

3.6 Energy Use and Conservation

Public Resources Code Section 21100(b)(3) and California Environmental Quality Act (CEQA) Guidelines Section 15126.4 require environmental impact reports (EIRs) to analyze energy use and conservation of the proposed Project, and in particular to describe any wasteful, inefficient, and unnecessary consumption of energy caused by a project. The analysis of energy conservation consists of a summary of the energy regulatory framework, the existing conditions at the Project site, a discussion of the proposed Project's potential impacts on energy resources, and identification of the Project design features or mitigation measures that may reduce energy consumption. The potential for impacts to energy conservation have been evaluated in accordance with Appendix F of the CEQA Guidelines and federal, state, and regional regulations.

3.6.1 Regulatory Setting

The following regulations and guidelines provide the framework for energy conservation. According to the majority of these programs and their requirements, the increased and growing demands for non-renewable energy supplies are best addressed through conservation.

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the U.S. Department of Transportation (DOT), the U.S. Department of Energy (DOE), and the U.S. Environmental Protection Agency (EPA) are three federal agencies with substantial influence over energy policies and programs. Generally, federal agencies influence and regulate transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy-related research and development projects, and through funding for transportation infrastructure improvements. On the state level, the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are two agencies with authority over different aspects of energy. The CPUC regulates privately owned utilities in the energy, rail, telecommunications, and water fields. 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.

There are federal, state, and local policies aimed at the transportation sector as well as development projects and project site design. Because the proposed Project is a transportation project and does not propose new development, only those policies associated with transportation are discussed below.

3.6.1.1 Federal

The federal Corporate Average Fuel Economy (CAFE) standard determines the fuel efficiency of certain vehicle classes in the United States. In 2007, as part of the Energy and Security Act of 2007, CAFE standards were increased for new light-duty vehicles to 35 miles per gallon (mpg) by 2020. Plans are underway to increase CAFE standards to require light-duty vehicles to meet an average fuel economy of 35.5 mpg by 2016.

3.6.1.2 State

California Assembly Bill 1493 (Pavley) enacted on July 22, 2002, required the CARB to develop and adopt regulations to reduce greenhouse gases emitted by passenger vehicles and light-duty trucks. CARB adopted regulations in 2004, but due to legal delays was not granted the authority by the EPA to proceed until 2009. The adopted regulations apply to the vehicle manufacture of 2009 and later model year vehicles. CARB estimates that the regulations will reduce GHG emissions from light duty passenger vehicles by an estimated 18 percent in 2020 and by 27 percent in 2030 (Association of Environmental Professionals [AEP] 2007). GHG reductions would result from improved vehicle design that includes small engines with superchargers, continuously variable transmissions, and hybrid electric drives. These types of vehicle design would further improve fossil fuel economy, allowing harmonization with the federal rules and CAFE standards for passenger/light duty vehicles.

3.6.1.3 Regional

The General Plan 2025 contains the following energy policies:

Air Quality Element

Policy AQ-2.1: Support Transportation Management Associations between large employers and commercial/ industrial complexes.

Policy AQ-2.2: Support programs and educate employers about employee rideshare and transit incentives for employers with more than 250 employees at a single location. The City will provide incentives and programs to encourage alternative methods of transit.

Policy AQ-2.3: Cooperate with local, regional, state, and federal jurisdictions to reduce VMT and motor vehicle emissions through job creation in job-poor areas.

Policy AQ-2.4: Monitor and strive to achieve performance goals and/or VMT reduction, which are consistent with SCAG's goals.

- Policy AQ-2.5: Consult with CARB to identify ways that it may assist the City (e.g., providing funding, sponsoring programs) with its goal to reduce air pollution by reducing emissions from mobile sources.
- Policy AQ-2.6: Develop trip reduction plans that promote alternative work schedules, ridesharing, telecommuting and work-at-home programs, employee education, and preferential parking.
- Policy AQ-2.7: Use incentives, regulations, and Transportation Demand Management in cooperation with surrounding jurisdictions to eliminate vehicle trips that would otherwise be made.
- Policy AQ-2.8: Work with Riverside Transit Authority (RTA) to establish mass transit mechanisms for the reduction of work-related and non-work-related vehicle trips.
- Policy AQ-2.9: Encourage local transit agencies to promote ridership through careful planning of routes, headways, origins and destinations, [and] types of vehicles.
- Policy AQ-2.10: Identify and develop non-motorized transportation corridors.

