 2014e).

The 2013 Title 24 standards, which had an effective date beginning July 1, 2014, include added provisions that require, for example, “cool roofs” on commercial buildings; increased efficiency in heating, ventilating, and air conditioning systems; and increased use of skylights and more efficient lighting systems (CEC, 2014e). The CEC estimates that implementation of the 2013 Title 24 standards may reduce statewide annual electricity consumption by approximately 613 GWh per year, electrical peak demand by 195 megawatts, and natural gas consumption by 10 million therms per year.

California Green Building Standards Code

All new construction must adhere to the California Green Building Standards Code (CCR, Title 24, Part 11) in place at the time of construction. As an example, the 2013 Title 24 California Green Building Standards, referred to as CALGreen:

- Sets a threshold of a 20 percent reduction in indoor water use and includes voluntary goals for reductions of 30 percent, 35 percent and 40 percent.
- Requires separate meters for indoor and outdoor water use at nonresidential buildings; and at those sites, irrigation systems for larger landscaped areas must be moisture-sensing.
- Calls for 50 percent of construction waste to be diverted from the landfills and lists higher, voluntary diversion amounts of 65 percent to 75 percent for new homes, and 80 percent for commercial construction.
- Mandates inspections of energy systems -- such as the heat furnace, air condition and mechanical equipment -- for nonresidential buildings that are larger than 10,000 square feet to "ensure that all are working at their maximum capacity according to design efficiencies."
- Requires that paint, carpet, vinyl flooring, particle board and other interior finish materials be low-emitting in terms of pollutants.

Million Solar Roofs Bill

The Million Solar Roofs Bill (SB 1), enacted in August 2006, complements the California Solar Initiative established by CPUC in January 2006 with a goal of building a million solar roofs in 10 years (December 31, 2016). The main components of the bill include increasing the amount of credit solar customers can receive for excess power generated by their solar systems, mandating solar panels as an option for new home buyers while their house is being constructed, and mandating that municipal utilities create their own rebate programs (CEC, 2014f). Post SB 1 rules have not yet been developed as of February 2016.

Senate Bill X1 2

SB X1 2, enacting the California Renewable Energy Resources Act, expands the Renewable Portfolio Standard by establishing a goal of 20 percent of the total electricity sold to retail customers in California per year from renewable sources by December 31, 2013, and 33 percent by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location. In addition to the retail sellers covered by SB 107, SB X1 2 adds local publicly owned electric utilities to the Renewable Portfolio Standard. The CPUC has established the quantity of electricity products from eligible renewable energy resources to be procured by retail sellers in order to achieve targets of 20 percent by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. The Act also requires that the governing boards for local publicly owned electric utilities establish the same targets, and the governing boards are responsible for ensuring compliance with these targets. The CPUC is responsible for enforcement of the Renewable Portfolio Standard for retail sellers, while the CEC and California Air Resources Board (CARB) will enforce the requirements for local publicly owned electric utilities.

Executive Order S-3-05

EO S-3-05 was signed by the Governor on June 1, 2005. EO S-3-05 established the following statewide emission reduction targets:

- Reduce GHG emissions to 2000 levels by 2010,
- Reduce GHG emissions to 1990 levels by 2020, and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

EO S-3-05 created a Climate Action Team (CAT) headed by Cal EPA and including several other state agencies. The CAT is tasked by EO S-3-05 with implementing the global warming emission reduction programs identified in the Climate Action Plan and to report on the progress made toward meeting the emission reduction targets established in the EO.

The first report to the Governor and the Legislature was released in March 2006 and will be issued bi-annually thereafter. The 2006 CAT report to the Governor contains recommendations and strategies to help ensure the targets in EO S-3-05 are met (Cal EPA, 2006). Subsequent CAT reports discussed the progress and supplemental recommendations to ensure the targets of EO S-3-05. The 2010 CAT Report to the Governor and the Legislature was issued in December 2010 (Cal EPA, 2010).

Executive Order B-30-15

EO B-30-15 was signed by the Governor on April 29, 2015. EO B-30-15 established a California GHG reduction target of 40 percent below 1990 levels by 2030. This intermediate GHG emissions reduction target will make it possible to meet the ultimate GHG emissions reduction target of 80 percent below 1990 levels by 2050, as established in EO S-3-05.

