3.1.2 Energy

This section of the Environmental Impact Report (EIR) discusses the potential energy impacts of projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy to ensure that energy implications are considered in project-related decision-making processes. As such, this section analyzes the energy impacts of the proposed JVR Energy Park Project (Proposed Project). Specifically, this section summarizes the existing conditions on the Project site, discusses the regulatory framework, and discloses estimated energy use during construction, decommissioning, and operation of the Proposed Project. This analysis considers the electricity, natural gas, and transportation fuel (petroleum) demands of the Proposed Project, as well as potential service delivery impacts. Information in this section is based on the following technical report prepared for the Proposed Project:

- Air Quality Technical Report for JVR Energy Park Project (Appendix C)
- Greenhouse Gas Emissions Technical Report for JVR Energy Park Project (Appendix P)
- Proposed Project Revisions Technical Memorandum (Appendix R)
- Energy Generation Technical Memorandum (Appendix V)

The Proposed Project area has been revised by increasing the Project's setbacks and realignment of an existing water main, a net reduction of 17 acres (see Section 1.2 Project Description of Chapter 1 in the Final EIR). The Proposed Project Revisions Technical Memorandum (Appendix R), these changes will not change any significance determinations in this Section 3.1.2 Energy. This Section has been revised to account for the Project changes.

3.1.2.1 Existing Conditions

Environmental Setting

The environmental setting for the Proposed Project related to electricity, natural gas, and petroleum, including associated service providers, supply sources, and estimated consumption, is discussed below. In summary, in 2016 (the latest calendar year for which data is uniformly available for all three types of energy sources), California's estimated annual energy use included the following:

- Approximately 282,896 gigawatt hours of electricity (EIA 2017a)
- Approximately 23 billion therms of natural gas (approximately 6.4 billion cubic feet of natural gas per day) (EIA 2017b)
- Approximately 16 billion gallons of gasoline (CARB 2018)

Electricity

Electricity usage in California for different land uses varies substantially by the types of uses in a building, types of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. Due to the state's energy efficiency building standards and efficiency and conservation programs, California's electricity use per capita has remained stable for more than 30 years, and the national average has steadily increased (CEC 2015a).

San Diego Gas & Electric (SDG&E) provides electric services to 3.6 million customers through 1.4 million electric meters located in a 4,100-square-mile service area that includes San Diego County and southern Orange County (SDG&E 2018). SDG&E is a subsidiary of Sempra Energy and would provide electricity to the Proposed Project. According to the California Public Utilities Commission (CPUC), SDG&E customers consumed approximately 19,169 million kilowatt-hours (kWh) of electricity in 2015 (CPUC 2016).

SDG&E receives electric power from a variety of sources. In 2016, 43% of SDG&E's power came from eligible renewable energy sources, including biomass/waste, geothermal, small hydroelectric, solar, and wind sources. This is an improvement of 11% that SDG&E maintained in 2014 (CPUC 2016, 2018).

Based on recent energy supply and demand projections in California, statewide annual peak electricity demand is projected to grow an average of 890 megawatts per year for the next decade, or 1.4% annually, and consumption per capita is expected to remain relatively constant at 7,200 to 7,800 kWh per person (CEC 2015a).

In San Diego County, the California Energy Commission (CEC) reported an annual electrical consumption of approximately 21.6 billion kWh in 2015 for residential use (CEC 2016a).

Natural Gas

CPUC regulates natural gas utility service for approximately 10.8 million customers who receive natural gas from Pacific Gas & Electric (PG&E), Southern California Gas (SoCalGas), SDG&E, Southwest Gas, and several smaller natural gas utilities. CPUC also regulates independent storage operators Lodi Gas Storage, Wild Goose Storage, Central Valley Storage, and Gill Ranch Storage (CPUC 2017). SDG&E provides natural gas service to San Diego and Orange Counties. SDG&E is a wholesale customer of SoCalGas and currently receives all of its natural gas from the SoCalGas system (CPUC 2017).

The CPUC regulates California natural gas rates and natural gas services, including in-state transportation over transmission and distribution pipeline systems, storage, procurement, metering, and

billing. Most of the natural gas used in California comes from out-of-state natural gas basins. California gas utilities may soon also begin receiving biogas into their pipeline systems (CPUC 2017).

In 2012, California customers received 35% of their natural gas supply from basins located in the Southwest, 16% from Canada, 40% from the Rocky Mountains, and 9% from basins located within California (CPUC 2017). Natural gas from out-of-state production basins is delivered into California through the interstate natural gas pipeline system. The major interstate pipelines that deliver out-of-state natural gas to California are the Gas Transmission Northwest Pipeline, Kern River Pipeline, Transwestern Pipeline, El Paso Pipeline, Ruby Pipeline, Southern Trails, and Mojave Pipeline. The North Baja–Baja Norte Pipeline takes gas off the El Paso Pipeline at the California/Arizona border and delivers it through California into Mexico. The Federal Energy Regulatory Commission regulates the transportation of natural gas on interstate pipelines, and CPUC often participates in Federal Energy Regulatory Commission proceedings to represent the interests of California natural gas consumers (CPUC 2017).

Most of the natural gas transported through interstate pipelines, and some California-produced natural gas is delivered through the PG&E and SoCalGas intrastate natural gas transmission pipeline systems (commonly referred to as California's "backbone" natural gas pipeline system). Natural gas on the backbone pipeline system is then delivered into local transmission and distribution pipeline systems or to natural gas storage fields. Some large noncore customers take natural gas directly off the high-pressure backbone pipeline system, and some core customers and other noncore customers take natural gas off the utilities' distribution pipeline systems. CPUC has regulatory jurisdiction over 150,000 miles of utility-owned natural gas pipelines, which transported 82% of the natural gas delivered to California's gas consumers in 2012 (CPUC 2017).

PG&E and SoCalGas own and operate several natural gas storage fields that are located in Northern and Southern California. These storage fields and four independently owned storage utilities—Lodi Gas Storage, Wild Goose Storage, Central Valley Storage, and Gill Ranch Storage—help meet peak-season natural gas demand and allow California natural gas customers to secure natural gas supplies more efficiently (CPUC 2017).

California's regulated utilities do not own any natural gas production facilities. All natural gas sold by these utilities must be purchased from suppliers or marketers. The price of natural gas sold by suppliers and marketers was deregulated by the Federal Energy Regulatory Commission in the mid-1980s and is determined by market forces. However, CPUC decides whether California's utilities have taken reasonable steps to minimize the cost of natural gas purchased on behalf of its core customers (CPUC 2017).

As indicated in the preceding discussion, natural gas is available from a variety of in-state and out-of-state sources, and is provided throughout the state in response to market supply and demand.

Complementing available natural gas resources, biogas may soon be available through existing delivery systems, thereby increasing the availability and reliability of resources.

Petroleum

There are more than 35 million registered vehicles in California, and those vehicles consume an estimated 18 billion gallons of fuel each year (CEC 2017; DMV 2017). Gasoline and other vehicle fuels are commercially provided commodities and would be available to the Proposed Project through commercial outlets.

Petroleum currently accounts for approximately 92% of California's transportation energy consumption (CEC 2017). However, technological advances, market trends, consumer behavior, and government policies could result in significant changes in fuel consumption by type and in total. At the federal and state levels, various policies, rules, and regulations have been enacted to improve vehicle fuel efficiency, promote the development and use of alternative fuels, reduce transportation-source air pollutants and greenhouse gas (GHG) emissions, and reduce vehicle miles traveled (VMT). Market forces have driven the price of petroleum products steadily upward over time, and technological advances have made use of other energy resources or alternative transportation modes increasingly feasible.

Largely as a result of and in response to these multiple factors, gasoline consumption within the state has declined in recent years, and availability of other alternative fuels and energy sources has increased. The quantity, availability, and reliability of transportation energy resources have increased in recent years, and this trend may likely continue and accelerate (CEC 2017). Increasingly available and diversified transportation energy resources act to promote continuing reliable and affordable means to support vehicular transportation within the state.

