

## 3.18 Energy Consumption

### 3.18.1 Introduction

This section evaluates the potential for the proposed project to result in adverse impacts related to energy consumption. The analysis is based on review of available energy data, the relevant regulatory ordinances, and a discussion of the methodology and thresholds used to determine whether the proposed project would result in significant impacts. This section analyzes the potential for both project-level and cumulative environmental impacts.

Public Resources Code (PRC) Section 21100(b) requires that an environmental impact report (EIR) discuss and consider mitigation measures for the potential energy impacts of proposed projects, and emphasizes avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. This section provides the required analysis, evaluation, and mitigation as specified in *CEQA Guidelines* Appendix F. Appendix F identifies the following three means of achieving the ultimate goal of conserving energy.

- Decreasing overall per capita energy consumption;
- Decreasing reliance on natural gas and oil; and
- Increasing reliance on renewable energy sources.

Appendix F further states that a project's energy consumption and proposed conservation measures may be addressed, as relevant and applicable, in the Project Description, Environmental Setting, and Analysis of Impacts portions of technical sections, as well as through mitigation measures and alternatives and potentially in other required sections of this EIR. In accordance with *CEQA Guidelines* Appendix F, this EIR includes relevant information and analyses that address the energy implications of the project. This section provides a summary of the project's anticipated energy needs, impacts, and conservation measures. Energy and other aspects of the project's energy implications are discussed in this section, and elsewhere in this EIR including in Chapter 2, *Project Description*; Section 3.2, *Air Quality*; Section 3.6, *Greenhouse Gas Emissions*; and Section 3.17, *Utilities and Service Systems*.

Data used in this section includes information obtained from the *Air Quality Assessment for the Los Cerritos Wetlands Oil Consolidation and Restoration Project* (Greve & Associates 2017a) and from the *Greenhouse Gas Assessment for the Los Cerritos Wetlands Oil Consolidation and Restoration Project* (Greve & Associates 2017b). All information sources used are included as citations within the text; sources are listed in Section 3.18.5, *References*.

### 3.18.2 Environmental Setting and Description of the Project

The project site is comprised of four individual sites: the Synergy Oil Field, City Property, Pumpkin Patch, and Los Cerritos Wetlands Authority (LCWA) sites. There are existing oil production operations and associated infrastructure on the Synergy Oil Field and City Property sites. The Pumpkin Patch site has one well on it, and the LCWA site is vacant. After all project approvals are received, the existing oil operations on the Synergy Oil Field and City Property sites would be phased out over time, and new oil production facilities would be constructed and operated on the Pumpkin Patch and LCWA sites. The northern portion of the Synergy Oil Field site would be remediated, if necessary, and restored to a natural wetland area that will be operated as a

wetlands mitigation bank. Oil operations on the southern portion of the Synergy Oil Field site and on the City Property site would continue for a fixed period of time of up to 40 years from commencement of occupation of the new office building on the Pumpkin Patch site, but would ultimately be phased out as new oil production operations are established on the Pumpkin Patch and LCWA sites. The proposed project also includes the construction of a new office building and storage structure on the Pumpkin Patch site to support the oil operations. Once the offices are relocated to the Pumpkin Patch site, the proposed project will relocate the existing office building on the Synergy Oil Field site to another location on the Synergy Oil Field site, repurpose it for use as a visitors center, construct a new parking area and perimeter trail to provide public access to this portion of the Los Cerritos Wetlands.

Crude oil extracted by the existing wells on the Synergy Oil Field and City Property sites is transported to area refineries via existing pipelines and transport trucks.<sup>79</sup> Some haul trips may continue under the project until the wells are eventually phased out over an approximately 40-year period; however, because the Applicant proposes as a project design feature to reduce full capacity oil production by 75 percent on these individual sites, it is anticipated oil haul trucks would not be required once production capacity from the 53 existing wells is reduced. and haul trucks would only be used to transport excess natural gas and residual petroleum off site.

### 3.18.2.1 Transportation Fuel

According to the California Energy Commission (CEC), transportation accounts for nearly 37 percent of California's total energy consumption (CEC 2015). Based on available fuel consumption data from the United States Energy Information Administration (USEIA), in 2015, California consumed a total of 342,523 thousand barrels of gasoline for transportation, which is equivalent to a total annual consumption of approximately 14.4 billion gallons by the transportation sector (USEIA 2016b). For diesel, California consumed a total of 80,487 thousand barrels for transportation, which is equivalent to a total annual consumption of approximately 3.4 billion gallons by the transportation sector (USEIA 2016c). As of December 31, 2015, California has 2,333 million barrels (98.0 billion gallons) of crude oil in the State's reserves (USEIA 2016d).

With respect to the project, transportation fuel is consumed through several activities. In addition to the haul trucks, supply trucks will bring additives needed during the oil extraction process to the site. These uses are assumed to be diesel-fueled. and employees will rely on personal vehicles to commute to the site, most of which are assumed to be gasoline-powered. Fueling stations throughout the greater Southern California region generally provide gasoline and diesel to support the transportation activities of these uses. These fueling stations receive gasoline and diesel fuel supplies from refineries located throughout California. Approximately 34.1 percent of California's petroleum supply comes from in-state sources, 54.5 percent is imported from foreign sources, and 11.4 percent is imported from Alaska (CEC 2017a). Crude oil is moved throughout California through a network of pipelines that carry the oil from both on-shore and off-shore oil wells to the refineries that are located in the San Francisco Bay Area, the Los Angeles area, and the Central Valley (USEIA 2016a).

---

<sup>79</sup> The oil operator has two alternative methods of transporting oil off site: through existing pipelines and via truck trips. For purposes of environmental analysis, the EIR assumes a conservative, worst case scenario that utilizes truck trips for oil transport and this assumption is included in both the Air Quality and GHG modeling. For the most part, the maximum number of truck trips would only be required if the existing wells are producing at capacity and only until such time that the 75 percent voluntary reduction in production that the project will implement as a project design feature occurs.

### 3.18.2.2 Electricity

Electrical services are provided to the region by Southern California Edison (SCE). SCE provides electricity to approximately 15 million people, 180 incorporated cities, 15 counties, 5,000 large businesses, and 280,000 small businesses throughout its 50,000-square-mile service area (SCE 2017a). SCE produces and purchases their energy from a mix of conventional and renewable generating sources. **Table 3.18-1, Electric Power Mix Delivered to Retail Customers in 2015**, shows the electric power mix that was delivered to retail customers for SCE compared to the statewide 2015 power mix. Total electricity sales/usage for SCE is shown in Table 3.18-1 compared to the statewide electricity sales/usage from the most recent year in which data is available.

