Rincon Consultants, Inc.

1980 Orange Tree Lane
Suite 105
Redlands, California 92374

909 253 0705 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

October 20, 2020
Project No. 20-09519

Valerie Salampessy
Empire Design Group, Inc.
24861 Washington Avenue
Murrieta, California 92562
(909) 489-8515
Via email: admin@empiregr.biz

Subject: **Energy Technical Memorandum for the Alessandro and Lasselle Commercial Center Project**
Moreno Valley, California 925530

Dear Ms. Salampessy:

Rincon Consultants, Inc. (Rincon) is pleased to provide this letter report analyzing the potential for energy impacts associated with the proposed Alessandro and Lasselle Commercial Center Project (project) in the City of Moreno Valley, Riverside County, California. Rincon prepared this letter report under contract to Empire Design Group to support California Environmental Quality Act (CEQA) documentation for the project. This memorandum evaluates both potential short-term construction and long-term operational energy impacts associated with the project.

Project Description

The project site is an approximately 5.6-acre undeveloped site (Assessor's Parcel Number [APN] 479-631-010) situated at the northwest corner of Alessandro Boulevard and Lasselle Street in Moreno Valley, Riverside County, California. The project site is surrounded by undeveloped land to the east and south, the Moreno Hills Seventh-Day Adventist Church to the southwest, and single-family residences to the west and north. The zoning designation of the project site is Neighborhood Commercial (NC). The site is currently undeveloped land covered with grass, and brush. The entire area of the new development would be disturbed, removing existing vegetation.

The project would involve the construction of two office buildings, two drive-thru restaurants with attached retail space, a bank, a sit-down restaurant with attached patio, an express car wash, and eight multiproduct fuel dispensers (MPD; to service up to 16 vehicles simultaneously) with a convenience store and attached quick-service restaurant with drive-thru. New building area would total approximately 40,229 square feet (sf), including the proposed pump station canopy, car wash, and sit-down restaurant patio. Table 1 summarizes project components.

Table 1 Project Components

Land Uses	Square Footage (sf)
Eight MPD and Gas Fueling Canopy	4,089
Convenient Store and Quick Serve Restaurant	3,400 and 1,525
Express Car Wash	3,850
Bank	4,125
Office/ retail	9,900
Retail/ dining	5,500
Retail and Drive-thru	1,600 and 1,320
Retail and Drive-thru	1,600 and 3,320