Existing Infrastructure

The Proposed Project is within the SDG&E service area. Much of the Proposed Project development footprint is currently fallowed agricultural fields. The Project site is bisected by the Southwest Powerlink and Sunrise Powerlink transmission lines.

3.1.2.2 Regulatory Setting

Federal, state, and local agencies regulate energy use and consumption through various means and programs. On the federal level, the U.S. Department of Transportation, the U.S. Department of Energy, and the U.S. Environmental Protection Agency are three federal agencies with substantial influence over energy policies and programs. On the state level, CPUC and CEC are two agencies with authority over different aspects of energy. Relevant federal, state, and local energy-related regulations are summarized below.

Federal

Federal Energy Policy and Conservation Act

In 1975, Congress enacted the Federal Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the National Highway Traffic Safety Administration is responsible for establishing additional vehicle standards. In 2012, new fuel economy standards for passenger cars and light trucks were approved for model years 2017 through 2021 (77 FR 62624–63200). Fuel economy is determined based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the United States.

Energy Independence and Security Act of 2007

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. In addition to setting increased Corporate Average Fuel Economy standards for motor vehicles, the EISA includes the following other provisions related to energy efficiency:

- Renewable Fuel Standard (RFS) (Section 202)
- Appliance and Lighting Efficiency Standards (Sections 301–325)
- Building Energy Efficiency (Sections 411–441)

This federal legislation requires ever-increasing levels of renewable fuels (the RFS) to replace petroleum (EPA 2013, 2015). The U.S. Environmental Protection Agency is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel. The RFS program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

The RFS program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the United States. As required under the act, the original RFS program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the EISA, the RFS program was expanded in several key ways that lay the foundation for achieving significant reductions in GHG emissions from the use of renewable fuels, reducing imported petroleum, and encouraging the development and expansion of the renewable fuels sector in the United States. The updated program is referred to as "RFS2" and includes the following:

- EISA expanded the RFS program to include diesel, in addition to gasoline.
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.

- EISA established new categories of renewable fuel and set separate volume requirements for each one.
- EISA required the U.S. Environmental Protection Agency to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

Additional provisions of the EISA address energy savings in government and public institutions, research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green" jobs.

State

The discussion below focuses primarily on those policies, regulations, and laws that directly pertain to energy-related resources. Refer to Section 3.1.3, Greenhouse Gas Emissions, of this EIR, which addresses various policies, regulations, and laws targeted to the reduction of GHG emissions that are expected to achieve co-benefits in the form of reduced demand for energy-related resources and enhanced efficiencies in the consumption of energy-related resources.

Warren-Alquist Act

The California Legislature passed the Warren-Alquist Act in 1974. The Warren-Alquist Act created the CEC. The legislation also incorporated the following three key provisions designed to address the demand side of the energy equation:

- It directed the CEC to formulate and adopt the nation's first energy conservation standards for both buildings constructed and appliances sold in California.
- The act removed the responsibility of electricity demand forecasting from the utilities, which had a financial interest in high-demand projections, and transferred it to a more impartial CEC.
- The CEC was directed to embark on an ambitious research and development program, with a particular focus on fostering what were characterized as non-conventional energy sources.

State of California Energy Action Plan

The CEC and CPUC approved the first State of California Energy Action Plan in 2003. The plan established shared goals and specific actions to ensure that adequate, reliable, and reasonably priced electrical power and natural gas supplies are provided, and identified policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers. In 2005, a second Energy Action Plan was adopted by the CEC and CPUC to reflect various policy changes and actions of the prior 2 years.

At the beginning of 2008, the CEC and CPUC determined that it was not necessary or productive to prepare a new energy action plan. This determination was based, in part, on a finding that the state's energy policies have been significantly influenced by the passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 (discussed below). Rather than produce a new energy action plan, the CEC and CPUC prepared an "update" that examines the state's ongoing actions in the context of global climate change.

Senate Bill 1078 (2002)

Senate Bill (SB) 1078 established the California Renewables Portfolio Standard (RPS) Program and required that a retail seller of electricity purchase a specified minimum percentage of electricity generated by eligible renewable energy resources as defined in any given year, culminating in a 20% standard by December 31, 2017. These retail sellers include electrical corporations, community choice aggregators, and electric service providers. The bill relatedly required the CEC to certify eligible renewable energy resources, design and implement an accounting system to verify compliance with the RPS by retail sellers, and allocate and award supplemental energy payments to cover above-market costs of renewable energy.

Senate Bills 107 (2006), X1-2 (2011), 350 (2015), and 100 (2018)

SB 107 (2006) accelerated the RPS established by SB 1078 by requiring that 20% of electricity retail sales be served by renewable energy resources by 2010 (not 2017). Additionally, SB X1-2 (2011) requires all California utilities to generate 33% of their electricity from eligible renewable energy resources by 2020. Specifically, SB X1-2 sets a three-stage compliance period: by December 31, 2013, 20% had to come from renewables; by December 31, 2016, 25% had to come from renewables; and by December 31, 2020, 33% will come from renewables.

SB 350 (2015) requires retail seller and publicly owned utilities to procure 50% of their electricity from eligible renewable energy resources by 2030, with interim goals of 40 % by 2024 and 45% by 2027.

SB 100 (2018) increased the standards set forth in SB 350 establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity resources do not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

Consequently, utility energy generation from non-renewable resources is expected to be reduced based on implementation of the 60% RPS in 2030. Therefore, any project's reliance on non-renewable energy sources would also be reduced.

Assembly Bill 1007 (2005)

AB 1007 (2005) required the CEC to prepare a statewide plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the plan in partnership with the California Air Resources Board (CARB) and in consultation with other state agencies, plus federal and local agencies. The State Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Assembly Bill 32 (2006) and Senate Bill 32 (2016)

In 2006, the State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020. In 2016, the Legislature enacted SB 32, which extended the horizon year of the state's codified GHG reduction planning targets from 2020 to 2030, requiring California to reduce its GHG emissions to 40% below 1990 levels by 2030. In accordance with AB 32 and SB 32, CARB prepares scoping plans to guide the development of statewide policies and regulations for the reduction of GHG emissions. Many of the policy and regulatory concepts identified in the scoping plans focused on increasing energy efficiencies, using renewable resources, and reducing the consumption of petroleum-based fuels (such as gasoline and diesel). As such, the state's GHG emissions reduction planning framework creates co-benefits for energy-related resources. Additional information on AB 32 and SB 32 is provided in Section 3.1.3 of this EIR.

California Building Standards

Part 6 of Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. Part 6 establishes energy efficiency standards for residential and non-residential buildings constructed in California to reduce energy demand and consumption. Part 6 is updated periodically to incorporate and consider new energy efficiency technologies and methodologies. The 2016 Title 24 building energy efficiency standards, which became effective on January 1, 2017, further reduce energy used in the state. In general, single-family homes built to the 2016 standards are anticipated to use approximately 28% less energy for lighting, heating, cooling, ventilation, and water heating than those built to the 2013 standards, and non-residential buildings built to the 2016 standards will use an estimated 5% less energy than those built to the 2013 standards (CEC 2015b). The 2016 Title 24 standards are the

current applicable building energy efficiency standards and became effective on January 1, 2017. The 2019 Standards will continue to improve upon the 2016 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The 2019 Standards will go into effect on January 1, 2020.

Title 24 also includes Part 11, the California's Green Building Standards (CALGreen). The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential, and state-owned buildings, as well as schools and hospitals. The 2016 CALGreen standards became effective on January 1, 2017. The mandatory standards require the following:

- 20% mandatory reduction in indoor water use
- 50% diversion of construction and demolition waste from landfills
- Mandatory inspections of energy systems to ensure optimal working efficiency

Similar to Title 24, Part 6, the proposed 2019 CALGreen standards will build upon the 2016 CALGreen standards for residential and non-residential construction and will go into effect on January 1, 2020.