**Table 3.18-1 Electric Power Mix Delivered to Retail Customers in 2015**

Energy Resource	2015 SCE	2015 CA Power Mix (for comparison)
<b>Total Sales/Total Usage (million kilowatt-hours)</b>	<b>87,544 (85,977 in 2016)</b>	<b>295,405</b>
<b>Eligible Renewable</b>	<b>25%<sup>a</sup></b>	<b>22%</b>
Biomass & bio-waste <sup>b</sup>	1%	3%
Geothermal	9%	4%
Small hydroelectric	0%	1%
Solar	7%	6%
Wind	8%	8%
<b>Coal</b>	<b>0%</b>	<b>6%</b>
<b>Large Hydroelectric</b>	<b>2%</b>	<b>5%</b>
<b>Natural Gas</b>	<b>26%</b>	<b>44%</b>
<b>Nuclear</b>	<b>6%</b>	<b>9%</b>
<b>Other</b>	<b>0%</b>	<b>0%</b>
<b>Unspecified sources of power<sup>c</sup></b>	<b>41%</b>	<b>14%</b>
<b>Total</b>	<b>100%</b>	<b>100%</b>

SOURCES: CEC 2016, 2017b; SCE 2017b.

- a. Percentages are estimated annually by the CEC based on the electricity sold to California consumers during the previous year.
- b. The Eligible Renewables category is further delineated into the specific sources: biomass & waste, geothermal, small hydroelectric, solar, and wind
- c. "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.

SCE maintains a substation north of the project site on Studebaker, near the entrance/exit ramps to the State Route 22 (SR-22)/Interstate 605 (I-605) freeways off of Studebaker.

Electricity is currently provided by SCE to the Synergy Oil Field site. The SCE lines would continue to be used on the Synergy Oil Field site to also provide electricity to the new visitors center that is proposed. The project would require the extension of SCE lines from its existing substation to the LCWA site to provide an interim power source until the natural gas turbines are fully operational to power the oil facilities (described below). The new wells that would be constructed on the Pumpkin Patch and LCWA sites would be electric powered, with electricity being produced on site over the long term by means of combusting natural gas in dedicated turbines (see discussion below in Section 3.18.2.3, Natural Gas). As discussed previously, until sufficient electricity is generated by the turbines, electrical power would be provided by an extension of the SCE power lines to the LCWA site, and then transmitted via a subsurface power lines across the City Property

site to provide power to the Pumpkin Patch site for operation of the oil wells as well as the new office building and warehouse.

### 3.18.2.3 Natural Gas

City of Long Beach Gas and Oil Department (LBGO) is responsible for providing natural gas supply to the region. The annual natural gas sale to customers in 2015 was approximately 8,500 million kilo British thermal units (kBtu) (California Gas and Electric Utilities 2016).<sup>80</sup>

The proposed project would rely mainly on combustion of natural gas in four 4.5-megawatt (MW) electricity-generating turbines with heat-recovery steam generators for cogeneration that would be located on site. The turbines would capture associated and casinghead gas from the oil wells and use it for project operations. The project proposes to include as part of its overall design and energy production strategy a microgrid and installation of solar photovoltaic (PV) modules. The microgrid would be designed to capture energy produced by the oil production operations (i.e., natural gas) and redistribute that energy elsewhere in the operation. The project would also include renewable solar PV with generation potential of 158 kilowatts (kW). The microgrid system would provide the energy needed for the facilities, including drilling rigs and supporting equipment, pumps, two electric vehicle charging stations, and other equipment. The project would purchase a limited amount of power from SCE to provide electricity to the visitors center and, when needed to supplement turbine electricity, the Pumpkin Patch and LCWA sites.

## 3.18.3 Regulatory Framework

### 3.18.3.1 State

#### *Transportation Sector*

#### **CARB Heavy-Duty On-Road and Off-Road Vehicle Regulations**

In 2004, the California Air Resources Board (CARB) adopted an Airborne Toxic Control Measure (ATCM) to Limit Diesel-Fueled Commercial Motor Vehicle Idling in order to reduce public exposure to diesel particulate matter (DPM) emissions (Title 13 California Code of Regulations [CCR] Section 2485). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given location. While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation also results in energy savings in the form of reduced fuel consumption from unnecessary idling.

In addition to limiting exhaust from idling trucks, CARB also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower (hp) such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The In-Use Off-Road Diesel-Fueled Fleets regulation adopted by CARB on July 26, 2007, aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission controlled models (13 CCR Section 2449). The compliance schedule requires full implementation by 2023 in

---

<sup>80</sup> Converted from 8.21 billion cubic feet (California Gas and Electric Utilities 2016) and a conversion factor of 1,035 Btu per cubic foot based on USEIA data (USEIA 2017b) and obtained from City of Long Beach Gas and Oil Department, 2016 California Gas Report.

all equipment for large and medium fleets and by 2028 for small fleets. While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation has shown an increase in energy savings in the form of reduced fuel consumption from more fuel-efficient engines.

### **California Assembly Bill No. 1493 (Pavley) (Chapter 200, Statutes of 2002)**

In response to the transportation sector accounting for more than half of California's carbon dioxide (CO<sub>2</sub>) emissions, Assembly Bill (AB) 1493 (Chapter 200, Statutes of 2002), authored by Assembly Member Fran Pavley and enacted on July 22, 2002, required CARB to set greenhouse gas (GHG) emission standards for passenger vehicles, light duty trucks, and other vehicles whose primary use is non-commercial personal transportation manufactured in and after 2009. Referred to as the Pavley standards, implementation of AB 1493 was delayed due to litigation, but ultimately upheld by the U.S. Supreme Court in the decision, *Massachusetts v. U.S. Environmental Protection Agency*. The standards established tailpipe GHG emissions standards for model year 2012 through 2016 light-duty vehicles under Phase I and model year 2017 through 2025 light-duty vehicles under Phase II. Although these standards were adopted as part of the State's efforts to reduce GHG emissions, the standards have co-benefits of reducing energy consumption from the transportation section by improving fuel economy and reducing fuel consumption as a means to reduce emissions.