Source: Empire Design Group, Inc. 2020

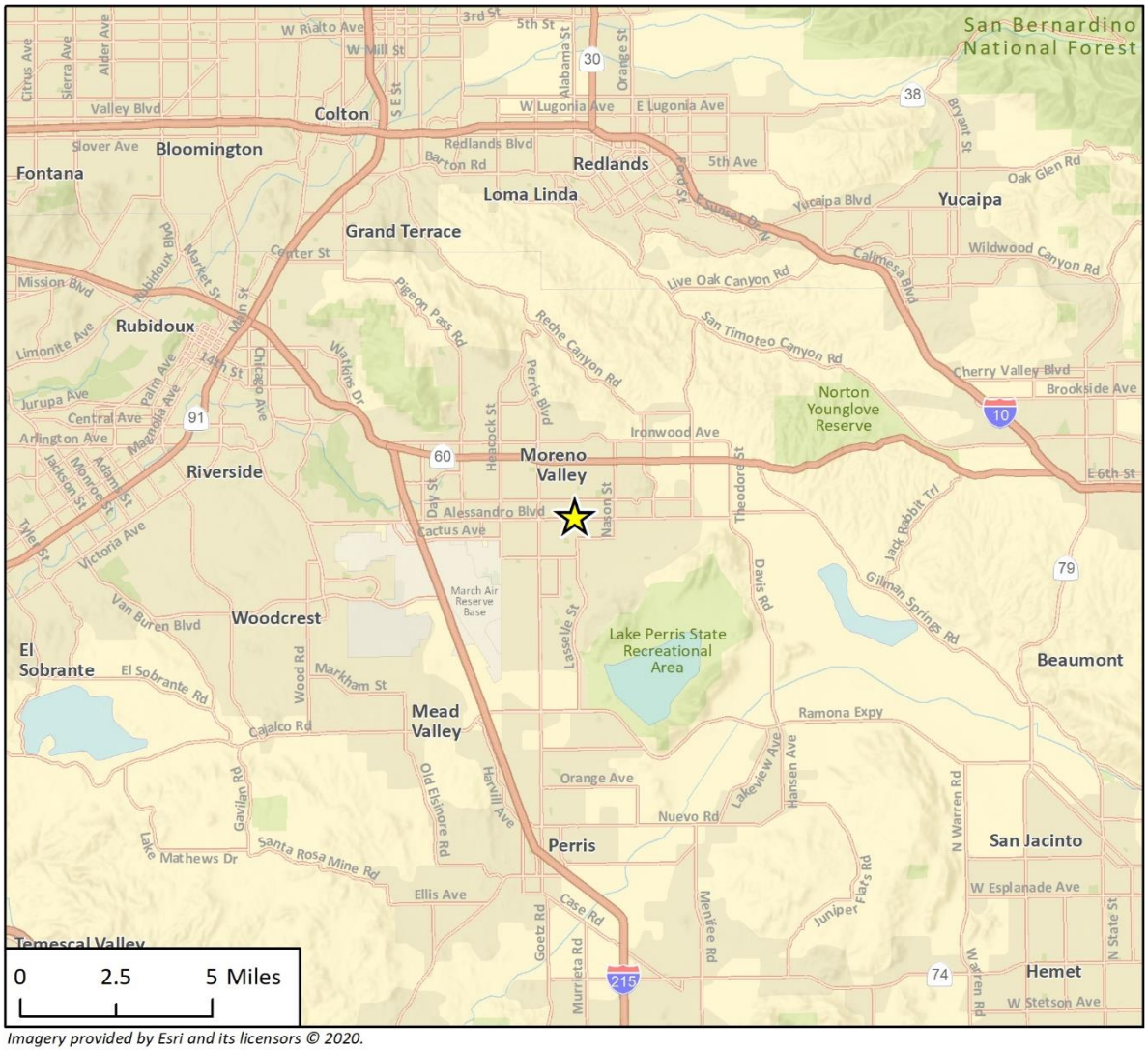
The maximum height of the structures would be 30 feet. The project would provide 170 parking stalls in total, including 11 Americans with Disabilities Act (ADA) accessible parking spaces and 20 car wash vacuum stalls.

Construction is expected to begin in January 2021 and be completed by February 2022. Construction phases would include site preparation, grading, building construction, paving, and architectural coating. The topography of the project site is relatively flat and vacant with little to no slope. Project construction would include approximately 5,709 cubic yards (cy) of cut material, 4,623 cy of fill material, and export of approximately 1,982 cy of material off-site during site preparation and grading activities.

Ingress and egress would occur via a proposed driveway along Lasselle Street and two proposed driveways along Alessandro Boulevard. The project would also involve sidewalk improvements along Lasselle Street and Alessandro Boulevard. Drought-tolerant landscaping would be incorporated along the project site perimeter and interspersed between on-site parking and circulation areas.

Figure 1 shows the project site's regional location. Figure 2 shows the location of the project site. Figure 3 shows the project site plan.

Figure 1 Regional Location



Imagery provided by Esri and its licensors © 2020.