Integrated Energy Policy Report

The CEC is responsible for preparing integrated energy policy reports that identify emerging trends related to energy supply, demand, conservation, public health and safety, and maintenance of a healthy economy. The CEC's 2015 Integrated Energy Policy Report discusses the state's policy goal to require that new residential construction be designed to achieve zero net energy standards by 2020, and that new non-residential construction be designed to achieve zero net energy standards by 2030 (CEC 2016b), which is relevant to this EIR. Refer to Section 3.1.3 of this EIR for additional information on the state's zero net energy objectives and how the state's achievement of its objectives would serve to beneficially reduce the Proposed Project's GHG emissions profile and energy consumption.

State Vehicle Standards

In response to the transportation sector accounting for more than half of California's carbon dioxide (CO_2) emissions, AB 1493 was enacted in 2002. AB 1493 required CARB to set GHG emissions standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set GHG emissions standards for motor vehicles manufactured in 2009 and all subsequent model years. The 2009–2012 standards resulted in a reduction in

approximately 22% of GHG emissions compared to emissions from the 2002 fleet, and the 2013–2016 standards resulted in a reduction of approximately 30%.

In 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global-warming gases with requirements for greater numbers of zero-emissions vehicles into a single package of standards called Advanced Clean Cars. By 2025, when the rules would be fully implemented, new automobiles would emit 34% fewer global-warming gases and 75% fewer smog-forming emissions (CARB 2011).

Although the focus of the state's vehicle standards is on the reduction of air pollutants and GHG emissions, one co-benefit of implementation of these standards is a reduced demand for petroleum-based fuels.

On September 23, 2020, California Governor Gavin Newsom signed Executive Order N-79-20 which required the California Air Resources Board to develop regulations to mandate that 100% of in-state sales of new passenger cars and trucks are zero-emission by 2035 – a target which would achieve more than a 35% reduction in greenhouse gas emissions and an 80% improvement in oxides of nitrogen emissions from cars statewide (Executive Department State of California 2020).

Sustainable Communities Strategy

The Sustainable Communities and Climate Protection Act of 2008, or SB 375, coordinates land use planning, regional transportation plans, and funding priorities to help California meet its GHG emissions reduction mandates. As codified in California Government Code Section 65080, SB 375 requires metropolitan planning organizations (e.g., San Diego Association of Governments) to include a Sustainable Communities Strategy in their regional transportation plan. The main focus of the Sustainable Communities Strategy is to plan for growth in a fashion that will ultimately reduce GHG emissions, but the strategy is also part of a bigger effort to address other development issues, including transit and VMT, which influence the consumption of petroleum-based fuels.

Local

SDG&E Individual Integrated Resource Plan

SDG&E's Conforming Portfolio identifies a need for approximately 700 gigawatt-hours of incremental renewable power in addition to the assumed increases in energy efficiency and behind-the-meter solar, to meet the 2030 planning target (approximately 4% of the total energy in the portfolio) (SDG&E 2018). SDG&E's Conforming Portfolio demonstrates that SDG&E has reduced its GHG emissions in the early years of the planning period, reflecting SDG&E's current position in relation to its RPS targets, with approximately 45% of its current energy mix coming from delivering renewable resources in 2018 as compared to an RPS requirement of 29%, its

aggressive adoption of energy storage, and no coal resources. SDG&E is fully compliant with RPS and long-term contracting requirements. SDG&E continues to procure to meet resource-specific renewable procurement mandates, as required, but does not expect to procure additional resources for RPS compliance purposes until after 2030. SDG&E is forecasted to reach 49% renewable energy in 2021, 98% of which will be from long-term contracts (SDG&E 2018).

County of San Diego General Plan

The County of San Diego General Plan takes steps to address energy by including policies for improving energy efficiency, reducing waste, recycling, and managing water use. The General Plan also seeks to reduce energy consumption through minimizing VMT; approving land use patterns that support increased density in areas where there is infrastructure to support it; creating increased opportunities for transit, pedestrians, and bicycles; and encouraging and approving green building and land development conservation initiatives. The following policies identified in the General Plan's Conservation and Open Space Element are applicable to the Project (County of San Diego 2011):

- **COS-14.1: Land Use Development Form.** Require that development be located and designed to reduce vehicular trips (and associated air pollution) by utilizing compact regional and community-level development patterns while maintaining community character.
- **COS-14.2: Villages and Rural Villages.** Incorporate a mixture of uses within Villages and Rural Villages that encourage people to walk, bicycle, or use public transit to reduce air pollution and GHG emissions.
- **COS-14.3: Sustainable Development.** Require design of residential subdivisions and nonresidential development through "green" and sustainable land development practices to conserve energy, water, open space, and natural resources.
- **COS-14.5: Building Siting and Orientation in Subdivisions.** Require that buildings be located and oriented in new subdivisions and multi-structure non-residential projects to maximize passive solar heating during cool seasons, minimize heat gains during hot periods, enhance natural ventilation, and promote the effective use of daylight.
- **COS-14.7: Alternative Energy Sources for Development Projects.** Encourage development projects that use energy recovery, photovoltaic, and wind energy.
- **COS-15.4: Title 24 Energy Standards.** Require development to minimize energy impacts from new buildings in accordance with or exceeding Title 24 energy standards.
- **COS-16.2: Single-Occupancy Vehicles.** Support transportation management programs that reduce the use of single-occupancy vehicles.

- **COS-17.2: Construction and Demolition Waste.** Require recycling, reduction and reuse of construction and demolition debris.
- **COS-19.1: Sustainable Development Practices.** Require land development, building design, landscaping, and operational practices that minimize water consumption.

The Proposed Project's consistency with applicable General Plan policies is evaluated in Section 3.1.4, Land Use and Planning, of this EIR.

Climate Action Plan

The County of San Diego (County) developed a Climate Action Plan (CAP) that is a comprehensive strategy to reduce GHG emissions in the unincorporated communities of the County.

In January 2018, the Planning Commission recommended adoption of the final CAP to the County Board of Supervisors. On February 14, 2018, the County Board of Supervisors adopted the CAP (County of San Diego 2018).

A lawsuit was then filed challenging the CAP and the County's related approvals (San Diego Superior Court Case No. 37-2018-00014081-CU-TT-CTL). On January 16, 2019, the County of San Diego Superior Court entered judgment in the suit (San Diego Superior Court Case No. 37- 2018-00014081-CU-TT-CTL). The judgment, among other things, issued a writ of mandate directing the County to set aside the approval of the CAP and the Final Supplemental Environmental Impact Report (SEIR) to the 2011 General Plan Update Program Environmental Impact Report and declared that the CAP and the "certification of the Final SEIR to the 2011 General Plan Update Program EIR are legally inadequate and may not be used to provide the basis for CEQA review of GHG impacts of development proposals in the unincorporated County."

The County subsequently appealed the Superior Court's judgment to the Fourth Appellate District, Division One (Case No. D075478). On June 12, 2020, the appellate court affirmed the trial court's order with respect to the CAP and the Final SEIR. The County withdrew approval of the CAP but directed staff to revise and continue the GHG reductions within the CAP, which were unchallenged by the court.

Renewable Energy Plan

The County's Renewable Energy Plan researches and develops renewable energy options in the County. The planning effort covers the residential, commercial, and industrial sectors of the County, with a particular focus on unincorporated areas, and presents a comprehensive approach to renewable energy and energy efficiency (County of San Diego 2017).