California Global Warming Solutions Act of 2006

In September 2006, the governor signed AB 32, The Global Warming Solutions Act of 2006, which mandates that California's GHG emissions be reduced to 1990 levels by 2020. The act directs the Cal EPA to work with state agencies to implement a cap on GHG emissions (primarily carbon dioxide) from stationary sources of such as electric power generation facilities, and industrial, commercial, and waste-disposal sectors. Since carbon dioxide emissions are directly proportional to fossil fuel consumption, the cap on emissions is expected to have the incidental effect of forcing a reduction in fossil fuel consumption from these stationary sources. Specifically, AB 32 directs the Cal EPA to work with other state agencies to accomplish the following: (1) promulgate and implement GHG emissions cap for the electric power, industrial, and commercial sectors through regulations in an economically efficient manner; (2) institute a schedule of GHG reductions; (3) develop an enforcement mechanism for reducing GHG; (4) establish a program to track and report GHG emissions (Cal EPA, 2014).

Local

City of Roseville

The City of Roseville's General Plan includes goals and policies for energy consumption as detailed below:

Public Facilities Element - Electric Utility

Goal 4 Aggressively pursue cost-effective and environmentally safe alternative sources of energy and energy conservation measures.

Policy 5 Explore the feasibility of the development and participation in renewable energy resources.

Policy 8 Pursue reasonable and cost-effective energy efficiency, conservation, and load management programs pertinent to the electric utility system.

Public Facilities Element - Water and Energy Conservation

Policy 8 Enforce energy requirements and encourage development and construction standards that promote energy efficiency and conservation.

Housing Element – Residential Energy Efficiency and Conservation

Goal 1 Continue efforts to encourage energy efficiency in housing construction and maintenance.

Policy 1 Roseville Electric shall commit to offering Energy Efficiency and Renewable Energy programs.

Policy 2 Roseville Electric shall continue to apply energy-efficient requirements to all residential construction

Policy 3 Roseville Electric shall continue the Electric Rate Assistance Programs for residential customers whose medical status or income qualify.

The City also has several programs that address energy conservation. Refer to **Section 4.5**, **Climate Change and Greenhouse Gas Emissions**, for a full description of the City's energy conservations plans, policies and programs.

As shown in **Table 4.12.5-1**, approximately 25 percent of Roseville Electric's power supply is provided through renewable energy sources. A mix of wind and geothermal, and hydroelectric, the energy will serve the immediate needs of its 2,000 Green Roseville customers. Roseville Electric anticipates entering into more contracts to meet state mandates by increasing the utility's renewable energy total. Roseville Electric requires air conditioners installed in new construction to exceed state energy efficiency requirements. Rebates are available to builders who construct energy efficient homes.

4.15.4 IMPACTS

Method of Analysis

For the purpose of this analysis, energy consumption from the Proposed Project was evaluated in the context of *CEQA Guidelines* Appendix F discussed below. The analysis assumes that the project, if annexed, would comply with relevant federal and state laws and regulations, City General Plan policies, ordinances, and improvement standards. Therefore, such policies, ordinances, and standards are not identified as mitigation measures.

Thresholds of Significance

CEQA Guidelines Appendix F provides guidance for assessing potential impacts that a project could have on energy supplies, focusing on the goal of conserving energy by ensuring that projects use energy wisely and efficiently. Because Appendix F does not include specific significance criteria, the following thresholds are based on the goal of Appendix F.

An energy impact is considered significant if the Proposed Project would:

- result in the wasteful, inefficient or unnecessary consumption of energy; or
- result in a substantial increase in demand upon energy resources in relation to projected supplies or capacity.

CEQA Guidelines Appendix F states that the means of achieving the goal of energy conservation includes the following:

- decreasing overall per capita energy consumption;
- decreasing reliance on fossil fuels such as coal, natural gas and oil; and
- increasing reliance on renewable energy sources.