Open Space and Conservation Element

- Policy OS-8.10: Support the use of public transportation, bicycling, and other alternative transportation modes in order to reduce the consumption of non-renewable energy supplies.

3.6.2 Environmental Setting

3.6.2.1 Riverside Public Utility

The City of Riverside (City) is the primary distribution provider for electricity in the entire City. Riverside Public Utility (RPU) is a municipally owned electrical utility, and as such maintains electrical facilities and infrastructure within the City. RPU's electrical system includes 91 miles of transmission lines and 1,300 miles of distribution lines. RPU's service area covers 80 square miles. RPU is responsible for the generation, transmission and distribution of electric power within the City. As of the 2009/2010 fiscal year, RPU had over 106,000 electrical meter connections and sold over 2,089 million of kilowatt-hours of energy. RPU's peak power demand was 560.3 megawatts (MW) of electricity (RPU 2010).

As of the 2009/2010 fiscal year, RPU's annual power delivery in the City was 2,203,000 megawatt hours (MWh). Table 3.6-1 summarizes RPU customer's electricity use by land use type. Table 3.6-2 summarizes the RPU energy resources.

**TABLE 3.6-1
RIVERSIDE PUBLIC UTILITIES ELECTRIC USE 2009/2010**

Electric Use	Number of Meters	Millions of kilowatt-hour Sale
Residential	95,258	701
Commercial	10,073	406
Industrial	916	906
Wholesale sales	--	44
Other	88	32
TOTAL	106,335	2,089

SOURCE: Riverside Public Utilities 2010.

**TABLE 3.6-2
RIVERSIDE PUBLIC UTILITIES ENERGY RESOURCES**

Energy Resource	Power Mix
Coal	57%
Renewables	16%
Nuclear	15%
Hydropower	1%
Natural Gas	1%
Other	10%
TOTAL	100%

SOURCE: Riverside Public Utilities 2010.

As shown, as of 2010, the largest proportion (57 percent) of RPU's electrical power came from coal, followed by renewable resources (16 percent), and nuclear power (15 percent). RPU's renewable energy sources include geothermal, wind, biomass/waste, small-scale hydroelectric, and solar power.

The General Plan 2025 Program Final EIR found that impacts to electrical supply would be less than significant upon General Plan buildout (City of Riverside 2007a).

3.6.2.2 Southern California Gas Company

Southern California Gas Company (SCGC) provides natural gas service for residential, commercial, and industrial uses. SCGC purchases natural gas from several bordering states. Interstate pipelines that currently serve California include: El Paso Natural Gas Company, Kern River Transmission Company, Mojave Pipeline Company, Gas Transmission-Northwest, Transwestern Pipeline Company, Southern Trails Pipeline, and Tuscarora Pipeline. Most of the major natural gas transmission pipelines within the City are owned and operated by SCGC. The CPUC regulates SCGC, who is the default provider required by state law, for natural gas delivery to the City. SCGC has the

capacity and resources to deliver gas except in certain situations that are noted in state law. As development occurs, SCGC will continue to extend its service to accommodate development and supply the necessary gas lines. SCGC does not base its service levels on the demands of the City; rather, it makes periodic upgrades to provide service for particular projects and new development. SCGC is continuously expanding its network of gas pipelines to meet the needs of new commercial and residential developments in Southern California.

3.6.3 Significance Determination Thresholds

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

CEQA Guidelines, Appendix F, Energy Conservation provides guidance for EIRs regarding potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing the inefficient, wasteful, and unnecessary consumption of energy. The Resources Agency amended Appendix F to make it clear that an energy analysis is mandatory. However, the Resources Agency also clarified that the energy analysis is limited to effects that are applicable to the project (Resources Agency 2009). Furthermore, Appendix F is not described as a threshold for determining the significance of impacts. Appendix F merely seeks inclusion of information in the EIR to the extent relative and applicable to the project. However, for the purpose of this Draft Environmental Impact Report (DEIR), implementation of the proposed Project would be considered to have significant energy impacts if it would:

1. Result in the use of excessive amounts of electric power; and/or
2. Result in the use of excessive amount of fuel or other forms of energy (e.g., natural gas, oil).