The United States Environmental Protection Agency (USEPA) and United States Department of Transportation (USDOT) adopted federal equivalent standards for model year 2012 through 2016 light-duty vehicles and model year 2017 through 2025 light-duty vehicles.<sup>81</sup> By 2025, vehicles are required to achieve 54.5 mpg (based on USEPA measurements that assume GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO<sub>2</sub> per mile. The federal standards are slightly different from the Pavley Phase I and Phase II standards, but the State of California has agreed not to contest these standards, in part due to the fact that while the national standard would achieve slightly lower reductions in California, it would achieve greater reductions nationally and is stringent enough to meet state GHG emission reduction goals (CARB 2016). On November 15, 2012, CARB approved an amendment that allows manufacturers to comply with the national standards to meet state law.

## ***Energy Sector***

### **Senate Bill 1389**

Senate Bill (SB) 1389, codified in PRC Sections 25300–25323, requires the CEC to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (PRC Section 25301(a)). The 2015 Integrated Energy Policy Report provides the results of the CEC's assessments of a variety of energy issues facing California including energy efficiency, strategies related to data for improved decisions in the Existing Buildings Energy Efficiency Action Plan, building energy efficiency standards, the impact of drought on California's energy system, achieving 50 percent renewables by 2030, the California Energy Demand Forecast, the Natural Gas Outlook, the Transportation Energy Demand Forecast, Alternative and Renewable Fuel and Vehicle Technology Program

---

<sup>81</sup> On March 15, 2017, the Trump Administration announced its intention to direct the USEPA to reconsider the model year 2017–2025 cars and light-truck emissions standards, but did not rescind California's waiver. Therefore, the standards remain in effect (The White House 2017).

benefits updates, update on electricity infrastructure in Southern California, an update on trends in California's sources of crude oil, an update on California's nuclear plants, and other energy issues.

### **Renewables Portfolio Standard**

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the State's Renewables Portfolio Standard (RPS) to 33 percent renewable power by 2020. Pursuant to Executive Order S-21-09, CARB was also preparing regulations to supplement the RPS with a Renewable Energy Standard that would result in a total renewable energy requirement for utilities of 33 percent by 2020; however, on April 12, 2011, Governor Jerry Brown signed SB X1-2 to increase California's RPS to 33 percent by 2020. SB 350 (Chapter 547, Statutes of 2015) further increased the RPS to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027. SB 350 was signed into law on October 7, 2015.

### **Title 24, Building Standards Code and California Green Building Standards (CALGreen) Code**

The CEC first adopted the Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the State. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods. These standards also have co-benefits of reducing building emissions of GHGs and other pollutants as a result of reduced consumption of electricity, natural gas, and other fuels from buildings subject to the standard.

The California Building Standards Commission (CBSC) adopted Part 11 of the Title 24 Building Energy Efficiency Standards, referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design, (2) Energy efficiency, (3) Water efficiency and conservation, (4) Material conservation and resource efficiency, and (5) Environmental air quality" (CBSC 2017). The CALGreen Code is not intended to substitute for or be identified as meeting the certification requirements of any green building program that is not established and adopted by the CBSC. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality. The CALGreen Code was most recently updated in 2016 to include new mandatory measures for residential as well as nonresidential uses; the new measures took effect on January 1, 2017. Although the CALGreen Code was adopted as part of the State's efforts to reduce GHG emissions, the standards have co-benefits of reducing energy consumption from residential and nonresidential buildings subject to the standard.

### **California Health and Safety Code, Division 25.5, California Global Warming Solutions Act of 2006**

In 2006, the California State Legislature adopted AB 32 (codified in the California HSC, Division 25.5, California Global Warming Solutions Act of 2006), which focuses on reducing GHG emissions in California to 1990 levels by 2020. Under HSC Division 25.5, CARB has the primary responsibility for reducing the

State's GHG emissions; however, it also tasked the CEC and the California Public Utilities Commission (CPUC) with providing information, analysis, and recommendations to CARB regarding strategies to reduce GHG emissions in the energy sector.

In 2016, the California State Legislature adopted SB 32 and its companion bill AB 197; both were signed by Governor Brown. SB 32 and AB 197 amend HSC Division 25.5 and establish a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and includes provisions to ensure that the benefits of state climate policies reach into disadvantaged communities. CARB is in the process of preparing the second update to the Scoping Plan to reflect the 2030 target established in Executive Order B-30-15 and SB 32 and was to consider its adoption in late June 2017; however, this has been postponed to a future undetermined date (CARB 2017a). The 2017 Scoping Plan Update discusses a Proposed Scenario and four alternatives. CARB states that the Proposed Scenario "is the clear choice to achieve the State's climate and clean air goals" (CARB 2017b). Under the Proposed Scenario, the majority of the reductions would result from continuation of the Cap-and-Trade regulation. Additional reductions are achieved from requiring 20 percent reduction of GHG emissions from the refinery sector, electricity sector standards (i.e., utility providers to supply 50 percent renewable electricity by 2030), doubling the energy efficiency savings at end uses, additional reductions from the Low Carbon Fuel Standard (LCFS), implementing the short-lived GHG strategy (e.g., hydrofluorocarbons), and implementing the mobile source strategy and sustainable freight action plan. The alternatives are designed to consider various combinations of these programs as well as consideration of a carbon tax in the event the Cap-and-Trade regulation is not continued.

Continuation of the Cap-and-Trade regulation is expected to cover approximately 34 to 76 percent of the 2030 reduction obligation (CARB 2017b). Under the Proposed Scenario, the short-lived GHG strategy is expected to cover approximately 13 to 26 percent. The Renewables Portfolio Standard with 50 percent renewable electricity by 2030 is expected to cover approximately 10 to 11 percent. The mobile source strategy and sustainable freight action plan includes maintaining the existing vehicle GHG emissions standards, increasing the number of zero emission vehicles and improving the freight system efficiency, and is expected to cover approximately 9 to 11 percent. The doubling of the energy efficiency savings, including demand-response flexibility for 10 percent of residential and commercial electric space heating, water heating, air conditioning and refrigeration, requires the CEC in collaboration with the CPUC to establish the framework for the energy savings target setting (expected by November 2017) and would cover approximately 7 to 8 percent of the 2030 reduction obligation. The other strategies would be expected to cover the remaining percentage of the 2030 reduction obligation.