The City assesses whether or not a project would result in wasteful and inefficient use of energy based on compliance with Title 24, the California Green Building Code, and Blueprint principles for reducing transportation fuel use during operation.

Impacts

IMPACT 4.15.1	INCREASED CONSUMPTION OF ENERGY
Applicable Policies and Regulations	California Energy Code (Title 24) City of Roseville General Plan Electric Utility and Water and Energy Conservation Measures
Significance with Policies and Regulations	Significant
Mitigation Measures	MM 4.15-1: Implement Measures to Reduce Energy Consumption
Significance After Mitigation	Less than Significant

Construction Phase Energy Requirements

Project construction would consume energy in two primary forms: (1) fuel energy consumed by construction vehicles and equipment; and (2) bound energy in construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass. These are discussed below.

Energy Consumed by Construction Vehicles and Equipment

Fossil fuels used for construction vehicles and other equipment would be used during site clearing, grading, paving, and building. Fuel consumed during construction would be temporary in nature and would not represent a significant demand on available fuel, beyond normal construction fuel usage. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or State.

Additionally, project-related mitigation measures would provide fuel and energy reduction during construction. Overall fuel and energy reductions are difficult to quantify; however, certain air quality (**Section 4.4**) emission reduction mitigation measures would also reduce fuel and electricity use during construction of the Proposed Project. **Mitigation Measure 4.4-1 d** would reduce fuel consumption through the use of late model construction equipment, which has greater fuel efficiency than earlier model engines and **Mitigation Measure 4.4-1 f**, would reduce energy consumption by requiring the contractor to minimize equipment idling to five minutes. These mitigation measures would reduce fuel and energy use during all stages of construction and avoid the wasteful, inefficient, or unnecessary consumption of fuel energy. Additionally, all diesel-fueled construction vehicles would be required to meet the latest emissions standards. Therefore, construction of the Proposed Project would not result in inefficient, wasteful, or unnecessary consumption of fuel energy as it would comply with relevant standards.

Bound Energy Contained in Construction Materials

Substantial reductions in energy inputs for construction materials can be achieved by selecting recycled building materials and/or building materials composed of recycled materials that require substantially less energy to produce than non-recycled building materials. Because the exact types of building materials to be used during construction are not known, it is not possible at this stage of the Proposed Project's planning to estimate and quantify the amount of energy that would be consumed in the production, transportation, and installation of construction materials. It is reasonable to assume that production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices and comply with the recommendations within the Green Building Code in the interest in minimizing the cost of doing business. It is also reasonable to assume that local building materials would be used where available, as local construction materials would be more cost-effective when accounting for costs associated with transportation of building materials over long distances. Given the proximity of the Proposed Project to the material recycling center at the Western Regional Sanitary Landfill (WRSL), it is also possible that unused construction materials would be recycled, and that cost-efficient recycled construction material would be utilized as feasible.

Operational Phase Energy Use

The operational phase would consume energy for multiple purposes including, but not limited to, building heating and cooling, refrigeration, lighting, electronics, office equipment, and commercial machinery (including kitchen appliances). Operational energy would also be consumed during each vehicle trip associated with these proposed uses. The following discussion of operational energy use begins with a discussion of on-site energy use and conservation measures, which is followed by a discussion of transportation energy use and conservation. **Table 4.15-1** presents the estimated energy use for the Proposed Project.

TABLE 4.15-1
ESTIMATED PEAK ENERGY DEMANDS OF THE PROPOSED PROJECT

Type of Energy	Peak Demand
Electricity	20.9 MVA[1]
Natural Gas	180.2 MCFH[1]
Gasoline	2,334,001 gallons per year[2]

MVA = Megavolt Amperes
MCFH = thousand cubic feet per hour
1 - Amoruso Ranch Technical Dry Utilities Study, **Appendix K**
2 - Based on the NHTSA passenger car and light truck CAFE standards for model years 2017-2021 (USDOT, 2014); 2035 CIP Plus Project vehicle miles traveled (VMT; Fehr & Peers, 2015b); Annual gasoline use in gallons/year = (255,781 miles/day)*(365 day/year)* (0.025 gallons/mile)

On-Site Energy Conservation

In accordance with California Energy Code Title 24, the Proposed Project would be required to meet the 2013 Building Energy Efficiency Standards for residential and non-residential construction. This includes standards for water and space heating and cooling equipment; insulation for doors, pipes, walls and ceilings; and appliances, to name a few. The Proposed Project would also be eligible for rebates and other financial incentives from both the electric and gas providers for the purchase of energy-efficient

appliances and systems, which would further reduce the overall operational energy demand of the Proposed Project.