3.6.4 Issue 1: Electric Power

Would the proposed Project result in the use of excessive amounts of electric power?

3.6.4.1 Impact Analysis

Scenario 1

Under Scenario 1, no changes to the existing land use would occur and no development is proposed. In addition, no construction would be required. No change would occur in the existing utility lines, and there would be no change in the existing use of electric power. **No impact** would result.

Scenario 2

Under Scenario 2, no changes to the existing land use would occur and no development is proposed. In addition, no construction would be required. No change would occur in the existing utility lines, and there would be no change in the existing use of electric power. **No impact** would result.

Scenario 3

Under Scenario 3, gas and electric power lines would be extended from the existing terminus of Overlook Parkway, west of Alessandro Arroyo, and be routed through the bridge and fill sections and tie into existing lines near the intersection of Sandtrack Road. The City of Riverside typical electric conduit system (six 5-inch, two 4-inch, and two 2-inch conduits) would be provided through one of the bridge box girder cells. The conduit layout is planned in coordination with RPU during the design phase. A future utility opening would also be accommodated in each bridge. Design and construction of electric power lines will remain consistent with the RPU Board-adopted Electric System Master Plan. Although the lines would be extended in the roadway for a more efficient distribution and service system, this scenario involves traffic circulation patterns and does not propose land use changes or development that would increase the use of electrical power. Further, construction would be temporary and relies primarily on gasoline- and diesel-fueled equipment. Construction would require no or minimal electrical power. Once completed, the Project would not create a new or permanent demand for electricity. **No impact** would result.

Scenario 4

Under Scenario 4, utility line improvements would include the same improvements as under Scenario 3 for both the bridge and fill section Project components, and no impact would result. In addition, utility line improvements would be installed during construction of the Proposed C Street. Design and construction of electric power lines will remain consistent with the RPU Board-adopted Electric System Master Plan. These improvements will be refined at the time improvement plans are completed for the final roadway alignment. Although the lines would be extended in the roadway for a more efficient distribution and service system, this scenario involves new roadways to address traffic circulation and does not propose land use changes or development that would increase the use of electrical power. Further, construction would be temporary and would not create a new or permanent demand for electricity. Construction would require no or minimal electrical power. **No impact** would result.

Off-site

The Traffic Impact Analysis (TIA) prepared for the proposed Project identifies measures to mitigate potentially significant traffic impacts within the Project vicinity. Measures

consist of improvements such as changing a two-way stop-controlled intersection to a four-way stop-control, installing traffic signals, changing traffic signal operations, and adding new or additional right- or left-turn lanes. Adding new or additional right- or left-turn lanes would only require roadway restriping and minor repaving in previously developed areas. These improvements would rely on gasoline- and diesel-fueled equipment. They would be short term (1/2 day up to a few weeks) and would not result in the use of excessive amounts of electric power. **No impacts** are identified.

3.6.4.2 Significance of Impacts

Under all scenarios, there would be no change in the existing use of electric power. Although Scenarios 3 and 4 involve utility line improvements in new roadways, this would not result in an excessive use of power. No impact would result.

No impacts would occur from implementation of off-site improvements.

3.6.4.3 Mitigation, Monitoring, and Reporting

No mitigation is required.

3.6.5 Issue 2: Fuel

Would the proposed Project result in the use of excessive amount of fuel or other forms of energy (e.g., natural gas, oil)?

3.6.5.1 Impact Analysis

a. Construction-related Fuel Use

Scenario 1

Under Scenario 1, both Crystal View Terrace and Green Orchard Place gates would remain in place and be closed until such time that Overlook Parkway is connected across the Alessandro Arroyo and to Alessandro Boulevard. No construction would occur under Scenario 1, and this scenario would not involve the use of fuel or other forms of energy. It is possible that reinforced locks and/or a new gate would be required to ensure emergency access. However, installation of a new gate would result in minimal equipment fuel use. **No impact** would result.