3.1.2.3 Analysis of Proposed Project Effects and Determination as to Significance

Guidelines for the Determination of Significance

The County's Guidelines for Determining Significance do not explicitly address energy. Therefore, for this EIR, Appendix G of the CEQA Guidelines was used to assess the Proposed Project's direct, indirect, and cumulative impacts. Appendix G does not prescribe a threshold for the determination of significance. Rather, Appendix G focuses on reducing and minimizing inefficient, wasteful, and unnecessary consumption of energy. Therefore, for the purpose of this EIR, a significant impact to energy would result if the Proposed Project would:

1. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

To ensure that energy implications are considered in project decisions, Appendix F, Energy Conservation, of the CEQA Guidelines was used to identify the potential energy implications of the Proposed Project. The following list of energy impact possibilities and potential conservation measures are analyzed below:

- The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project's life cycle including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
- The effects of the project on local and regional energy supplies and on requirements for additional capacity.
- The effects of the project on peak and base period demands for electricity and other forms of energy.
- The degree to which the project complies with existing energy standards.
- The effects of the project on energy resources.
- The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

The Proposed Project is a ~~643~~ 623-acre solar energy facility. The 626-acre development footprint also includes an approximately 3-acre disturbance for a water main realignment. The solar energy facility ~~which~~ includes ~~a switchyard~~ the Switchyard Facilities that would be transferred to SDG&E after construction. For the purposes of this analysis, the ~~switchyard~~ Switchyard Facilities (as described in Section 1.2.1) ~~is~~ are a component of the Project and ~~has~~ have been analyzed as part of the whole of the action. However, this EIR highlights the specific analysis of the ~~switchyard~~

Switchyard Facilities under each threshold of significance in the event responsible agencies have CEQA obligations related to the ~~switchyard~~ Switchyard Facilities.

3.1.2.3.1 Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

Electricity

Construction and Decommissioning Use

Temporary electric power for lighting and electronic equipment (such as computers inside temporary construction trailers, and heating, ventilation, and air conditioning) would be powered by a diesel generator. The amount of electricity used during construction and decommissioning would be minimal; typical demand would stem from the use of electrically powered hand tools and several construction trailers by managerial staff during the hours of construction and decommissioning activities (7 a.m. to 7 p.m.). The majority of the energy used during construction and decommissioning would be from petroleum. The electricity used for construction and decommissioning activities would be temporary and minimal (23 months). Consuming energy to construct a renewable energy project to reduce the state's GHG emissions from energy is not wasteful, inefficient, or unnecessary.

Switchyard Facilities

Temporary electric power for lighting and electronic equipment (such as computers inside temporary construction trailers, and heating, ventilation, and air conditioning) would be used in the ~~switchyard~~ Switchyard Facilities. The amount of electricity used during construction would be minimal; typical demand would stem from the use of electrically powered hand tools and several construction trailers by managerial staff during the hours of construction activities. The majority of the energy used during construction would be from petroleum. The electricity used for construction activities would be temporary and minimal (9 months).

The electricity used to construct and decommission the Proposed Project and to construct the ~~switchyard~~ Switchyard Facilities would be temporary and minimal and not wasteful, inefficient or unnecessary. Furthermore, the electricity consumed during construction and decommissioning would be a result of activities essential to complete this work.

Operational Use

The Proposed Project would be an un-staffed facility that would be monitored remotely and would only require periodic maintenance (i.e., solar panel washing up to four times annually), inspection,

and repair activities when needed. Activities that would require inspection and/or repair would include workers travelling to and from San Diego. These activities would only result in an increase in petroleum use, not electricity. The Proposed Project would have ~~motion-detection~~ security lighting at entrances, which was estimated to use 2,830 kilowatt-hours (kWh) per year. This electricity would be supplied by SDG&E with backup power provided by a diesel generator.

The Draft EIR disclosed that the Proposed Project is expected to produce an estimated 211,159 megawatt hours ~~of renewable electricity~~ per year (MWh/yr), which is based on the use of mono-facial PV modules that produce solar power from only one side of the module. Since public review of the Draft EIR, revisions to the Proposed Project include the use of bi-facial PV modules which produce solar power from both sides of the module. A bi-facial module generates electricity from direct sunlight on the top of the module and ambient light from the bottom of the module. The Proposed Project would also use modules with increased wattage (increased from 385 watts to approximately 540 watts per module). Due to these technological improvements in the PV modules, the estimated renewable electricity production of the Proposed Project has been increased to approximately 283,000 MWh/yr. These technological improvements also make it possible to maintain the Proposed Project's 90 MW AC nameplate capacity (power delivered to the grid) even though the MUP footprint has been reduced by 20 acres. An Energy Generation Memorandum (Appendix V to the Final EIR) provides further discussion regarding these technological improvements and the power capacity. Therefore, the Proposed Project's generation of renewable energy will far exceed the Proposed Project's minimal electricity demand and would not result in a wasteful use of energy.

Switchyard Facilities

~~Motion-detection~~ Low-level lighting will be mounted near the ~~switchyard~~ Switchyard Facilities gates to allow for nighttime emergency repair and routine maintenance access. The lighting would not be a significant source of electricity use. The electricity used during the operation of the ~~switchyard~~ Switchyard Facilities would not result in the inefficient use of electricity.

Natural Gas

Construction and Decommissioning Use

Natural gas is not anticipated to be required during construction and decommissioning of the Proposed Project. Fuels used for construction and decommissioning would primarily consist of diesel and gasoline, which are discussed under the subsection "Petroleum," below. There are minimal options for low-horsepower natural gas fueled construction equipment; however, there are no plans to use this type of equipment for this project. Any minor amounts of natural gas that may be consumed as a result of Proposed Project construction and decommissioning would be

temporary and negligible, and not inefficient, wasteful, or unnecessary, and would not have an adverse effect.

Switchyard Facilities

Natural gas is not anticipated to be required during construction of the ~~switchyard~~ Switchyard Facilities. Fuels used for construction would primarily consist of diesel and gasoline, which are discussed under the subsection "Petroleum," below. Any minor amounts of natural gas that may be consumed as a result of ~~switchyard~~ Switchyard Facilities construction would be temporary and negligible, and would not have an adverse effect.

Operational Use

The Proposed Project would not have natural gas service. There would be no natural gas consumption during operation.

Switchyard Facilities

The ~~switchyard~~ Switchyard Facilities would not have natural gas service and therefore would be no natural gas consumption during operation.

Petroleum

Construction and Decommissioning Use

Petroleum would be consumed throughout construction and decommissioning of the Proposed Project. Fuel consumed by construction and decommissioning equipment would be the primary energy resource expended over the course of construction and decommissioning, and VMT associated with the transportation of construction materials and construction worker commutes would also result in petroleum consumption. Heavy-duty construction equipment associated with construction and decommissioning activities, and haul trucks involved in relocating dirt around the Project site would rely on diesel fuel. Construction workers would travel to and from the Project site throughout the duration of construction and decommissioning. It is assumed that construction workers would travel to and from the Project site in gasoline-powered vehicles.

Heavy-duty construction equipment of various types would be used during construction and decommissioning. The California Emissions Estimator Model (CalEEMod) was used to estimate construction and decommissioning equipment usage; results are included in Appendix C of this EIR. Based on that analysis, diesel-fueled construction and decommissioning equipment would operate for an estimated ~~72,328~~ 72,408 hours, as summarized in Table 3.1.2-1, Hours of Operation for Construction and Decommissioning Equipment – JVR Energy Park Project.

Fuel consumption from construction and decommissioning equipment was estimated by converting the total carbon dioxide (CO_2) emissions from each construction and decommissioning phase to gallons using conversion factors for CO_2 to gallons of gasoline or diesel. The conversion factor for gasoline is 8.78 kilograms per metric ton CO_2 per gallon, and the conversion factor for diesel is 10.21 kilograms per metric ton CO_2 per gallon (The Climate Registry 2019). The estimated diesel fuel use from construction and decommissioning equipment is shown in Table 3.1.2-2, Construction and Decommissioning Equipment Diesel Demand – JVR Energy Park Project.

Fuel consumption from worker and vendor trips was estimated by converting the total CO_2 emissions from the construction and decommissioning phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Worker vehicles are assumed to be gasoline fueled, and vendor/hauling vehicles are assumed to be diesel fueled. Based on data from similar projects in the general vicinity of the Project site, the worker mix was assumed to include 50% coming from San Diego (72 miles from the project) and 50% from El Centro (44 miles from the project). Vendor trips were assumed to come entirely from San Diego.