Project Location

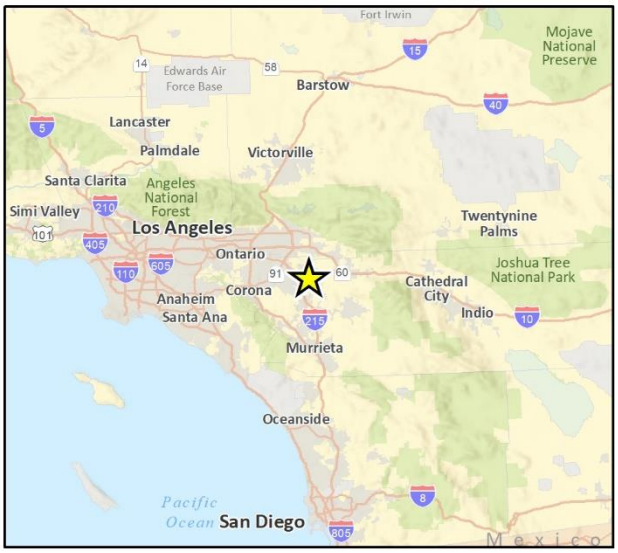
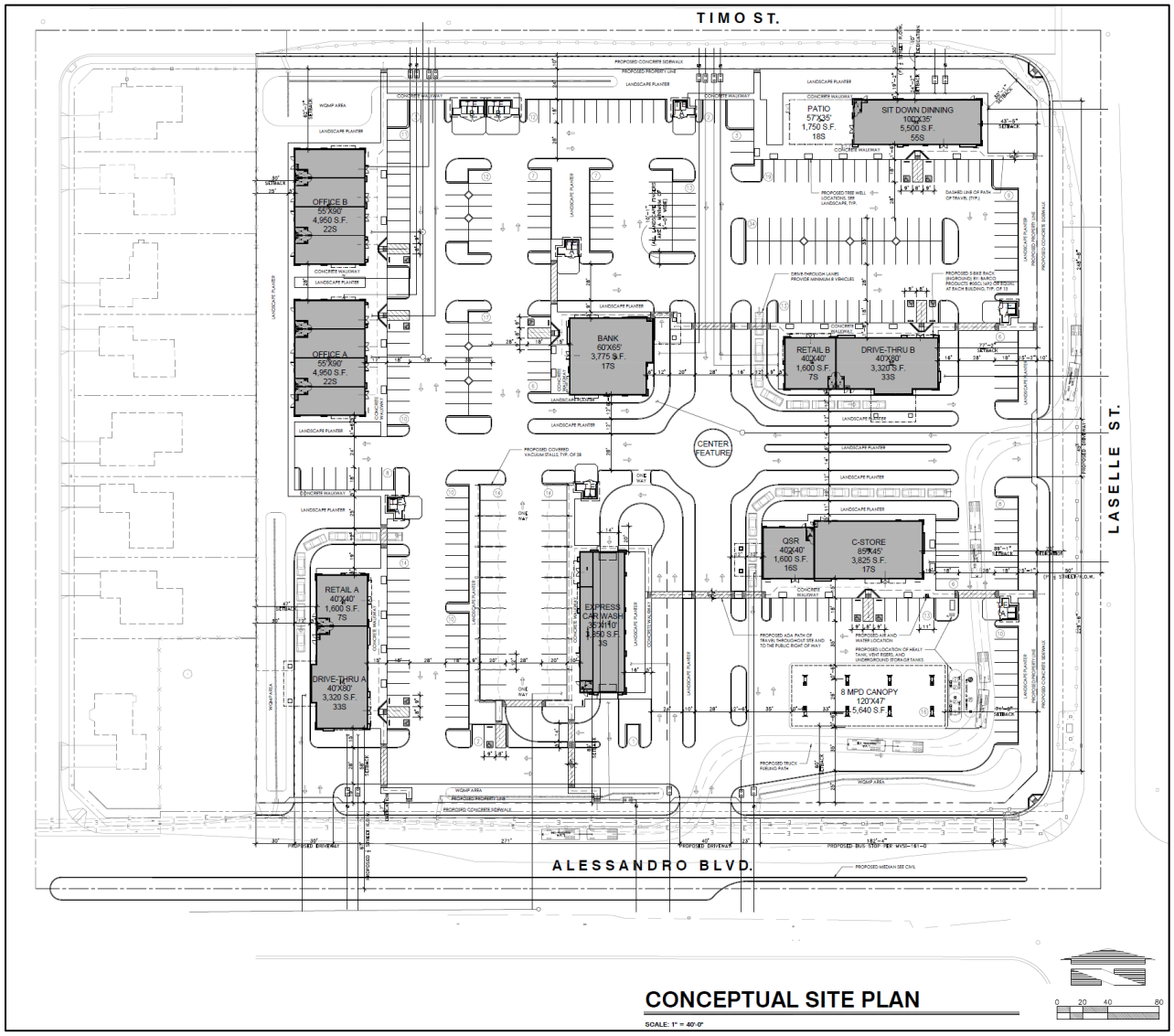


Figure 2 Project Location

Imagery provided by Microsoft Bing and its licensors © 2020.