As discussed in **Section 4.5**, **Climate Change and Greenhouse Gas Emissions**, the Proposed Project includes a number of design measures that would reduce vehicles miles traveled (transportation fuel), water consumption and the energy demands of the Proposed Project. These design measures, as well as additional energy conserving measures, have been incorporated into **Mitigation Measure 4.4-2**. The elements of **Mitigation Measure 4.4-2** that would provide energy savings are listed in **Table 4.15-2**. These measures would reduce the consumption of electricity, gasoline, and natural gas.

TABLE 4.15-2
ENERGY USE REDUCTION MITIGATION MEASURES

Energy Mitigation Measure	Type of Energy	Basis for Energy Reduction
Provide tree plantings that meet or exceed the requirements of the City's Community Design Guidelines to provide shading of buildings and parking lots.	Electricity	Shading provides natural cooling, thereby reducing electricity use associated with HVAC equipment.
Landscape with native drought-resistant plants (ground covers, shrubs and trees) with particular consideration of plantings that are not reliant on gas-powered landscape maintenance equipment.	Electricity	Reduces water consumption, thereby, reducing indirect project-related electricity consumption for water transport.
Require all flat roofs on non-residential structures to have a white or silver cap sheet to reduce energy demand.	Electricity	Reduces internal temperature of buildings, thereby reducing cooling needs and the project related energy consumption.
Provide conductive/inductive electric vehicle charging station and signage prohibiting parking for non-electric vehicles within designated spaces within non-residential developments.	Gasoline	Encourages use of electrical vehicles for employees and patrons of commercial and offices uses, thereby potentially reducing project related gasoline consumption.
Provide vanpool parking only spaces and preferential parking for carpools to accommodate carpools and vanpools in employment areas (e.g. community commercial, business-professional uses).	Gasoline	Encourages multiple ridership, thereby potentially reducing vehicle trips and project related gasoline consumption.
Design streets to maximize pedestrian access to transit stops.	Gasoline	Encourages use of public transportation, thereby potentially reducing vehicle trips and project related gasoline consumption.
Require site design to maximize access to transit lines, to accommodate bus travel, and to provide lighted shelters at transit access points.	Gasoline	Encourages use of public transportation, thereby potentially reducing vehicle trips and project related gasoline consumption.
Develop the plan consistent with the higher residential densities (within approved residential density ranges of zone) provided around the village nodes and transit corridors.	Gasoline	Increases pedestrian access to commercial and mixed uses, thereby reducing the need for vehicle trips and project related gasoline consumption.
Participate in Roseville Electric incentive programs for energy-efficient development where feasible if available.	Electricity	Encourages energy to off-set energy efficient development to reduce energy demands.
Design a pedestrian access network to link areas of the project site with other land uses.	Gasoline	Providing pedestrian access network reduces vehicle miles traveled, thereby, reducing project related gasoline consumption (CAPCOA, 2010).