Scenario 2

Under Scenario 2, the gates at both Crystal View Terrace and Green Orchard Place would be removed. Like Scenario 1, no construction would occur under Scenario 2, as the removal of the gates is a minor procedure. Any equipment required to remove the

existing gates would consume a minimal amount of fuel. There would be no increase in the use of other forms of energy. **No impact** would result.

Scenario 3

Under Scenario 3, the gates at Crystal View Terrace and Green Orchard Place would be removed and Overlook Parkway would be connected across the Alessandro Arroyo and eastward to Alessandro Boulevard through construction of a fill crossing and a bridge. In addition, storm drains, water lines, and gas and electric power lines would be extended to tie into existing lines concurrent with roadway construction. Temporary construction activities would occur within a construction easement on either side of the proposed roadways. Grading and construction activities consume energy through the operation of heavy off-road equipment, trucks, and worker traffic. Construction details and phasing are discussed in Section 3.2 and 3.8. Table 3.2-4 in the Air Quality section and Table 3.8-6 of the Greenhouse Gas section present a summary of the maximum anticipated heavy equipment requirements for construction of Scenario 3.

To calculate the total fuel consumed by off-road construction equipment, the carbon dioxide (CO₂) emission estimates (in pounds) were divided by the CO₂ emission factor (in pounds per gallon). These factors are 22.67 pounds of CO₂ per gallon of diesel fuel in off-road equipment, 22.37 pounds of CO₂ per gallon of diesel fuel in on-road trucks, and 19.56 pounds of CO₂ per gallon of gasoline in worker vehicles. In addition, fuel-energy consumed by the anticipated hauling/delivery trucks and worker vehicles can be similarly quantified. The consumption of fuel during the construction phase was determined based on the following assumptions:

- All construction-related CO₂ emissions would be due to the combustion of fossil fuels.
- All off-road (heavy) equipment would be diesel powered and all worker vehicles would be gasoline powered.

Table 3.6-3 summarizes the gallons of fuel consumed.

TABLE 3.6-3
FILL-CROSSING AND BRIDGE CONSTRUCTION FUEL CONSUMPTION
(gallons)

	Off-Road Equipment	Hauling Trucks	Vendor Trucks	Worker Vehicles	Total
Abutment Construction	11,532	7	97	609	12,244
Bent Construction	4,975	0	48	304	5,328
Superstructure Construction	36,806	0	436	1,792	39,033
Fill Crossing	4,903	4	48	397	5,352
TOTAL	58,216	11	629	3,102	61,957

As shown in Table 3.6-3, off-road construction equipment would consume approximately 58,216 gallons of diesel fuel, hauling/delivery trucks would consume approximately 640 gallons of diesel fuel, and worker vehicles would consume approximately 3,102 gallons of fuel. More efficient equipment that uses clean fuel technologies or electric-based engines would be employed wherever feasible during construction to reduce total fuel-energy consumption. The calculated fuel consumption (61,957 gallons) would be short term and would not comprise an excessive use of energy. There are no conditions on-site or in the Project design that would require non-standard equipment or construction practices that would increase fuel-energy consumption above typical rates. Therefore, Scenario 3 would not result in the use of excessive amounts of fuel during the construction phase, and impacts would be **less than significant**.

Scenario 4

Under Scenario 4, both Crystal View Terrace and Green Orchard Place gates would be removed and Overlook Parkway would be connected east across the Alessandro Arroyo and eastward to Alessandro Boulevard. In addition, Proposed C Street would also be constructed to provide a connection to State Route 91 (SR-91).

Fuel consumption from construction of the fill-crossing and bridge would be the same as that summarized in Table 3.6-3. Table 3.2-6 in the Air Quality section and Table 3.8-8 of the Greenhouse Gases section present a summary of the maximum anticipated heavy equipment requirements for construction of the Proposed C Street under Scenario 4. Using the same assumptions above, the total fuel consumed from construction of Scenario 4 was calculated.