Fig 1 Project Site Location

Figure 3 Project Site Plan



Source: Empire Design Group, Inc. 2020

Energy Setting

Electricity and Natural Gas

In 2018, California used 285,488 gigawatt-hours (GWh) of electricity, of which approximately 31 percent were from renewable resources (California Energy Commission [CEC] 2019a). California also consumed approximately 12,600 million U.S. therms (MMthm) of natural gas in 2018 (CEC 2018a). Moreno Valley Utility (MVU) provides electricity to the project site and Southern California Gas Company (SCG) provides natural gas.

MVU is a publicly owned utility owned and operated by the community and is locally controlled on a not-for-profit basis. The service area extends from Interstate -215 located approximately 4.4 miles west from the project site, to Gilman Springs Road located approximately 6.1 miles east from the project site.

SCG provides natural gas service to approximately six million residential and business customers across 20,000 square miles of southern California, including Moreno Valley (SCG 2019). The project site is located in SCG's Southern Zone.

Table 2, Electricity Consumption in the MVU Service Area in 2018, and Table 3, Natural Gas Consumption in SCG Service Area in 2018, show the electricity and natural gas consumption by sector for MVU and SCG, respectively. In 2018, MVU provided approximately 0.07 percent of the total electricity used in California. In 2018, SCG provided approximately 40.9 percent of the total natural gas used in California.

Table 2 Electricity Consumption in the MVU Service Area in 2018

Agriculture and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Streetlight	Total Usage
0.4	129.4	8.4	10.8	0.4	42.1	1.8	193.3

Notes: All usage expressed in GWh
Source: CEC 2018b

Table 3 Natural Gas Consumption in SCG Service Area in 2018

Agriculture and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Total Usage
77.6	913.0	74.5	1,714.4	229.2	2,147.4	5,156.1

Notes: All usage expressed in MMThm
Source: CEC 2018a

Petroleum

In 2015, the transportation sector in California consumed about 23.2 billion gallons of gasoline, including 15.5 billion gallons of finished gasoline[1] and 3.7 billion gallons of diesel (CEC 2017). Although California's population and economy are expected to grow, gasoline demand is projected to decline from roughly 15.8 billion gallons in 2017 to between 12.3 billion and 12.7 billion gallons in 2030, a 20 to 22 percent reduction. This forecast decline is due to both increasing use of electric vehicles and improved fuel

[1] Finished gasoline formulated for use in motor vehicles, the composition and properties of which meet the requirements of the reformulated gasoline regulations promulgated by the U.S. Environmental Protection Agency under Section 211(k) of the Clean Air Act.

economy for new gasoline vehicles. Diesel demand is anticipated to continue to rise, increasing from around 3.7 billion diesel gallons in 2015 to about 4.7 billion gallons in 2030 (CEC 2017).

Project Site Energy Consumption

The project site is currently undeveloped. Aside from intermittent site access and maintenance, minimal to no energy consumption is associated with current activities at the project site.

Regulatory Setting

Federal Regulations

Energy Independence and Security Act of 2007

The Energy Independence and Security Act, enacted by Congress in 2007, is designed to improve vehicle fuel economy and help reduce the United States dependence on foreign oil. It expands the production of renewable fuels, reducing dependence on oil, and confronting climate change. Specifically, it does the following:

- Increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard, requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, which represents a nearly five-fold increase over current levels
- Reduces United States demand for oil by setting a national fuel economy standard of 35 miles per gallon (mpg) by 2020 – an increase in fuel economy standards of 40 percent

The Energy Independence and Security Act of 2007 also set energy efficiency standards for lighting (specifically light bulbs) and appliances. Development would also be required to install photosensors and energy-efficient lighting fixtures consistent with the requirements of 42 USC Section 17001 et seq.