### 3.18.4 Analysis of Impacts

This section describes the impact analysis relating to energy consumption for the proposed project. It describes the methods and applicable thresholds used to determine the impacts of the proposed project.

#### 3.18.4.1 Significance Criteria

For the purposes of this EIR, thresholds of significance were developed based on the recommendations and guidance on energy conservation analyses for EIRs provided in *CEQA Guidelines* Appendix F. The thresholds of significance were developed to determine whether the project would have a significant environmental impact regarding energy conservation.

In accordance with Appendix F, the EIR's energy analysis should include:

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including pre-construction, construction, and property restoration. If appropriate, the energy intensiveness of materials may be discussed.
2. The effects of the project on local and regional energy supplies and on requirements for additional capacity.
3. The effects of the project on peak and base period demands for electricity and other forms of energy.
4. The degree to which the project complies with existing energy standards.
5. The effects of the project on energy resources.
6. The project's projected transportation energy use requirements and its overall use of efficient transportation.

Based on these recommended analyses above, the following thresholds of significance were developed. The project would have a significant energy impact if it would:

- Cause wasteful, inefficient, and unnecessary consumption of energy during construction, operation, and/or maintenance;
- Result in an increase in demand for electricity or natural gas that exceeds available supply or distribution infrastructure capabilities that could result in the construction of new energy facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- Conflict with adopted energy standards, policies, and regulations.

### 3.18.4.2 Methodology

The purpose of the project is to decommission and gradually phase out existing oil wells on the Synergy Oil Field and City Property sites, construct new state-of-the art oil production operations on two smaller parcels (Pumpkin Patch and LCWA sites), and restore the northern 76.52 acres of the Synergy Oil Field site as wetlands. The evaluation of potential impacts related to energy usage that may result from the construction and long-term operations of the project has been conducted as described below.

#### **Construction**

The majority of construction activities would occur over a 4-year period with the remaining components occurring intermittently over a 40-year period. Refer to Table 2-2, Synergy Oil Field Site Activities, in Chapter 2, *Project Description*, for a general overview of project construction. For purposes of this analysis, the first 4 years of construction were estimated using the California Emissions Estimator Model (CalEEMod) based on known project-specific details. Specific construction activities associated with construction during this 4-year period would generate pollutant emissions from the following construction activities and phases: (1) demolition and site preparation, (2) well cellars, (3) process equipment, (4) tank construction, (5) construction of non-oil (off-site) facilities, (6) construction of office/warehouse, (7) wetlands restoration, (8) turbine commissioning, and (9) landfill excavation and fill. Refer to Chapter 2, *Project Description*; Section 3.2, *Air Quality*; and Section 3.6, *Greenhouse Gas Emissions*, for information regarding the activities that would occur during these construction phases.

Construction energy consumption would result primarily from transportation fuels (e.g., diesel and gasoline) used for haul trucks, heavy-duty construction equipment, and construction workers traveling to and from the



site. Construction activities can vary substantially from day to day, depending on the specific type of construction activity and the number of workers and vendors traveling to the site. This analysis considers these factors and provides the estimated maximum construction energy consumption for the purposes of evaluating the associated impacts on energy resources. The energy usage required for project construction has been estimated based on the number and type of construction equipment that would be used during project construction, the extent that various equipment are utilized in terms of equipment operating hours or miles driven, and the estimated duration of construction activities. Energy for construction worker commuting trips has been estimated based on the predicted number of workers for the various phases of construction and the estimated vehicle miles traveled (VMT). The assessment also includes a discussion of the project's compliance with relevant energy-related regulatory measures and project features that would minimize the amount of energy usage during construction.

The construction equipment would likely be diesel-fueled (with the exception of construction worker commute vehicles, which would primarily be gasoline-fueled). For the purposes of this assessment, it is assumed heavy-duty construction equipment and haul trucks would be diesel-fueled, due to the speculative nature of specifying the amounts and types of non-diesel equipment that might be used, and the difficulties in calculating the energy which could be consumed by non-diesel equipment. This also represents a worst-case scenario intended to represent the maximum potential energy use during construction. The estimated fuel economy for heavy-duty construction equipment is based on fuel consumption factors from the CARB off-road vehicle emissions factor model (OFFROAD), which is a state-approved model for estimating emissions from off-road heavy-duty equipment. The estimated fuel economy for haul trucks and worker commute vehicles is based on fuel consumption factors from the CARB on-road vehicle emissions factor model (EMFAC), which is a state-approved model for estimating emissions on-road vehicles and trucks. Both OFFROAD and EMFAC are incorporated into CalEEMod, which is a state-approved emissions model used for the project's air quality and GHG emissions assessment. Therefore, this energy assessment is consistent with the modeling approach used for other environmental analyses in the EIR and consistent with general CEQA standards.

### ***Operation and Maintenance***

Operational activities would consist of natural gas combustion for heating (office and visitors center), two diesel-powered drilling rigs,<sup>82</sup> turbines located at LCWA, and other miscellaneous sources. Transportation fuel demand may occur from oil truck trips<sup>83</sup> that would haul the crude oil from the site to off-site refinery locations in the region, but only if the legacy wells are producing at capacity or if excess natural gas or residual petroleum requires off-site truck transport. For the purposes of this assessment, transportation fuel demand from oil truck trips are included in order to provide a conservative analysis. Employee travel to and from the site would also result in transportation fuel demand. The estimated fuel economy for haul trucks and worker commute vehicles is based on fuel consumption factors from the CARB EMFAC emissions model. The estimated fuel usage for the off-road equipment (i.e., diesel-powered workover drilling rigs, cranes, and forklifts) is based on the number of equipment that would be used during operational activities, hour usage estimates, the expected number of days the equipment would operate per year, and hourly equipment fuel

---

<sup>82</sup> The project would include a total of two diesel-powered drilling rigs operating during daylight hours at the Pumpkin Patch and LCWA sites. A total of two electric-powered drilling rigs would be located on the Pumpkin Patch and LCWA sites and would utilize electricity generated from the turbines.