Table 3.6-4 summarizes the gallons of fuel consumed.

**TABLE 3.6-4
CONSTRUCTION FUEL CONSUMPTION FOR THE
PROPOSED C STREET (gallons)**

	Off-Road Equipment	Hauling Trucks	Vendor Trucks	Worker Vehicles	Total
Grading	28,726	0	0	595	29,321
Paving	1,930	0	0	119	2,050
TOTAL	30,657	0	0	715	31,371

As shown in Table 3.6-4, off-road construction equipment would consume approximately 30,657 gallons of diesel fuel, and worker vehicles would consume approximately 715 gallons of fuel. Adding this to the fuel consumed during construction of the fill-crossing and bridge results in 88,873 gallons of diesel fuel consumed by off-road equipment, 640 gallons of diesel fuel consumed by hauling/delivery trucks, and 3,817 gallons of fuel consumed by worker vehicles. More efficient equipment that uses clean fuel technologies or electric-based engines would be employed wherever feasible

during construction to reduce total fuel-energy consumption. Construction of Scenario 4 would result in the consumption of 93,328 gallons of fuel. For the same reasons outlined under Scenario 3 above, Scenario 4 would not result in the use of excessive amounts of fuel during the construction phase, and impacts would be **less than significant**.

Off-site

As previously stated, off-site measures consist of improvements such as changing a two-way stop controlled intersection to a four-way stop control, installing traffic signals, changing traffic signal operations, and adding new or additional right- or left-turn lanes. These improvements would not result in the construction-related use of excessive amount of fuel or other forms of energy. **No impacts** are identified.

b. Long-term Operational-Related Fuel Use

As discussed in Section 3.2, Air Quality, each scenario would affect vehicle traffic patterns and distribution along with trip length on road segments in the county. The following is a discussion of the change in operational fuel consumption due to the change in vehicle miles travelled (VMT) for each of the baseline conditions.

Gates Closed Baseline

Scenario 1

This scenario is equivalent to the Gates Closed baseline. Therefore, there is no difference in VMT or fuel consumption between Scenario 1 and the Gates Closed baseline. **No impact** would result.

Scenario 2

When compared to the Gates Closed baseline, Scenario 2 would result in a decrease of 37,848 VMT at buildout. The gasoline and diesel fuel vehicle population for the study area and the worst-case existing fuel economy were obtained from the Emission Factors (EMFAC) computer program (discussed in more detail in Sections 3.2 and 3.8). To determine the decrease in fuel consumption, it was assumed that 97 percent of the vehicle population would be gasoline powered with a fuel economy of 18 mpg, and 3 percent of the vehicle population would be diesel powered with a fuel economy of 11 mpg. With these assumptions, Scenario 2 would result in a decrease of 2,040 gallons of gasoline and 103 gallons of diesel fuel when compared to the Gates Closed baseline; therefore, **no impact** would result.

Scenario 3

When compared to the Gates Closed baseline, Scenario 3 would result in a decrease of 3,871 VMT at buildout. Using the assumptions discussed above, this results in a

decrease of 209 gallons of gasoline and 11 gallons of diesel fuel when compared to the Gates Closed baseline. **No impact** would result.

Scenario 4

When compared to the Gates Closed baseline, Scenario 4 would result in a decrease of 29,516 VMT at buildout. Using the assumptions discussed above, this results in a decrease of 1,591 gallons of gasoline and 80 gallons of diesel fuel when compared to the Gates Closed baseline. **No impact** would result.