Energy Policy and Conservation Act

Enacted in 1975, the Energy Policy and Conservation Act established fuel economy standards for new light-duty vehicles sold in the United States. The law placed responsibility on the National Highway Traffic and Safety Administration (NHTSA), a part of the United States Department of Transportation (USDOT), for establishing and regularly updating vehicle standards. The United States Environmental Protection Agency (U.S. EPA) administers the Corporate Average Fuel Economy (CAFE) program, which determines vehicle manufacturers' compliance with existing fuel economy standards.

Corporate Average Fuel Economy Standards

The CAFE standards are Federal rules established by the National Highway Traffic Safety Administration (NHTSA) that set fuel economy and greenhouse gas (GHG) emissions standards for all new passenger cars and light trucks sold in the United States. The CAFE standards become more stringent each year, reaching an estimated 38.3 miles per gallon for the combined industry-wide fleet for model year 2020 (77 Federal Register 62624 et seq. [October 15, 2012 Table I-1). It is, however, illegal for individual municipalities to adopt more stringent fuel efficiency standards. The Clean Air Act (CAA) (42 United States Code [USC] Section 7543[a]) states that "no state or any political subdivision therefore shall adopt or attempt to enforce any standard relating to the control of emissions from new motor vehicles or new motor vehicle engines subject to this part." In August 2016, the U.S. EPA and NHTSA announced the

adoption of the phase two programs related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi- trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower carbon dioxide (CO_2) emissions by approximately 1.1 billion metric tons (MT) of CO_2 and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program.

As of August 2019, NHSTA and U.S. EPA were undergoing the rulemaking process to establish the Safer Affordable Fuel Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (SAFE Vehicles Rule). The SAFE Vehicles Rule would amend the existing CAFE standards such that the requirements for model years 2021 through 2026 are lowered to the 2020 standards of 43.7 miles per gallon (mpg) for passenger cars and 31.3 mpg for light duty trucks. The SAFE Vehicles Rule has not been finalized at the time this memorandum was prepared.

Construction Equipment Fuel Efficiency Standard

U.S. EPA sets emission standards for construction equipment. The first federal standards (Tier 1) were adopted in 1994 for all off-road engines over 50 horsepower (hp) and were phased in by 2000. A new standard was adopted in 1998 that introduced Tier 1 for all equipment below 50 hp and established the Tier 2 and Tier 3 standards. The Tier 2 and Tier 3 standards were phased in by 2008 for all equipment. The current iteration of emissions standards for construction equipment are the Tier 4 efficiency requirements are contained in 40 Code of Federal Regulations Parts 1039, 1065, and 1068 (originally adopted in 69 Federal Register 38958 [June 29, 2004], and most recently updated in 2014 [79 Federal Register 46356]). Emissions requirements for new off-road Tier 4 vehicles were to be completely phased in by the end of 2015.

Energy Star Program

In 1992, U.S. EPA introduced Energy Star© as a voluntary labeling program designed to identify and promote energy-efficient products to reduce GHG emissions. The program applies to major household appliances, lighting, computers, and building components such as windows, doors, roofs, and heating and cooling systems. Under this program, appliances that meet specification for maximum energy use established under the program are certified to display the Energy Star© label. In 1996, U.S. EPA joined with the Energy Department to expand the program, which now also includes qualifying commercial and industrial buildings, as well as homes (Energy Star 2019).

State Regulations

Assembly Bill 2076

Pursuant to Assembly Bill (AB) 2076 (Chapter 936, Statutes of 2000), the CEC and the California Air Resources Board (CARB) prepared and adopted a joint-agency report, Reducing California's Petroleum Dependence, in 2003. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita vehicle miles traveled (VMT). One of the performance-based goals of AB 2076 is to reduce petroleum demand to 15 percent below 2003 demand. Furthermore, in response to the CEC's 2003 and 2005 Integrated Energy Policy Reports, the Governor directed the CEC to take the lead in developing a long-term plan to increase alternative fuel use.