Calculations for total worker, vendor, and hauler fuel consumption are provided in Table 3.1.2-3, Construction and Decommissioning Worker Vehicle Gasoline Demand – JVR Energy Park Project; Table 3.1.2-4, Construction and Decommissioning Vendor Truck Diesel Demand – JVR Energy Park Project; and Table 3.1.2-5, Construction and Decommissioning Haul Truck Diesel Demand – JVR Energy Park Project. As shown in Tables 3.1.2-2 through 3.1.2-5, the Proposed Project is estimated to consume ~~857,544~~ 819,085 gallons of petroleum during the construction and decommissioning phases. There are no other transportation options to bring equipment, supplies, and workers to the site, beyond the consumption of petroleum for conventionally fueled vehicles. Despite the proximity of rail lines to the Proposed Project, there is no nearby location where equipment and supplies could be delivered to the Project by rail. Furthermore, the Proposed Project would be required to comply with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to 5 minutes.

Additionally, in accordance with mitigation measure **M-AQ-1**, the Proposed Project would use Tier 4 Interim construction and decommissioning equipment and electrical or natural gas-powered construction equipment where feasible (for equipment less than 50 horsepower), and worker carpooling would be encouraged to reduce petroleum usage. Therefore, petroleum use during construction and decommissioning would be short term (approximately ~~22~~ 23 months), and would not be wasteful or inefficient or unnecessary.

Switchyard Facilities

Petroleum would be consumed throughout construction of the ~~switchyard~~ Switchyard Facilities. Fuel consumed by construction equipment would be the primary energy resource expended over

the course of construction, and VMT associated with the transportation of construction materials and construction worker commutes would also result in petroleum consumption. Heavy-duty construction equipment associated with construction activities, and haul trucks involved in relocating dirt around the ~~switchyard~~ Switchyard Facilities would rely on diesel fuel. Construction workers would travel to and from the ~~switchyard~~ Switchyard Facilities throughout the duration of construction. It is assumed that construction workers would travel to and from the ~~switchyard~~ Switchyard Facilities in gasoline-powered vehicles.

Heavy-duty construction equipment of various types would be used during construction. CalEEMod was used to estimate construction equipment usage; results are included in Appendix C of this EIR. Based on that analysis, diesel-fueled construction equipment would operate for an estimated 5,188, hours, as summarized in Table 3.1.2-6, Hours of Operation for Construction Equipment – ~~Switchyard~~ Switchyard Facilities.

Fuel consumption from construction equipment was estimated by converting the total CO_2 emissions from each construction phase to gallons using conversion factors for CO_2 to gallons of gasoline or diesel. The conversion factor for gasoline is 8.78 kilograms per metric ton CO_2 per gallon, and the conversion factor for diesel is 10.21 kilograms per metric ton CO_2 per gallon (The Climate Registry 2019). The estimated diesel fuel use from construction equipment is shown in Table 3.1.2-7, Construction Equipment Diesel Demand – ~~Switchyard~~ Switchyard Facilities.

Fuel consumption from worker and vendor trips was estimated by converting the total CO_2 emissions from the construction phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Worker vehicles are assumed to be gasoline fueled, and vendor/hauling vehicles are assumed to be diesel fueled.

Calculations for total worker, vendor, and hauler fuel consumption are provided in Table 3.1.2-8, Construction Worker Vehicle Gasoline Demand – Switchyard Facilities; Table 3.1.2-9, Construction Vendor Truck Diesel Demand – Switchyard Facilities; and Table 3.1.2-10, Construction Haul Truck Diesel Demand – Switchyard Facilities. As shown in Tables 3.1.2-7 through 3.1.2-10, the Switchyard Facilities is estimated to consume 33,826 gallons of petroleum during the construction and decommissioning phases (this is included in the proposed project total above). By comparison, approximately 22.1 billion gallons of petroleum would be consumed in California over the course of the ~~Switchyard's~~ Switchyard Facilities' construction phases based on the California daily petroleum consumption estimate of approximately 52.9 million gallons per day (CEC 2016a). There are no other transportation options to bring equipment, supplies, and workers to the site, beyond the consumption of petroleum for conventionally-fueled vehicles. Despite the proximity of rail lines to the Proposed Project, there is no nearby location where equipment and supplies could be delivered to the Project by rail. Furthermore, the Proposed Project would be required to comply with CARB's Airborne Toxics Control Measure, which restricts

heavy-duty diesel vehicle idling time to 5 minutes. Therefore, the ~~Switchyard's~~ Switchyard Facilities' petroleum use would not be wasteful or inefficient during construction because it would be temporary and relatively minimal.

Operational Use

The majority of fuel consumption resulting from the Proposed Project's operational phase would be attributable to workers traveling to and from the Project site during periodic maintenance and inspection, and worker vehicles traveling around the Project site.

Petroleum fuel consumption associated with motor vehicles and water trucks traveling to and from the Project site during operation is a function of VMT. To estimate a worst-case conservative scenario, emissions were calculated based on water being delivered to the site weekly (the anticipated frequency is four times per year with water provided by onsite groundwater wells). As shown in the Appendix P, the annual VMT attributable to the Proposed Project operations is expected to be 315,360 VMT per year. Similar to construction worker and vendor trips, fuel consumption for operation was estimated by converting the total CO_2 emissions from operations to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. The worker vehicles were assumed to be gasoline powered, and the water trucks were assumed to be diesel.

Calculations for annual mobile-source fuel consumption are provided in Table 3.1.2-11, Petroleum Consumption – JVR Energy Park Operation. Mobile sources from the Proposed Project would result in approximately 23,394 gallons of gasoline per year and 1,636 gallons of diesel consumed per year beginning in 2021. The Proposed Project would include a 1.5 megawatts diesel emergency generator at the substation. The generator was assumed to operate for testing and maintenance approximately 30 minutes each month for a total of up to 52 hours per year, in accordance with San Diego Air Pollution Control District Rule 69.4.1. The diesel generators for the Proposed Project are anticipated to use up to 3,898 gallons of diesel per year.

Over the lifetime of the Proposed Project, the fuel efficiency of the vehicles being used by the employees for commuting and periodic maintenance and inspection activities is expected to increase, and such vehicles may even employ alternative fuels and/or may be electric. As such, the amount of petroleum consumed as a result of vehicular trips to and from the Project site during operation would decrease over time. There are numerous regulations in place that require and encourage increased fuel efficiency. For example, CARB has adopted an approach to passenger vehicles by combining the control of smog-causing pollutants and GHG emissions into a single, coordinated package of standards. The approach also includes efforts to support and accelerate the number of plug-in hybrids and zero-emissions vehicles in California (CARB 2013). Additionally, in response to SB 375, CARB adopted the goal of reducing per-capita GHG emissions from 2005 levels by 8% by 2020, and 13% by 2035 for light-duty passenger vehicles in the planning area for the San Diego Association of

Governments. As such, operation of the Project is expected to use decreasing amounts of petroleum over time due to advances in fuel economy.

In summary, although the Proposed Project would slightly increase petroleum use during operation as a result of maintenance of the site and a diesel generator, the use would not be wasteful or inefficient, and, due to efficiency increases, would diminish over time. Furthermore, the Proposed Project would generate approximately ~~7,390,568~~ 9,905,000 MWh of renewable electricity over its 35-year lifetime. Given these considerations, petroleum energy consumption associated with the Proposed Project would not be considered inefficient or wasteful.

Switchyard Facilities

During operation, an occasional maintenance truck would be used to perform routine maintenance, including equipment testing, monitoring, repair, routine procedures to ensure service continuity, and standard preventive maintenance of the facility on an as-needed basis.

Calculations for annual mobile-source fuel consumption are provided in Table 3.1.2-12, Petroleum Consumption –Switchyard Facilities Operation. Mobile sources from the ~~switchyard~~ Switchyard Facilities would result in approximately 528 gallons of gasoline per year and 37 gallons of diesel consumed per year beginning in 2021. As such, operation of the ~~switchyard~~ Switchyard Facilities would result in a negligible increase in associated operational trips. Given these considerations, energy consumption associated with operation of the ~~switchyard~~ Switchyard Facilities would not be considered inefficient or wasteful**.**

Summary

The Proposed Project would use electricity, natural gas, and petroleum products during the construction, operation, and decommissioning phases. However, the amount of energy used would not be inefficient or wasteful. Furthermore, due to the remote location of the Project site there are no alternative means of transporting materials or workers to the site (such as rail, bus) that would reduce energy use further. Finally, the Proposed Project would produce up to ~~211,159~~ 283,000 MWh/yr. ~~megawatt hours of renewable electricity per~~ year. Therefore, the Proposed Project would have a **less than significant** impact.