<sup>83</sup> Oil haul would only occur for the original, legacy wells if they are producing at capacity, however, because the Applicant is reducing existing production by 75 percent, no oil haul trucking would be required. Some excess natural gas may be transported off site by truck along with residual petroleum.

consumption factors from the OFFROAD model. The workover drilling rigs would operate for up to 365 days per year during the daytime hours. The cranes and forklifts would be used periodically, estimated to be up to approximately 4 hours per day for 100 days per year.

In addition to the diesel-powered workover drilling rigs, drilling rigs would be in operation at both the Pumpkin Patch and LCWA sites on a regular basis but would be electrically-powered with electricity provided by the turbines. The LCWA site would contain four 4.5 MW gas turbine generator sets to convert natural gas from the wells to electricity and would serve as the primary source of energy for operational- and maintenance-related equipment. The project would also include renewable solar PV with generation potential of 158 kW. The project would purchase a limited amount of power from SCE to provide electricity to the visitors center and, when needed to supplement turbine electricity, the Pumpkin Patch and LCWA sites. The amount of energy that would be purchased from SCE is estimated based on energy factors in CalEEMod. Refer to the CalEEMod modeling files provided in Section 3.6, *Greenhouse Gas Emissions*.

As stated in Chapter 1, *Introduction*, on April 28, 2016, the City sent an NOP to responsible, trustee, and federal agencies, as well as to organizations, and individuals potentially interested in the project to identify the relevant environmental issues that should be addressed in the EIR. No issues related to energy were identified.

### 3.18.4.3 Impact Evaluation

**Impact EN-1: The project would not result in the wasteful, inefficient, and unnecessary consumption of energy during construction, operation, and/or maintenance. (Less than Significant with Mitigation)**

#### ***Construction***

As discussed in Chapter 2, *Project Description*, the majority of the project would be constructed over a 4-year period after which the remaining oil wells will be phased out gradually over a 40-year period, and new oil wells drilled over a period of approximately 8 to 12 years (approximately 6 wells/year). A summary of the annual fuel consumption during construction of the project is provided in **Table 3.18-2, Estimated Construction Fuel Usage**. Compliance with the CARB anti-idling regulation and implementation of Mitigation Measure AQ-2 (refer to Section 3.2, *Air Quality*) requiring the use of equipment certified to the Tier 4 emissions standards would result in fuel savings in the absence of these regulations and measures. Table 3.18-2 provides an estimate of the fuel savings from these regulations and measures.

The gasoline and diesel fuel consumption for transportation uses in California in 2015 is also provided in Table 3.18-2. To put the project's construction transportation fuel demand into perspective, the values are compared to the energy sales from state transportation fuel supplies. As shown, the project would represent a very small fraction of the energy sales from regional providers and state transportation fuel supplies.

**Table 3.18-2 Estimated Construction Fuel Usage**

Fuel Use	Gallons of Diesel Fuel per Year	Gallons of Gasoline Fuel per Year
Project Construction	113,037	5,039
Estimated Project Fuel Savings from Construction Measures (Annual)	12,203 (Tier 4 equipment, Anti-idling)	—
State of California (Transportation Sector)	3,400,000,000	14,400,000,000
Percent of State (Transportation Sector)	0.0033%	0.00003%

SOURCE: ESA, 2017. Refer to calculation worksheets provided in Appendix J.

Construction of the project would utilize fuel efficient equipment consistent with state and federal regulations, and would comply with state measures to reduce the inefficient, wasteful, and unnecessary consumption of energy. While these regulations were originally adopted to reduce construction emissions, compliance with the above anti-idling and the use of equipment that meets the Tier 4 emissions standards would also result in energy savings from the use of more fuel-efficient engines. According to the CARB, the anti-idling regulation was estimated to reduce non-essential idling and associated emissions of DPM and nitrogen oxides (NO<sub>x</sub>) emissions by 64 and 78 percent respectively in analysis year 2009 (CARB 2004). A field testing program by an engine manufacturer that included a wide range of equipment types has shown that a Tier 4 engine results in up to 10 percent lower fuel consumption than an equivalent Tier 3 engine based on the overall results of the program (Cummins 2014). Another manufacturer has shown an 18 percent increase in fuel efficiency with a Tier 4 lift truck (i.e., forklift) as compared to the previous generation (MCF 2015). Compliance with anti-idling regulations and commitments under Mitigation Measure AQ-2 to use fuel-efficient Tier 4 equipment would result in fuel savings that would otherwise have been consumed in the absence of these measures, as shown in Table 3.18-2.

Electricity used during construction to provide temporary power for lighting and electronic equipment (e.g., computers, etc.) and to power certain construction equipment would generally not result in a substantial increase in on-site electricity use. Overall, construction activities would require minimal electricity consumption and would not be expected to have any adverse impact on available electricity supplies and infrastructure. Similarly, natural gas is not anticipated to be consumed in any substantial quantities during construction of the project; however, if natural-gas-powered equipment are used, it would offset (i.e., replace) the diesel-fueled equipment assumed in the analysis and not result in an overall change in the project's energy impacts.

As stated previously, the majority of construction activities would occur over a 4-year period with the remaining components occurring intermittently over a 40-year period. The remaining construction activities after the 4-year period would be much less intense requiring fewer heavy-duty equipment and fewer number of days per year of construction activity. As proposed, the drilling of new wells at the Pumpkin Patch and LCWA sites would occur over 8 to 12 years (approximately 6 wells/year) and over the course of 40 years from occupancy of the new office building on the Pumpkin Patch site, the existing 53 wells on the Synergy Oil Field and City Property sites would be plugged and abandoned. As a result, annual energy demand would be much less than shown in Table 3.18-2. Nonetheless, the project would still employ energy efficient measures including the use of Tier 4 equipment and prohibition of unnecessary idling. In addition, the project would comply with future applicable regulatory mandates that the State Legislature and/or CARB may adopt in future years to improve heavy-duty construction efficiency and reduce fuel consumption as part of the State's mandate to reduce GHG emissions.

Based on the available data, construction would utilize energy for necessary on-site activities and to transport construction materials and demolition debris to and from the site. It is reasonable to conclude that idling restrictions and the use of cleaner equipment would result in less fuel combustion and energy consumption and minimize project construction-related energy use. Therefore, construction of the project would not result in the wasteful and unnecessary consumption of energy and construction impacts would be less than significant.