California Energy Plan

The CEC is responsible for preparing the California Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The 2008 California Energy Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies several strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs, as well as encouragement of urban designs that reduce VMT and accommodate pedestrian and bicycle access.

Integrated Energy Policy Report

Senate Bill 1389 (Chapter 568, Statutes of 2002) required the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The CEC uses these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety. The most recent assessment, the *2018 Integrated Energy Policy Report*, contains two volumes. Volume I highlights implementation of California's innovative policies and the role they have played in establishing a clean energy economy. Volume II, adopted February 20, 2019, provides more detail on several key energy policies, including decarbonizing buildings, increasing energy efficiency savings, and integrating more renewable energy into the electricity system.

Senate Bill 100

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the state's Renewables Portfolio Standard Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 44 percent by 2024, 60 percent by 2030, and 100 percent by 2045.

Energy Action Plan (EAP)

In October 2005, the CEC and California Public Utilities Commission updated their energy policy vision by adding important dimensions to the policy areas included in the original Energy Action Plan, such as the emerging importance of climate change, transportation-related energy issues, and research and development activities. The CEC adopted an update to the EAP II in February 2008 that supplements the earlier EAPs and examines the state's ongoing actions in the context of global climate change.

Assembly Bill 1007

Assembly Bill 1007 (Chapter 371, Statutes of 2005) requires the CEC to prepare a plan to increase the use of alternative fuels in California. The CEC prepared the State Alternative Fuels Plan in partnership with CARB and in consultation with other Federal, State, and local agencies. The State Alternative Fuels Plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The State Alternative Fuels Plan assesses 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.

Executive Order S-06-06

Executive Order (EO) S-06-06, April 25, 2006, establishes targets for the use and production of biofuels and biopower, and directs State agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The EO establishes the following targets to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels in California by 2010, 40 percent by 2020, and 75 percent by 2050. Executive Order S-06-06 also calls for the state to meet a target for use of biomass electricity. The 2011 Bioenergy Action Plan identifies those barriers and recommends actions to address them so that the state can meet its clean energy, waste reduction, and climate protection goals. The 2012 Bioenergy Action Plan updates the 2011 Plan and provides a more detailed action plan to achieve the following goals:

- Increase environmentally and economically sustainable energy production from organic waste
- Encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications
- Create jobs and stimulate economic development, especially in rural regions of the state
- Reduce fire danger, improve air and water quality, and reduce waste

California Code of Regulations, Title 24

Title 24 of the California Code of Regulations requires California homes and businesses to meet strong energy efficiency measures, thereby lowering their energy use. Title 24 contains numerous subparts, including Part 1 (Administrative Code), Part 2 (Building Code), Part 3 (Electrical Code), Part 4 (Mechanical Code), Part 5 (Plumbing Code), Part 6 (Energy Code), Part 8 (Historical Building Code), Part 9 (Fire Code), Part 10 (Existing Building Code), Part 11 (Green Building Standards Code), Part 12 (Referenced Standards Code).

Part 6 (Building Energy Efficiency Standards)

Part 6 of Title 24 contains the 2016 Building Energy Efficiency Standards for new residential and nonresidential buildings, which went into effect on January 1, 2017. Part 6 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2016 Standards improve upon the previous 2013 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. Under the 2016 Standards, non-residential buildings are generally five percent more energy efficient than the 2013 Standards as a result of better windows, insulation, lighting, ventilation systems, and other features (CEC 2015). Part 6 also provides for the installation of cool roofs in Sections 140.3(a)(1), 141.0(b)(2)(B), and 141.0(b)(3).

The 2019 Building Energy Efficiency Standards, adopted on May 9, 2018, will become effective on January 1, 2020. The 2019 Standards focus on four key areas: 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3) residential and nonresidential ventilation requirements; 4) and nonresidential lighting

requirements (CEC 2018c). Under the 2019 Standards, nonresidential buildings will be 30 percent more energy-efficient compared to the 2016 Standards (CEC 2018d).