3.1.2.3.2 Conflict with Energy Standards, Regulations, Plans, and Policies

The Proposed Project would be consistent with applicable standards, regulations, plans, and policies in place to reduce energy consumption. It is anticipated that worker vehicles would meet the applicable standards of AB 1493 (vehicles manufactured in 2009 or later), and as a result would likely consume less energy as fuel efficiency standards are increased and vehicles are replaced. The Proposed Project would also support the goals within SB 100, AB 2514, and SB 32 for the production of renewable

energy. The Proposed Project is expected to produce an estimated ~~211,159~~ 283,000 MWh/yr (Appendix V to the Final EIR) ~~megawatt hours of renewable electricity per year~~. Moreover, the Proposed Project would support the implementation of the County's Renewable Energy Plan through implementation of additional renewable energy generation facilities within the County. Lastly, refer to Section 3.1.4 for a detailed analysis of the Proposed Project's consistency with energy-related policies in the County's General Plan. For reasons stated, the Proposed Project would be consistent with all applicable energy plans and policies; therefore, impacts would be **less than significant**.

Switchyard Facilities

The ~~switchyard~~ Switchyard Facilities would meet the Title 24 and CalGreen standards to reduce energy demand and increase energy efficiency. Additionally, worker vehicles would meet the applicable standards of AB 1493, and as a result would likely consume less energy as fuel efficiency standards are increased and vehicles are replaced. Moreover, the ~~switchyard~~ Switchyard Facilities would support the implementation of the County's Renewable Energy Plan through implementation of additional renewable energy generation facilities within the County. For reasons stated, the ~~switchyard~~ Switchyard Facilities would be consistent with all applicable energy plans and policies; therefore, impacts would be **less than significant**.

3.1.2.4 Cumulative Impact Analysis

Potential cumulative impacts on energy would result if the Proposed Project, in combination with past, present, and future projects, would result in the wasteful or inefficient use of energy. This could result from development that would not incorporate sufficient building energy efficiency features, would not achieve building energy efficiency standards, or would result in the unnecessary use of energy during construction, decommissioning, and/or operation. The geographic extent for the analysis of cumulative impacts related to energy includes the areas serviced by the energy service providers for the Proposed Project. Projects that include development of large buildings or other structures that would have the potential to consume energy in an inefficient manner would have the potential to contribute to a cumulative impact. Projects that would mostly include construction, such as transportation infrastructure or renewable energy projects, could also contribute to a cumulative impact; however, the impact of these projects would be limited because they would not typically involve substantial ongoing energy use. Other large renewable energy generation projects (see Table 1-4, Cumulative Scenario – Reasonably Foreseeable, Approved, and Pending Projects, in Chapter 1, Project Description) would result in an increase in regional renewable energy supply.

As described previously, the Proposed Project would not result in wasteful, inefficient, or unnecessary use of energy given the Proposed Project's minimal energy use and production of renewable energy. Cumulative projects that include long-term energy demand, such as residential

developments, would be subject to CALGreen, which provides energy efficiency standards for commercial and residential buildings. CALGreen would implement increasingly stringent energy efficiency standards that would require the Proposed Project and the cumulative projects to minimize the wasteful and inefficient use of energy. In addition, cumulative projects would be required to meet or exceed the Title 24 building standards, further reducing the inefficient use of energy. Future development would also be required to meet even more stringent requirements, including the objectives set in the AB 32 Scoping Plan (CARB 2017), which would seek to make all newly constructed residential homes produce a sustainable amount of renewable energy through the use of on-site photovoltaic solar systems. Furthermore, various federal and state regulations, including the Low Carbon Fuel Standard, Pavley Clean Car Standards, and Low Emission Vehicle Program, would serve to reduce the transportation fuel demand of cumulative projects.

Given the Proposed Project would generate ~~7,390,568~~ 9,905,000 MWh of renewable energy over its 35-year lifetime, the Proposed Project would not contribute to a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, including a substantial demand on energy resources or services such that new regional energy facilities would be required to be constructed as a result of the incremental increase in energy demand resulting from the Proposed Project. Furthermore, the Proposed Project would generate additional renewable energy itself reducing the need for non-renewable energy generating facilities and increasing the amount of clean energy available to consumers in the region. Therefore, the Proposed Project would have a less than cumulatively considerable impact with respect to significant cumulative impacts related to the wasteful or inefficient use of energy.

Switchyard Facilities

As discussed above, in consideration of cumulative energy use, the ~~switchyard~~ Switchyard Facilities would not contribute to a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, including a substantial demand on energy resources or services such that new regional energy facilities would be required to be constructed as a result of the incremental increase in energy demand resulting from the ~~switchyard~~ Switchyard Facilities. The ~~switchyard~~ Switchyard Facilities would aid the Proposed Project in transmitting renewable electricity to the grid, helping to avoid wasteful energy practices. Furthermore, the ~~switchyard~~ Switchyard Facilities would aid the Proposed Project in generating additional renewable energy itself reducing the need for non-renewable energy generating facilities and increasing the amount of clean energy available to consumers in the region. Therefore, the ~~switchyard~~ Switchyard Facilities would not contribute to a cumulative impact to the wasteful or inefficient use of energy.

3.1.2.5 Significance of Impacts Prior to Mitigation

The Proposed Project would use 99 MWh of electricity over its 35-year lifetime while it would generate approximately ~~7,390,568~~ 9,905,000 MWh of renewable electricity. As such, the Proposed Project would not result in the wasteful or inefficient use of electricity, and impacts would be **less than significant**. The Proposed Project would not conflict with an applicable plan, policy or regulation; therefore, impacts would be **less than significant**.

3.1.2.6 Mitigation Measures

No mitigation would be required.

3.1.2.7 Conclusion

The Proposed Project would use 99 MWh of electricity over its 35-year lifetime while it would generate approximately ~~7,390,568~~ 9,905,000 MWh of renewable electricity. Therefore, the Proposed Project would produce enough clean reliable electricity for over 30,900 customers. As such, the Proposed Project would not result in the wasteful or inefficient use of electricity. Impacts would **be less than significant**.

Table 3.1.2-1
Hours of Operation for Construction and Decommissioning Equipment – JVR Energy Park

Phase	Hours of Equipment Use
Site Mobilization and Water Main Realignment	~~0~~ 80
Demolition of Old Farm	320
Site Prep, Grading, Stormwater Protections	3,840
Fence Installation	960
Pile Driving	2,560
Landscaping Installation	1,920
Tracker and Module Installation	10,560
DC Electrical	11,520
Underground Medium AC Voltage Electrical	3,200
Inverter Installation	640
BESS Installation	640
Commissioning	0
Perimeter Fence Removal	264
System Disassembly and Removal	28,000
Energy Storage System	1,056
Site Cleanup & Restoration	352
Trenching – ~~Switchyard~~Switchyard Facilities	176
Site Preparation 1 – ~~Switchyard~~Switchyard Facilities	2,184
Conductor Installation 1	168
Site Preparation 2 – ~~Switchyard~~Switchyard Facilities	552
Paving – ~~Switchyard~~Switchyard Facilities	616
Site Preparation – Gen-Tie	352
Operate Air Tools	640
Structure Installation	248
Conductor Installation 2	168
Erect Structures	84
Conductor Removal 1	168
Operate Air Tools	640
Structure Removal	8
Conductor Removal 2	168
Remove Structures	84
Total	~~**72,328**~~ **72,408**

Source: Appendix P.