**Operations**

Project operations would result in energy demand from worker and visitor trips, truck trips, workover drilling rigs, cranes, forklifts, and the four turbines. The four turbines would utilize the natural gas byproduct from the oil wells to provide the majority of the electricity needed for project operations. The project would purchase a limited amount of power from SCE to provide electricity to the visitors center and, when needed to supplement turbine electricity, for the Pumpkin Patch and LCWA sites.

Crude oil extracted from the wells would be transported to area refineries via existing pipelines; transport trucks are not expected to be required. Nonetheless, as a conservative assessment, emissions from oil truck are included in the air quality and greenhouse gas emissions analyses and are, therefore, included in this transportation energy analysis.<sup>84</sup> Worker trips and visitor trips would also contribute to on-road fuel demand. The estimated fuel usage for on-road trucks and vehicles is based on the expected number of workers and visitors to the site, fuel consumption information from the CARB on-road vehicle emissions model, EMFAC2014, and the average distance that the workers and visitors would travel on local and regional roadways as specified in CalEEMod. A summary of the annual transportation fuel consumption during operation of the project is provided in **Table 3.18-3, Estimated Operational Fuel Usage**. Compliance with the CARB anti-idling regulation and implementation of Mitigation Measure AQ-3 (refer to Section 3.2, *Air Quality*) requiring the use of drilling rigs certified to the Tier 4 emissions standards would result in fuel savings in the absence of these regulations and measures. Table 3.18-3 provides an estimate of the fuel savings from these regulations and measures. Furthermore, the fuel usage estimations represent a conservative approach to quantifying the project’s operational emissions. On-road equipment and vehicles (i.e., trucks, worker vehicles, and visitor vehicles) would also be expected to require less fuel resources as more efficient trucks and vehicles that achieve greater fuel economy compared to current standards replace older model year trucks and vehicles.

**Table 3.18-3 Estimated Operational Fuel Usage**

Fuel Use	Gallons of Diesel Fuel per Year	Gallons of Gasoline Fuel per Year
Project Operations	252,057	47,760
Estimated Project Fuel Savings from Operational Measures (Annual)	24,026 (Tier 4 drill rigs, Anti-idling)	—
State of California (Transportation Sector)	3,400,000,000	14,400,000,000
Percent of State (Transportation Sector)	0.0074%	0.0003%

SOURCE: ESA, 2017. Refer to calculation worksheets provided in Appendix J.

<sup>84</sup> The oil operator has two alternative methods of transporting oil off site: through existing pipelines and via truck trips. For purposes of environmental analysis, the EIR assumes a conservative, worst case scenario that utilizes truck trips for oil transport and this assumption is included in both the Air Quality and GHG modeling. For the most part, the maximum number of truck trips would only be required if the existing wells are producing at capacity and only until such time that the 75 percent voluntary reduction in production that the project will implement as a project design feature occurs.

The gasoline and diesel fuel consumption for transportation uses in California in 2015 is also provided in Table 3.18-3. To put the project’s operational transportation fuel demand into perspective, the values are compared to the energy sales from state transportation fuel supplies. As shown, the project would represent a very small fraction of the energy sales from regional providers and state transportation fuel supplies.

The four turbines (4.5 MW each; 18 MW total) with heat recovery steam generators for cogeneration would use natural gas byproduct from the oil wells to provide the majority of power for the Pumpkin Patch and LCWA facilities. The turbines would provide electricity for the electric drilling rigs at the Pumpkin Patch and LCWA sites, lighting, pumps and other operational equipment, and electric vehicle charging stations. The cogeneration process would use waste heat from the turbine exhaust to heat oil and water, and cool gas as part of the oil production/separation process. The water reclaimed from this process would be injected back into the oil production formation, and the gas not used by the on-site turbines and oil would be sold for use and further processing. Without cogeneration, natural gas would be combusted in a boiler to heat the oil/water mixture and the refrigeration units would be powered by off-site generated electricity. Therefore, without cogeneration additional energy would be required for heating and by electric consumption for cooling. These additional energy demands were estimated by SPEC Services (email dated December 20, 2016) at approximately 41,160 kilowatt-hours (kWh) per day of electricity for cooling and 480 thousand standard cubic feet per day (MSCFD) of natural gas combusted for heating. The turbines would be estimated to generate approximately 334,550 kWh per day of electricity assuming a 77.84 percent load factor and 24 hours of operation in a day. A summary of the energy saved from the cogeneration process relative to the total energy needed without cogeneration is provided in **Table 3.18-4, Estimated Turbine Energy Savings from Cogeneration.**

**Table 3.18-4 Estimated Turbine Energy Savings from Cogeneration**

Energy Use	Electricity (kWh/ day)	Natural Gas (MSCFD)
Additional Energy Needed without Cogeneration	41,160	480
Turbine Energy with Cogeneration	334,550	— <sup>a</sup>
Total Turbine Energy Needed without Cogeneration	375,710	480
Percent Energy Savings with Cogeneration	11%	100%

SOURCE: Greve & Associates, 2017a; Greve & Associates, 2017b.  
NOTES:  
a. Waste heat from the turbines would be used to heat the oil/water mixture rather than combusting additional natural gas.

The four turbines would be a part of a microgrid that controls integration of multiple energy sources and uses them to maximize efficiency, cost savings, and reliability. The turbines will be required to adhere to South Coast Air Quality Management District’s (SCAQMD) Best Available Control Technologies (BACT) standards. The remaining power for the visitors center and, when needed to supplement turbine electricity, the Pumpkin Patch and LCWA sites would come from the SCE grid. SCE is subject to the Renewables Portfolio Standard, requiring utility providers to increase procurement from eligible renewable resources over time to 50 percent by 2030. Therefore, over time, the project’s energy use will become cleaner and more efficient as SCE expands its renewables portfolio.