Part 11 (CALGreen)

The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code in 2008. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The mandatory provisions of the CALGreen became effective January 1, 2011 and were updated in 2016. The 2016 Standards, which became effective on January 1, 2017, establish green building criteria for residential and nonresidential projects. The CEC adopted updates to the 2016 Standards in 2019 that will take effect on January 1, 2020. While the 2019 updates focus predominantly on residential development, changes affecting nonresidential development include new standards for interior windows and doors leading to unconditioned space and use of CO_2 monitors to control outside airflow in ventilation systems (VCA Green 2018).

Local Regulations

City of Moreno Valley Energy Efficiency and Climate Action Strategy

The City of Moreno Valley adopted the Moreno Valley Energy and Climate Action Strategy (CAS) in 2012. The CAS is intended to identify methods that the City can reduce energy and water consumption and greenhouse gas (GHG) emissions. Additionally, the CAS outlines ways the City can implement to encourage community members to reduce their own energy and water consumption and GHG emissions (City of Moreno Valley 2012). The CAS is divided into two sections: Energy Efficiency (City as an organization) and Climate Action (City as a community). The primary focus of the energy efficiency section is to identify existing and potential measures for the City as an organization to achieve, while providing guidance for implementing policy in order to distinguish the most effective, practical and affordable energy practices. The climate action section provides measures similar to those identified in the energy efficiency section and additional GHG reduction measures on a community-wide basis. Section II of the CAS, contains the following proposed policies related to community energy resources (City of Moreno Valley 2012):

Greenhouse Gas Analysis Reduction Policies

- **Measure R2-E5:** New Construction Commercial Energy Efficiency Requirements. Require energy efficient design for all new commercial buildings to be 10% beyond the current Title 24 standards. (Reach Code)
- **Measure R3-E1:** Energy Efficient Development, and Renewable Energy Deployment Facilitation and Streamlining. Updating of codes and zoning requirements and guidelines to further implement green building practices. This could include incentives for energy efficient projects.

Energy Efficiency Policies:

- **Measure C1**: Install light colored "cool" roofs and cool pavements. (Cool roofs are a requirement per State Title 24/CalGreen Building Standards).
- **Measure C2**: Require Energy Star equipment and appliances in new construction & renovations.

- **Measure C20:** Require new large developments (projects of regional significance) participate in the Savings by Design or similar programs to identify ways to improve energy efficiency of proposed construction.
- **Measure C21:** Encourage community use of Southern California Edison, Moreno Valley Utility, Eastern Municipal Water District, and The Gas Company financial incentives and rebate opportunities.
- **Measure C22:** Adopt a dark sky ordinance and reduce unnecessary outdoor lighting.
- **Measure C23:** Encourage passive solar design, to maximize passive solar heating during cool seasons, minimize solar heat gain during hot seasons, and enhance natural ventilation. (Existing design guideline).
- **Measure C31:** Explore building footprint, setbacks, height, scale, hardscape requirements to create compact building design techniques.
- **Measure C33:** Apply urban planning principles that encourage high density, mixed-use, walkable/bikeable neighborhoods, and coordinate land-use and transportation with open space systems and promote the efficient delivery of services and goods. (GHG Policy R2-T1 Land Use Based Trips and VMT Reduction Policies)
- **Measure C41:** Set goals consistent with State's Long Term Strategic Plan: All new residential construction in California will be zero net energy by 2020. All new commercial construction in California will be zero net energy by 2030.
- **Measure C55:** Require shaded and accessible pedestrian paths of travel between building entrances and parking lots, sidewalks, adjacent properties, and public transportation stops.

City of Moreno Valley General Plan

Chapter 9 of the City of Moreno Valley General Plan consists of the following goals and policies related to energy use and energy reduction goals:

Goal 2.10: Ensure that all development within the City of Moreno Valley is of high quality, yields a pleasant living and working environment for existing and future residents, and attracts business as the result of consistent exemplary design.