Energy Mitigation Measure	Type of Energy	Basis for Energy Reduction
Design buildings to meet the 2013 Title 24 Energy Efficiency Standards (which is a 25% reduction below 2010 Title 24 Energy Efficiency Standards).	Electricity and Natural Gas	Provides for a 25 percent reduction in energy efficiency over the previous 2010 Title 24 Standard; thereby, reducing electricity and natural gas consumption (CAPCOA, 2010).
Ensure that all area lighting installed on the site shall be considered high efficiency lighting. All public street lights shall meet Roseville Electric standards at the time of construction.	Electricity	Provides that 100 percent of installed lighting shall be high efficiency; thereby, reducing project-related electricity consumption (CAPCOA, 2010).
Turf will be restricted consistent with the City's Water Efficient Landscape Ordinance and Project's Water Conservation Strategy	Electricity	Provides that the project would reduce turf compared to typical uses; thereby, indirectly reducing electricity used for water transport (CAPCOA, 2010). Refer to Section 4.12.1.3 for a discussion of "typical" turf area in residential and non-residential areas and the resulting decrease in water supply demands as a result of turf reducing measures within the Proposed Project.
Install water efficient landscape irrigation systems at all public land uses.	Electricity	Provides that a 10 percent reduction in water usage be realized from the use of water efficient landscape irrigation; thereby, reducing indirect project-related electricity consumption for water transport (CAPCOA, 2010).
The applicant shall ensure that builders offer only energy efficient appliances for installation in residential units, including Energy Star refrigerators, clothes washers, dishwashers, and ceiling fans	Electricity	Provides that a reduction of between 50 and 15 percent of water and energy use would occur due to the installation of energy efficient appliances; thereby, reducing direct and indirect project-related electricity consumption (CAPCOA, 2010).

Notes:
The components of Mitigation Measure 4.4-2 that would provide energy savings are listed in this table. Some bullet points within the measure would simply reduce emissions and it is not clear if they would have an energy savings; therefore, not all components of the mitigation measure are listed.
Source: CAPCOA, 2010.

Transportation Energy Use

As shown in **Table 4.15-1**, under 2035 Capital Improvement Program (CIP) Plus Project conditions, the total estimated vehicle miles traveled (VMT) for the Proposed Project is 255,781 miles per day (Fehr & Peers, 2015b) resulting in the consumption of an estimated 2,334,067 gallons of gasoline annually. The VMT estimates are the sum of all project trips generated by the project multiplied by the distance they travel. With 45,221 total daily trips, the average trip length for the Proposed Project would be approximately 5.66 miles, which is less than the regional average of 12.8 miles (CARB, 2013b). As discussed in **Section 4.5**, **Climate Change and Greenhouse Gas Emissions**, the Proposed Project includes a number of components which result in an overall reduction in VMT. Most notably, of the 45,221 total trips generated by the Proposed Project (refer to **Appendix M**, Traffic Study for the Proposed Project), approximately 8,546 trips would be "captured" internally from available retail, office, and elementary schools located within the project site, eliminating the need for these trips to travel to areas

outside of the project site. The reduction in VMT due to internal capture results in a reduction in gasoline consumption.

As discussed in **Section 2.6.4**, **Project Description**, public transit would serve the project site through Roseville Transit and the Placer County Transit bus systems. These services would utilize the proposed circulation system to provide local and regional transit connections for community residents and employees. Bus Rapid Transit (BRT) facilities (e.g., stops, bus shelters) may be included along Westbrook Boulevard within the project site to accommodate a proposed route that may extend from Sacramento Regional Transit's Light Rail Station at Watt Avenue/I-80 north along Watt Avenue through the Sierra Vista Specific Plan (SVSP) and Creekview Specific Plan (CSP) to the project site. Additionally, 25 parking spaces within designated commercial areas (Parcel AR 53) will be designated for park and ride users.

In addition to the design features discussed above, the Proposed Project would include several mitigation measures that would reduce the use of energy from transportation. As shown in **Table 4.15-2**, the Proposed Project would:

- Provide conductive/inductive electric vehicle charging stations;
- Provide vanpool parking only spaces and preferential parking for carpools to accommodate carpools and vanpools in employment areas (e.g. community commercial, business-professional uses)
- Streets would be designed to maximize pedestrian access to transit stops
- Site design would maximize access to transit lines, to accommodate bus travel, and to provide lighted shelters at transit access points.
- Development would include higher residential densities (within approved residential density ranges of zone) provided around the village nodes and transit corridors.
- Pedestrian and bicycle trails would connect uses within the project site to encourage alternative transportation.

Summary of Operational Energy Consumption

As shown in **Table 4.15-1**, the Proposed Project will result in the consumption of energy, natural gas, and transportation fuel. This is a potentially **significant** impact. As discussed above, various proposed design features and mitigation measures would be implemented to ensure the more efficient use of energy resources during project operation. With mitigation, the Proposed Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, this impact would be considered **less than significant**.