Table 3.1.2-2
Construction and Decommissioning Equipment Diesel Demand – JVR Energy Park

Phase	Pieces of Equipment[a]	Equipment CO_2 (MT)[a]	Kilograms CO_2 per Gallon[b]	Gallons
Site Mobilization and Water Main Realignment	~~0~~ 1	~~0.00~~ 1.48	10.21	~~0.00~~ 145.19
Demolition of Old Farm	2	87.59	10.21	8,578.82
Site Prep, Grading, Stormwater Protections	8	12.41	10.21	1,215.84
Fence Installation	2	114.78	10.21	11,242.12
Pile Driving	8	311.58	10.21	30,516.65
Landscaping Installation	3	30.62	10.21	2,998.97
Tracker and Module Installation	11	0.00	10.21	0.00
DC Electrical	12	8.40	10.21	822.84
Underground Medium AC Voltage Electrical	4	3.61	10.21	353.41
Inverter Installation	2	363.83	10.21	35,635.03
BESS Installation	2	36.74	10.21	3,598.38
Commissioning	0	0.00	10.21	0.00
Perimeter Fence Removal	1	3.61	10.21	353.41
System Disassembly and Removal	35	363.83	10.21	35,635.03
Energy Storage System	3	36.74	10.21	3,598.38
Site Cleanup & Restoration	2	10.07	10.21	986.69
Trenching – ~~Switchyard~~Switchyard Facilities	1	3.26	10.21	319.42
Site Preparation 1 – ~~Switchyard~~Switchyard Facilities	13	84.65	10.21	8,290.87
Conductor Installation 1	1	1.55	10.21	151.71
Site Preparation 2 – ~~Switchyard~~Switchyard Facilities	3	25.94	10.21	2,540.32
Paving – ~~Switchyard~~Switchyard Facilities	7	12.28	10.21	1,202.81
Site Preparation – Gen-Tie	4	10.52	10.21	1,030.52
Operate Air Tools	1	13.62	10.21	1,333.73
Structure Installation	1	0.48	10.21	47.48
Conductor Installation 2	1	8.69	10.21	850.91
Erect Structures	1	2.66	10.21	260.64
Conductor Removal 1	1	1.86	10.21	182.62
Operate Air Tools	1	13.62	10.21	1,333.72
Structure Removal	1	0.48	10.21	47.48
Conductor Removal 2	1	10.55	10.21	1,033.29
Remove Structures	1	3.20	10.21	313.21
			Total	**154,619.49** **~~154,474.30~~**

Sources:
[a] Appendix P.
[b] The Climate Registry 2018.
Notes: CO_2 = carbon dioxide; MT = metric ton

Table 3.1.2-3
Construction and Decommissioning Worker Vehicle Gasoline Demand – JVR Energy Park

Phase	Trips	Vehicle CO_2 (MT)[a]	Kilograms CO_2 per Gallon[b]	Gallons
Site Mobilization and Water Main Realignment	100	1.90	8.78	216.57
Demolition of Old Farm	800	15.03	8.78	1,712.13
Site Prep, Grading, Stormwater Protections	48,000	22.22	8.78	2,530.31
Fence Installation	1,200	44.43	8.78	5,060.62
Pile Driving	2,400	182.28	8.78	20,760.57
Landscaping Installation	16,000	147.00	8.78	16,742.39
Tracker and Module Installation	4,960	440.99	8.78	50,227.18
DC Electrical	24,000	881.99	8.78	100,454.34
Underground Medium AC Voltage Electrical	40	183.75	8.78	20,927.98
Inverter Installation	700	29.40	8.78	3,348.47
BESS Installation	300	29.40	8.78	3,348.47
Commissioning	40	14.70	8.78	1,674.24
Perimeter Fence Removal	1,320	3.61	8.78	410.97
System Disassembly and Removal	70,000	808.57	8.78	92,091.80
Energy Storage System	13,200	152.47	8.78	17,365.88
Site Cleanup & Restoration	880	10.16	8.78	1,157.72
Trenching – ~~Switchyard~~Switchyard Facilities	88	1.67	8.78	190.58
Site Preparation 1 – ~~Switchyard~~Switchyard Facilities	714	13.58	8.78	1,546.30
Conductor Installation 1	504	9.58	8.78	1,091.50
Site Preparation 2 – ~~Switchyard~~Switchyard Facilities	184	3.45	8.78	392.65
Paving – ~~Switchyard~~Switchyard Facilities	198	3.64	8.78	414.37
Site Preparation – Gen-Tie	110	2.02	8.78	230.21
Operate Air Tools	640	11.76	8.78	1,339.40
Structure Installation	124	2.28	8.78	259.51
Conductor Installation 2	84	1.54	8.78	175.80
Erect Structures	84	1.54	8.78	175.80
Conductor Removal 1	504	5.82	8.78	663.06
Operate Air Tools	640	7.39	8.78	841.98
Structure Removal	124	1.43	8.78	163.13
Conductor Removal 2	84	0.97	8.78	110.51
Remove Structures	84	0.97	8.78	110.51
			Total	**345,734.95**

Sources:
[a] Appendix P.
[b] The Climate Registry 2018.
Notes: CO_2 = carbon dioxide; MT = metric ton

Table 3.1.2-4
Construction and Decommissioning Vendor Truck Diesel Demand – JVR Energy Park

Phase	Trips	Vehicle CO_2 (MT)[a]	Kilograms CO_2 per Gallon[b]	Gallons
Site Mobilization and Water Main Realignment	200	21.65	10.21	2,120.04
Demolition of Old Farm	40	0.25	10.21	24.75
Site Prep, Grading, Stormwater Protections	5,400	580.28	10.21	0.00
Fence Installation	120	0.75	10.21	73.94
Pile Driving	0	0.00	10.21	0.00
Landscaping Installation	80	1.00	10.21	98.37
Tracker and Module Installation	8,400	900.87	10.21	88,233.73
DC Electrical	0	0.00	10.21	0.00
Underground Medium AC Voltage Electrical	9,000	965.21	10.21	94,536.14
Inverter Installation	80	8.58	10.21	840.32
BESS Installation	2,800	300.29	10.21	29,411.24
Commissioning	0	0.00	10.21	0.00
Perimeter Fence Removal	0	0.00	10.21	0.00
System Disassembly and Removal	7,000	695.86	10.21	68,154.82
Energy Storage System	3,080	306.18	10.21	0.00
Site Cleanup & Restoration	0	0.00	10.21	0.00
Trenching – ~~Switchyard~~ Switchyard Facilities	0	0.00	10.21	0.00
Site Preparation 1 – ~~Switchyard~~ Switchyard Facilities	210	22.73	10.21	2,226.04
Conductor Installation 1	336	36.36	10.21	3,561.67
Site Preparation 2 – ~~Switchyard~~ Switchyard Facilities	184	19.84	10.21	1,942.74
Paving – ~~Switchyard~~ Switchyard Facilities	0	0.00	10.21	0.00
Site Preparation – Gen-Tie	22	2.36	10.21	231.10
Operate Air Tools	0	0.00	10.21	0.00
Structure Installation	372	39.90	10.21	3,907.49
Conductor Installation 2	0	0.00	10.21	0.00
Erect Structures	0	0.00	10.21	0.00
Conductor Removal 1	336	33.40	10.21	3,271.43
Operate Air Tools	0	0.00	10.21	0.00
Structure Removal	372	36.98	10.21	3,621.94
Conductor Removal 2	0	0.00	10.21	0.00
Remove Structures	0	0.00	10.21	0.00
			Total	**302,255.76**

Sources:
[a] Appendix P.
[b] The Climate Registry 2018.
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram.