**Summary**

The purpose and objective of the project is to restore wetlands and gradually decommission aging oil wells and replace them with 120 new state-of-the art oil wells. Implementation of the project would accomplish these

objectives in an energy efficient manner by utilizing equipment and haul trucks that are certified to current, stringent emissions standards (refer to Section 3.2, *Air Quality*, Mitigation Measure AQ-3), which ensures that the diesel-powered workover drill rigs are equipped with Tier 4 certified engines that are clean and fuel efficient. Implementation of the project would also require compliance with the CARB anti-idling ATCM, which prohibits diesel-fueled commercial vehicles greater than 10,000 pounds from idling for more than 5 minutes at any given time. While intended to reduce air pollutant emissions, compliance with the above anti-idling and emissions standards would also result in efficient use of energy and the minimization or elimination of wasteful and unnecessary consumption of energy. Compliance with anti-idling regulations and commitments under Mitigation Measure AQ-3 to use fuel-efficient Tier 4 workover drill rigs would result in fuel savings that would otherwise have been consumed in the absence of these measures, as shown in Table 3.18-3. In addition, as shown in Table 3.18-4, implementation of the project would incorporate energy efficient features including the use of cogeneration, which would result in substantial electricity and natural gas energy savings from the use of waste heat from the turbine exhaust to heat oil and water, and cool gas as part of the oil production/separation process. As a result, impacts would be less than significant with mitigation.

**Mitigation Measures:** Mitigation Measure AQ-3 would apply.

**Significance Determination:** Less than Significant with Mitigation.

---

**Impact EN-2: The project would not increase demand on local and regional energy supplies, resulting in the need for additional capacity. (Less than Significant)**

Construction and operation of the project would require energy primarily for the use of off-road equipment, on-road trucks and vehicles, and operations of the visitors center and Pumpkin Patch and LCWA sites. The estimated fuel consumption for the project would require a very small fraction of the state's annual fuel usage as shown in Table 3.18-2 for construction and in Table 3.18-3 for operations.

While construction and operation of the project would result in an increased in fuel demand as compared to existing conditions, according to the USEIA International Energy Outlook 2016, the global supply of crude oil, other liquid hydrocarbons, and biofuels is expected to be adequate to meet the world's demand for liquid fuels through 2040 (USEIA 2016e). As of December 31, 2015, California had approximately 2,333 million barrels (approximately 98.0 trillion gallons) of crude oil left in the State's reserves (USEIA 2017a). The project's fuel demand would not represent a substantial fraction of the available energy supply in terms of equipment and transportation fuels and would not substantially affect existing local and regional supply and capacity for the foreseeable future. Furthermore, construction and operation of the project would use equipment that would be consistent with the energy standards applicable to heavy-duty equipment including limiting idling fuel consumption and utilizing fuel-efficient heavy-duty equipment that meet the stringent Tier 4 standards that reduce emissions and fuel consumption. Because project operations would primarily rely on on-site generated electricity from the turbines, which would utilize the natural gas byproduct from the oil wells, the project would have little effect on regional energy supplies. The turbines and microgrid system means that the project would provide almost all of its own electricity and, therefore, would avoid capacity impacts on local or regional energy suppliers. The limited amount of power not generated by the turbines would be supplied by SCE. Based on SCE's emissions intensity factors, the maximum amount of energy the project would draw from the grid would be approximately 3.18 million kWh per year. This represents only a fraction of SCE's and the State's total usage (see Table 3.18-1). The project's energy usage would be 0.004 percent of SCE's total yearly usage and 0.004 percent of SCE's 2015 electricity sales and 0.001 percent of the State's 2015 electricity sales. The project

would provide crude oil supplies to refineries in the region thus providing net additional oil energy supplies. As a result, construction and operational energy impacts on supplies and infrastructure would be less than significant.

**Mitigation Measures:** None required.

**Significance Determination:** Less than Significant.

---

**Impact EN-3: The project would be consistent with existing energy standards, policies, and regulations. (Less than Significant with Mitigation)**

Implementation of the project would utilize contractors that demonstrate compliance with applicable regulations governing the accelerated retiring, replacing, repowering, or retrofitting of older, less-efficient engines with newer emission-controlled models. The project would require that construction and operational equipment meet the fuel-efficient Tier 4 emissions standards (refer to Section 3.2, *Air Quality*, Mitigation Measures AQ-2 and AQ-3). In addition, contractors would be required to comply with the anti-idling ATCM that prohibits diesel-fueled commercial vehicles greater than 10,000 pounds from idling for more than 5 minutes at any given time. While intended to reduce construction emissions, compliance with these emissions regulations would also result in efficient use of construction-related energy and the minimization or elimination of wasteful and unnecessary consumption of energy as discussed under Impact EN-1.

The four turbines (4.5 MW each; 18 MW total) would adhere to SCAQMD's BACT standards and stationary source permitting regulations established by the SCAQMD. Additionally, the office building would be subject to applicable regulations outlined by the Title 24 Building Standards Code and the CALGreen Code. The CALGreen Code includes resource, water, and design measures aimed at increasing building energy and water efficiency and decreasing waste. Implementation of such measures would increase energy efficiency at the office building and ensure consistent with building regulations.

**Mitigation Measures:** Mitigation Measures AQ-2 and AQ-3 would apply.

**Significance Determination:** Less than Significant with Mitigation.

---

### 3.18.4.4 Cumulative Impacts

Under CEQA, individual small project-level contributions to environmental impacts may be potentially considerable in the aggregate or cumulative level. A cumulatively considerable impact is the impact of the project in addition to the related projects. In the case of energy, the proximity of the project to other energy-demanding projects or activities is typically not directly relevant to the determination of a cumulative impact. Energy is generally regulated on regional, state, or federal scales. Currently, no established non-speculative method exists to assess the cumulative energy impact of a single project with the unique characteristics of the proposed project that overtime is designed to generate its own energy.

As discussed previously, the State has adopted numerous regulations to improve energy efficiency from all sectors of the economy including the transportation sector. Transportation energy end-users would be required to utilize vehicles that meet increasingly stringent fuel economy standards. In addition, the State has promulgated measures, such as the anti-idling measure and emissions standards for off-road equipment and on-road vehicles and trucks. Other individual projects located within the State would be required to comply with these regulations.

Refer to Section 3.2, *Air Quality*, and Section 3.6, *Greenhouse Gas Emissions*, for detailed discussions of these applicable regulations that have co-benefits of improved energy efficiency. Compliance with these regulations would ensure cumulative projects achieve improved energy efficiency, minimize the wasteful and inefficient use of energy, and not create substantial additional demand for energy beyond the demand that is already planned for as a result of general growth in the State's population and economy. As a result, cumulative impacts would be less than significant.