IMPACT 4.15-2	SUBSTANTIAL INCREASED DEMAND ON ENERGY RESOURCES IN RELATION TO PROJECTED SUPPLIES OR CAPACITY
Applicable Policies and Regulations	None
Significance with Policies and Regulations	Less than Significant
Mitigation Measures	None
Significance After Mitigation	Less than Significant

Total consumption of energy in the State of California for electricity, natural gas, and transportation fuel is described in **Section 4.15.2**. The estimated consumption of electricity, natural gas, and transportation fuel as a result of implementation of the Proposed Project is shown in **Table 4.15-1**. Specific impacts to service providers in the City of Roseville from the electricity and natural gas demands are discussed further in **Section 4.12.5**, **Electricity, Natural Gas, and Telecommunication Services**. As described therein, electricity and natural gas demand would be adequately met from local supply provided by Roseville Electric and Pacific Gas and Electric (PG&E). Because the City has access to 50 percent of its supply from the REP and has an aggressive energy efficiency program, the demand from the Proposed Project is not anticipated to exceed Roseville Electric's projected supply.

The demand for transportation fuel would be minimal when considered in relation to State of California supply and demand discussed above. It is expected that gasoline consumption in the state will decrease in the future largely due to high fuel prices, efficiency gains, competing fuel technologies, and mandated increases of alternative fuel use. As a consequence of improved vehicle efficiency, California should experience a 2 billion-gallon decline in gasoline consumption from 14.6 billion gallons per year in 2012 to 12.7 billion gallons per year by 2022 (CEC, 2013b). Further, it is anticipated that the state will undertake additional measures in accordance with the Scoping Plan to reduce reliance on fossil fuels and reduce GHG emissions in order to meet the goals of AB 32. The Proposed Project incorporates smart growth elements, consistent with the Blueprint principles for newly developing areas, to reduce reliance on automobiles and transportation fuel. These include a balanced mix of residential and commercial uses in close proximity to each other that promotes walking or bike riding to neighborhoods functions and services. Additionally, a variety of transportation modes are planned in the Proposed Project that will reduce reliance on automobiles, including bus services and a network of multiple-use trails and paseos that provide access to areas within the project site as well as connections to the City's pedestrian and bike lane network. Project-related demand for transportation fuel would not be substantial in relation to the States available gasoline supplies given the projected decline in State-wide gasoline consumption and the smart growth principles incorporated into the Proposed Project to reduce reliance on automobiles.

Therefore, the increase in demand for energy resources resulting from the Proposed Project in relation to projected supplies and capacity would be **less than significant**.

4.15.5 MITIGATION MEASURES

MM 4.15-1 Measures to Reduce Energy Consumption (Impact 4.15-1)

Implementation of the Air Quality **Mitigation Measures 4.4-1(d)** and **(f)** and **Mitigation Measure 4.4-2** reduce direct and indirect operational energy consumption. The requirements of **Mitigation Measures 4.4-1(d)** and **(f)** and **Mitigation Measure 4.4-2** are listed below:

MM 4.4-1 Measures to Reduce Short-term Construction-related Emissions

d. Prior to approval of Grading or Improvement Plans, whichever occurs first, the applicant shall provide a written calculation to the Placer County Air Pollution Control District (PCAPCD) for approval by the District demonstrating that the heavy-duty (50 horsepower or greater) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, shall achieve a project wide fleet-average 20 percent NO_x reduction and 45 percent particulate reduction as required by CARB. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

f. Include the following standard notes on the Improvement/Grading Plan:

- During construction the contractor shall utilize existing power sources (e.g., power poles) or clean fuel (i.e. gasoline, biodiesel, natural gas) generators rather than temporary diesel power generators.
- During construction the contractor shall minimize idling time to a maximum of 5 minutes for all diesel-powered equipment.