Table 3.1.2-5
Construction and Decommissioning Haul Truck Diesel Demand – JVR Energy Park

Phase	Trips	Vehicle CO_2 (MT)[a]	Kilograms CO_2 per Gallon[b]	Gallons
Site Mobilization and Water Main Realignment	0	0.00	10.21	0.00
Demolition of old farm	40	0.21	10.21	20.92
Site Prep, Grading, Stormwater Protections	35,000 ~~33,000~~	186.13 ~~580.28~~	10.21	18,230.40 ~~56,834.23~~
Fence Installation	0	0.00	10.21	0.00
Pile Driving	0	0.00	10.21	0.00
Landscaping Installation	0	0.00	10.21	0.00
Tracker and Module Installation	0	0.00	10.21	0.00
DC Electrical	0	0.00	10.21	0.00
Underground Medium AC Voltage Electrical	0	0.00	10.21	0.00
Inverter Installation	0	0.00	10.21	0.00
BESS Installation	0	0.00	10.21	0.00
Commissioning	0	0.00	10.21	0.00
Perimeter Fence Removal	0	0.00	10.21	0.00
System Disassembly and Removal	0	0.00	10.21	0.00
Energy Storage System	0	0.00	10.21	0.00
Site Cleanup & Restoration	0	0.00	10.21	0.00
Trenching – ~~Switchyard~~Switchyard Facilities	0	0.00	10.21	0.00
Site Preparation 1 – ~~Switchyard~~ Switchyard Facilities	0	0.00	10.21	0.00
Conductor Installation 1	0	0.00	10.21	0.00
Site Preparation 2 – ~~Switchyard~~ Switchyard Facilities	30	1.15	10.21	112.69
Paving – ~~Switchyard~~ Switchyard Facilities	0	0.00	10.21	0.00
Site Preparation – Gen-Tie	0	0.00	10.21	0.00
Operate Air Tools	0	0.00	10.21	0.00
Structure Installation	0	0.00	10.21	0.00
Conductor Installation 2	0	0.00	10.21	0.00
Erect Structures	0	0.00	10.21	0.00
Conductor Removal 1	0	0.00	10.21	0.00
Operate Air Tools	0	0.00	10.21	0.00
Structure Removal	0	0.00	10.21	0.00
Conductor Removal 2	0	0.00	10.21	0.00
Remove Structures	0	0.00	10.21	0.00
			Total	**18,364.01** ~~**56,967.84**~~

Sources:
[a] Appendix P.
[b] The Climate Registry 2018.
Notes: CO_2 = carbon dioxide; MT = metric ton

Table 3.1.2-6
Hours of Operation for Construction Equipment – Switchyard Facilities

Phase	Hours of Equipment Use
Trenching – ~~Switchyard~~ Switchyard Facilities	176
Site Preparation 1 – ~~Switchyard~~ Switchyard Facilities	2,184
Conductor Installation 1	168
Site Preparation 2 – ~~Switchyard~~ Switchyard Facilities	552
Paving – ~~Switchyard~~ Switchyard Facilities	616
Site Preparation – Gen-Tie	352
Operate Air Tools	640
Structure Installation	248
Conductor Installation 2	168
Erect Structures	84
Total	**5,188**

Source: Appendix P.

Table 3.1.2-7
Construction Equipment Diesel Demand – Switchyard Facilities

Phase	Pieces of Equipment[a]	Equipment CO_2 (MT)[a]	Kilograms CO_2 per Gallon[b]	Gallons
Trenching – ~~Switchyard~~ Switchyard Facilities	1	3.26	10.21	319.42
Site Preparation 1 – ~~Switchyard~~ Switchyard Facilities	13	84.65	10.21	8,290.87
Conductor Installation 1	1	1.55	10.21	151.71
Site Preparation 2 – ~~Switchyard~~ Switchyard Facilities	3	25.94	10.21	2,540.32
Paving – ~~Switchyard~~ Switchyard Facilities	7	12.28	10.21	1,202.81
Site Preparation – Gen-Tie	4	10.52	10.21	1,030.52
Operate Air Tools	1	13.62	10.21	1,333.73
Structure Installation	1	0.48	10.21	47.48
Conductor Installation 2	1	8.69	10.21	850.91
Erect Structures	1	2.66	10.21	260.64
			Total	**16,028.41**

Sources:
[a] Appendix P.
[b] The Climate Registry 2018.
Notes: CO_2 = carbon dioxide; MT = metric ton

Table 3.1.2-8
Construction Worker Vehicle Gasoline Demand – Switchyard Facilities

Phase	Trips	Vehicle CO_2 (MT)[a]	Kilograms CO_2 per Gallon[b]	Gallons
Trenching – ~~Switchyard~~ Switchyard Facilities	88	1.67	8.78	190.58
Site Preparation 1 – ~~Switchyard~~ Switchyard Facilities	714	13.58	8.78	1,546.30
Conductor Installation 1	504	9.58	8.78	1,091.50
Site Preparation 2 – ~~Switchyard~~ Switchyard Facilities	184	3.45	8.78	392.65
Paving – ~~Switchyard~~ Switchyard Facilities	198	3.64	8.78	414.37
Site Preparation – Gen-Tie	110	2.02	8.78	230.21
Operate Air Tools	640	11.76	8.78	1,339.40
Structure Installation	124	2.28	8.78	259.51
Conductor Installation 2	84	1.54	8.78	175.80
Erect Structures	84	1.54	8.78	175.80
			Total	**5,816.12**

Sources:
[a] Appendix P.
[b] The Climate Registry 2018.
Notes: CO_2 = carbon dioxide; MT = metric ton

Table 3.1.2-9
Construction Vendor Truck Diesel Demand – Switchyard Facilities

Phase	Trips	Vehicle CO_2 (MT)[a]	Kilograms CO_2 per Gallon[b]	Gallons
Trenching – ~~Switchyard~~ Switchyard Facilities	0	0.00	10.21	0.00
Site Preparation 1 – Switchyard Facilities	210	22.73	10.21	2,226.04
Conductor Installation 1	336	36.36	10.21	3,561.67
Site Preparation 2 – Switchyard Facilities	184	19.84	10.21	1,942.74
Paving - Switchyard Facilities	0	0.00	10.21	0.00
Site Preparation – Gen-Tie	22	2.36	10.21	231.10
Operate Air Tools	0	0.00	10.21	0.00
Structure Installation	372	39.90	10.21	3,907.49
Conductor Installation 2	0	0.00	10.21	0.00
Erect Structures	0	0.00	10.21	0.00
			Total	**11,869.04**

Sources:
[a] Appendix P.
[b] The Climate Registry 2018.
Notes: CO_2 = carbon dioxide; MT = metric ton

Table 3.1.2-10
Construction Haul Truck Diesel Demand – Switchyard Facilities

Phase	Trips	Vehicle CO_2 (MT)[a]	Kilograms CO_2 per Gallon[b]	Gallons
Trenching – ~~Switchyard~~ Switchyard Facilities	0	0	10.21	0.00
Site Preparation 1 – ~~Switchyard~~ Switchyard Facilities	0	0	10.21	0.00
Conductor Installation 1	0	0	10.21	0.00
Site Preparation 2 – ~~Switchyard~~ Switchyard Facilities	30	1.15	10.21	112.69
Paving – ~~Switchyard~~ Switchyard Facilities	0	0	10.21	0.00
Site Preparation – Gen-Tie	0	0	10.21	0.00
Operate Air Tools	0	0	10.21	0.00
Structure Installation	0	0	10.21	0.00
Conductor Installation 2	0	0	10.21	0.00
Erect Structures	0	0	10.21	0.00
			Total	**112.69**

Sources:
[a] Appendix P.
[b] The Climate Registry 2018.
Notes: CO_2 = carbon dioxide; MT = metric ton

Table 3.1.2-11
Petroleum Consumption – JVR Energy Park Operation

Fuel	MT CO_2	Kilograms CO_2 per Gallon	Gallons
Gasoline Vehicles	205.40	8.78	23,393.82
Diesel Vehicles	16.70	10.21	1,635.53
Diesel Generator	39.80	10.21	3,898.23
		Total	**28,927.58**

Sources:
[a] Appendix P.
[b] The Climate Registry 2018.
Notes: MT = metric ton; CO_2 = carbon dioxide

Table 3.1.2-12
Petroleum Consumption – Switchyard Facilities Operation

Fuel	MT CO_2	Kilograms CO_2 per Gallon	Gallons
Gasoline Vehicles	4.64	8.78	528.31
Diesel Vehicles	0.38	10.21	36.94
		Total	**565.25**

Sources:
[a] Appendix P.
[b] The Climate Registry 2018.
Notes: MT = metric ton; CO2 = carbon dioxide

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