### 3.18.5 References

- California Air Resources Board (CARB). 2004. *Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling*, Appendix F, July 2004. Available at <https://www.arb.ca.gov/regact/idling/isorappf.pdf>, accessed May 2017.
- . 2016. *Advanced Clean Cars Summary*. Available at [http://www.arb.ca.gov/msprog/clean\\_cars/acc%20summary-final.pdf](http://www.arb.ca.gov/msprog/clean_cars/acc%20summary-final.pdf), accessed May 2017.
- . 2017a. *Notice of Postponement—Public Meeting for the 2017 Climate Change Scoping Plan Update*, June 13. Available at <https://www.arb.ca.gov/lispub/rss/displaypost.php?pno=10383>, accessed July 2017.
- . 2017b. *The 2017 Climate Change Scoping Plan Update*, January. Available at [https://www.arb.ca.gov/cc/scopingplan/2030sp\\_pp\\_final.pdf](https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf), accessed May 2017.
- California Building Standards Commission (CBSC). 2017. *Guide to the 2016 California Green Building Standards Code*, January. Available at <https://www.documents.dgs.ca.gov/bsc/CALGreen/CALGreen-Guide-2016-FINAL.pdf>, accessed May 2017.
- California Energy Commission (CEC). 2015 *Integrated Energy Policy Report*. CEC-100-2015-001-CMF, (2016) 153. Available at [http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-01/TN212017\\_20160629T154354\\_2015\\_Integrated\\_Energy\\_Policy\\_Report\\_Small\\_File\\_Size.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-01/TN212017_20160629T154354_2015_Integrated_Energy_Policy_Report_Small_File_Size.pdf), accessed May 2017.
- California Gas and Electric Utilities. 2016 *California Gas Report*. Available at <https://www.socalgas.com/regulatory/documents/cgr/2016-cgr.pdf>, accessed July 2017.
- . 2016. Total System Electric Generation. Available at [http://www.energy.ca.gov/almanac/electricity\\_data/total\\_system\\_power.html](http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html), accessed May 2017.
- . 2017a. Oil Supply Sources to California Refineries. Available at [http://www.energy.ca.gov/almanac/petroleum\\_data/statistics/crude\\_oil\\_receipts.html](http://www.energy.ca.gov/almanac/petroleum_data/statistics/crude_oil_receipts.html), accessed May 2017.
- . 2017b. *Southern California Edison. 2015 Power Content Label*. Available at [http://www.energy.ca.gov/pcl/labels/2015\\_labels/Southern\\_California\\_Edison.pdf](http://www.energy.ca.gov/pcl/labels/2015_labels/Southern_California_Edison.pdf), accessed May 2017.
- Cummins. 2014. *Cummins Tier-4-Final Field Test Showed 10% Lower Fuel Consumption*, March 5. Available at <https://cumminsengines.com/cummins-tier-4-final-field-test-program>, accessed May 2017.
- Greve & Associates. 2017a. *Air Quality Assessment for the Los Cerritos Wetlands Oil Consolidation and Restoration Project*, May 8.
- . 2017b. *Greenhouse Gas Assessment for the Los Cerritos Wetlands Oil Consolidation and Restoration Project*, May 8.
- Mitsubishi Caterpillar Forklift America, Inc. (MCF). 2015. *Cat® Lift Trucks Introduces New Tier 4 Final Diesel Pneumatic Tire Lift Truck*, November 19, 2015. Available at <http://www.mcfa.com/mcfa/news/articles/cat/2015/Cat%20Lift%20Trucks%20Introduces%20New%20Tier%204%20Final%20Diesel%20Pneumatic%20Tire%20Lift%20Truck>, accessed May 2017.



- Southern California Edison (SCE). 2017a. About Us, Who We Are. Available at <https://www.sce.com/wps/portal/home/about-us/who-we-are/>, accessed May 2017.
- . 2017b. *Edison International and Southern California Edison. 2016 Annual Report*. Available at <http://www.edison.com/content/dam/eix/documents/investors/corporate-governance/2016-annual-report.pdf>, accessed May 2017.
- United States Energy Information Administration (USEIA). 2016a. California, State Profile and Energy Estimates, Profile Analysis. Available at <https://www.eia.gov/state/analysis.php?sid=CA>, accessed May 2017.
- . 2016b. Table F3: Motor Gasoline Consumption, Price, and Expenditure Estimates. Available at [http://www.eia.gov/state/seds/data.cfm?incfile=/state/seds/sep\\_fuel/html/fuel\\_mg.html&sid=CA](http://www.eia.gov/state/seds/data.cfm?incfile=/state/seds/sep_fuel/html/fuel_mg.html&sid=CA), accessed May 2017.
- . 2016c. Table F7: Distillate Fuel Oil Consumption Estimates. Available at [http://www.eia.gov/state/seds/data.cfm?incfile=/state/seds/sep\\_fuel/html/fuel\\_use\\_df.html&sid=CA](http://www.eia.gov/state/seds/data.cfm?incfile=/state/seds/sep_fuel/html/fuel_use_df.html&sid=CA), accessed May 2017.
- . 2016d. Crude Oil Proved Reserves, Reserve Changes, and Production. Available at [http://www.eia.gov/dnav/pet/pet\\_crd\\_pres\\_dcu\\_sCA\\_a.htm](http://www.eia.gov/dnav/pet/pet_crd_pres_dcu_sCA_a.htm), accessed May 2017.
- . 2016e. International Energy Outlook 2016. Available at [http://www.eia.gov/outlooks/ieo/liquid\\_fuels.cfm](http://www.eia.gov/outlooks/ieo/liquid_fuels.cfm), accessed May 2017.
- . 2017a. California, Profile Data, May 18. Available at <https://www.eia.gov/state/data.cfm?sid=CA#ReservesSupply>, accessed May 2017.
- . 2017b. Natural Gas: Heat Content of Natural Gas Consumed, April 28. Available at [https://www.eia.gov/dnav/ng/ng\\_cons\\_heat\\_a\\_EPG0\\_VGTH\\_btucf\\_a.htm](https://www.eia.gov/dnav/ng/ng_cons_heat_a_EPG0_VGTH_btucf_a.htm), accessed May 2017.
- White House, The. 2017. Remarks by President Trump at American Center for Mobility, Detroit, MI, March 15. Available at <https://www.whitehouse.gov/the-press-office/2017/03/15/remarks-president-trump-american-center-mobility-detroit-mi>, accessed May 2017.

[THIS PAGE INTENTIONALLY LEFT BLANK]