MM 4.4-2 Project Measures to Reduce Operational Emissions

Following receipt of an application for a Tentative Maps (excluding the Large Lot Subdivision Map), Design Review Permit, conditional use permits and/or all discretionary permits, the applicant shall forward an early consultation notice to the PCAPCD. Where the PCAPCD provides comments on a specific development proposal, the applicant shall consult with PCAPCD and the developer to incorporate measures recommended by the PCAPCD and agreed to by the applicant into the Proposed Project. Where the PCAPCD does not provide comment on a specific development proposal, the applicant shall incorporate measures that reduce vehicle emissions and operation emissions from the proposed development. This measure shall be implemented through project design, conditions of approval, noticing and disclosure statements, or through the City's plan check and inspection processes. This process is intended to ensure that best available and practical approaches are used to reduce operational emissions in specific tentative map and design review permit applications. The following is a listing of measures that shall be implemented for the purpose of reducing vehicle and operational emissions, unless the applicant demonstrates to the City's satisfaction that the measure is infeasible. If the applicant demonstrates that any particular measure in the list below is infeasible for

a proposed project to which it would otherwise be applicable, the applicant must provide an analysis demonstrating that a replacement measure is comparably effective.

- Provide tree plantings that meet or exceed the requirements of the City's Community Design Guidelines to provide shading of buildings and parking lots.
- Landscape with native drought-resistant plants (ground covers, shrubs, and trees) with particular consideration of plantings that are not reliant on gas-powered landscape maintenance equipment.
- Require all flat roofs on non-residential structures to have a white or silver cap sheet to reduce energy demand, unless a demonstration of infeasibility is made by the applicant.
- Provide conductive/inductive electric vehicle charging station and signage prohibiting parking for non-electric vehicles within designated spaces within non-residential developments.
- Provide vanpool parking only spaces and preferential parking for carpools, to accommodate both carpools and vanpools in employment areas (e.g. community commercial, business-professional uses).
- All truck loading and unloading docks shall be equipped with one 110/208 volt power outlet for every two-dock doors. Signs shall be posted stating "Diesel trucks are prohibited from idling more than five minutes and trucks requiring auxiliary power shall connect to the 110/208-vot outlets to run auxiliary equipment."
- Design streets to maximize pedestrian/bicycle access to transit stops.
- Require site design to maximize access to transit lines, to accommodate bus travel, and to provide lighted shelters at transit access points.
- Develop the plan consistent with the higher residential densities (within approved residential density ranges of zone) provided around the village nodes and transit corridors.
- Participate in Roseville Electric incentive programs for energy-efficient development where feasible as available.
- Ten percent of the residential units shall be designated as low to very-low income residential units.
- A pedestrian and bicycle access network shall link areas of the project site with other land uses.
- Electric landscape maintenance equipment shall be utilized on parks and public/quasi-public lands.
- Design buildings to meet the 2013 Title 24 Energy Efficiency Standards (which is a 25 percent reduction below 2010 Title 24 Energy Efficiency Standards).
- Ensure that all public street and area lighting installed on the site shall be considered high efficiency lighting.
- Utilize reclaimed water where available for irrigation of all non-single family areas within the project site, including the school, parks, paseos, roadway landscaping, and commercial landscaping.

- Reduce the area of turf allowed consistent with the City's Water Efficient Landscape Ordinance and the Water Conservation Strategy (see **Appendix G**).Install water efficient landscape irrigation systems at all public land uses

Measures for Residential Units:

- Require electrical outlets be installed on the exterior walls of both the front and back of residences to promote the use of electric landscape maintenance equipment.
- Require every garage of each single family home to be considered "Electric Vehicle Ready." This by definition is not limited to, but includes a conduit raceway to a spare electric box in the garage that is sized for a future 220v outlet. A 220v breaker space must be available in the electrical panel.
- Require installation of a gas outlet in the rear of residential buildings for use of outdoor cooking appliances, such as gas burning barbeques.
- Require installation of low NO_x hot water heaters (beyond District Rule 246 requirements).
- Prior to approval of Tentative Maps: provide notice to homebuyers through conditions, covenants, and restrictions (CC&Rs) or other mechanisms to inform them that only gas fireplaces shall be permitted.
- The applicant shall ensure that builders offer only energy efficient appliances for installation in residential units, including Energy Star refrigerators, clothes washers, dishwashers, and ceiling fans.