Gates Open Baseline

Scenario 1

When compared to the Gates Open baseline, Scenario 1 would result in an increase of 37,848 VMT at buildout (refer to Section 3.2.5.1 Air Quality). Using the assumptions discussed above, this results in an increase of 209 gallons of gasoline and 11 gallons of diesel fuel when compared to the Gates Open baseline. As discussed in the Regulatory Setting Section 3.8, various federal and state regulations on vehicle and fuel manufacture would likely result in the substantial reduction of the region's vehicle fuel consumption. Specifically, the CAFE, Low Carbon Fuel Standard (LCFS), and Pavley regulations would increasingly improve the fuel economy of vehicles manufactured after 2009, as well as increase the availability of and conversion to cleaner fuels. Maintaining the gates on Crystal View Terrace and Green Orchard Place would affect circulation patterns in the Project vicinity; however, this scenario does not propose new development or land use that would use of excessive amount of fuel or other forms of energy. This scenario's contribution to energy use is the additional VMT. Regulations at the federal and state level are in place to increase the fuel efficiency of vehicles in order to improve fossil fuel economy over time. Impacts would be **less than significant**.

Scenario 2

This scenario is equivalent to the Gates Open baseline. Therefore, there is no difference in VMT or fuel consumption between Scenario 2 and the Gates Open baseline, and **no impact** would result.

Scenario 3

Removing the gates on Crystal View Terrace and Green Orchard Place would change circulation patterns in the Project vicinity; however, this scenario does not propose new development or land use that would use of excessive amount of fuel or other forms of energy. When compared to the Gates Open baseline, Scenario 3 would result in an increase of 33,977 VMT at buildout. Using the assumptions discussed above, this results in an increase of 1,831 gallons of gasoline and 93 gallons of diesel fuel when compared to the Gates Open baseline. However, as discussed above, regulations aimed at

increasing fuel efficiency of vehicles would improve fossil fuel economy over time. Impacts would be **less than significant**.

Scenario 4

When compared to the Gates Open baseline, Scenario 4 would result in an increase of 8,332 VMT at buildout. Using the assumptions discussed above, this results in an increase of 449 gallons of gasoline and 23 gallons of diesel fuel when compared to the Gates Open baseline. However, as discussed above, with regulations and the increasing fuel efficiency of vehicles, impacts would be **less than significant**.

Off-site

The previously mentioned off-site improvements would not result in the long-term operational-related use of excessive amount of fuel or other forms of energy. **No impacts** are identified.

3.6.5.2 Significance of Impacts

a. Construction-Related Fuel Use

There would be no construction under Scenario 1 and 2. Therefore, no impact is identified from construction-related fuel use.

Although construction of roadways in Scenarios 3 and 4 would involve construction equipment that uses diesel fuel and worker vehicles that use gasoline, it would not result in an excessive use of fuel or other forms of energy. Impacts would be less than significant.

No impacts would occur from implementation of off-site improvements.

b. Long-term Operational-Related Fuel Use

A summary of the long-term operational-related fuel use impacts is shown in Table 3.6-5 and summarized below.

**TABLE 3.6-5
LONG-TERM OPERATIONAL-RELATED FUEL USE IMPACTS**

	Gate Closed Baseline	Gates Open Baseline
Scenario 1	Equivalent VMT and fuel consumption. No impact.	Increase in VMT and less than significant increase in fuel consumption.
Scenario 2	Decrease in VMT and fuel consumption. No impact.	Equivalent VMT and fuel consumption. No impact.
Scenario 3	Decrease in VMT and fuel consumption. No impact.	Increase in VMT and less than significant increase in fuel consumption.
Scenario 4	Decrease in VMT and fuel consumption. No impact.	Increase in VMT and less than significant increase in fuel consumption.

Gates Closed Baseline

There would be no change in the existing use of fuel or other forms of energy for all of the scenarios. In fact, Scenarios 2, 3, and 4 would result in a decrease in fuel consumption when compared to the Gates Closed baseline. Therefore, no impact would result.

No impacts from off-site improvements would occur.

Gates Open Baseline

Scenarios 1, 3 and 4 would result in a slight increase in fuel consumption due to the increase in VMT when compared to the Gates Open baseline. However, as discussed above, with regulations intended to increase the fuel efficiency of vehicles and improve fossil fuel economy over time, impacts would be less than significant.

Under Scenario 2, there would be no change in the existing use of fuel or other forms of energy. No impacts would result.

No impacts associated with off-site improvements would occur.

3.6.5.3 Mitigation, Monitoring, and Reporting

No mitigation is required.

THIS PAGE IS INTENTIONALLY BLANK.