> **Policy 2.10.4:** Landscaping and open spaces should be provided as an integral part of project design to enhance building design, public views, and interior spaces; provide buffers and transitions as needed; and facilitate energy and resource conservation.

Goal 2.13: Coordinate development activity with the provision of public infrastructure and services to eliminate possible gaps in service provision.

> **Policy 2.13.4:** Encourage installation of advanced technology infrastructure, including, but not limited to, infrastructure for high speed internet access and solar energy.

Objective 6.7: Reduce mobile and stationary source air pollutant emissions.

> **Policy 6.7.6:** Require building construction to comply with the energy conservation requirements of Title 24 of the California Administrative Code.

Objective 7.5: Encourage efficient use of energy resources.

> **Policy 7.5.1:** Encourage building, site design, and landscaping techniques that provide passive heating and cooling to reduce energy demand.

Policy 7.5.2: Encourage energy efficient modes of transportation and fixed facilities, including transit, bicycle, equestrian, and pedestrian transportation. Emphasize fuel efficiency in the acquisition and use of City-owned vehicles.

Policy 7.5.3: Locate areas planned for commercial, industrial and multiple family density residential development within areas of high transit potential and access

Policy 7.5.5: Encourage the use of solar power and other renewable energy systems

Impact Analysis

Methodology

Construction energy demand was calculated based on information contained in the California Emissions Estimator Model (CalEEMod) run provided by *Urban Crossroads: Moreno Valley Commercial Air Quality Impact and Greenhouse Gas Analysis*. Construction energy demand considers diesel fuel consumption associated with operation of off-road construction equipment and vendor/hauling truck trips as well as gasoline fuel consumption associated with worker trips to and from construction sites. Energy demand for off-road construction equipment is based on anticipated equipment, usage hours, horsepower, load factors, and construction phase duration provided by the CalEEMod output, as well as Exhaust and Crankcase Emission Factors for Nonroad Compression Ignition Engines (U.S. EPA 2018). Hauling, vendor, and worker trip fuel consumption considers anticipated daily trips, default trip lengths, and average fuel efficiency values obtained from the Bureau of Transportation Statistics (U.S. Department of Transportation 2018).

Operational energy demand considers transportation-based fuel consumption as well as electricity and natural gas consumption associated with the project. Transportation-based fuel consumption is based on vehicle miles traveled and fleet mix obtained from CalEEMod. Electricity and natural gas consumption is also based on CalEEMod outputs and compared to existing consumption in the MVU and SCG service areas.

Significance Thresholds

According to Appendix G of the CEQA Guidelines, an energy-related impact would be considered significant if the project would result in one or more of the following conditions:

a. Wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation;
b. Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Threshold a:	Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction Energy Demand

Construction activity would use energy in the form of petroleum-based fuels used to power off-road construction vehicles and equipment on the project site, construction worker travel to and from the project site, and vehicles used to deliver materials to the project site. The project would require demolition, site preparation, grading, building construction, paving, and architectural coating.

Total consumption of gasoline and diesel fuel during project construction was estimated using the assumptions and factors from the applicant provided CalEEMod run used to estimate construction air pollutant emissions (Urban Crossroads 2020). Table 4 summarizes the estimated construction fuel construction for the project. Diesel fuel consumption for construction equipment operation and vendor/hauling trips, would total approximately 8,578 gallons over the course of project construction. Other petroleum fuel consumption (i.e., gasoline), including worker trips to and from construction sites, would total approximately 14,810 gallons over the approximately 13-month construction period. Construction-related energy calculations are included in Attachment A.

Table 4 Construction Fuel Consumption

Fuel Type	Gallons of Fuel	MMBtu[4]
Diesel Fuel (Construction Equipment)[1]	42,736	5,447
Diesel Fuel (Hauling & Vendor Trips)[2]	8,578	1,093
Other Petroleum Fuel (Worker Trips)[3]	14,810	1,626
Total	**66,124**	**8,167**

[1] Fuel demand rate for construction equipment is derived from the total hours of operation, the equipment's horse power, the equipment's load factor, and the equipment's fuel usage per horse power per hour of operation, which are provided in CalEEMod outputs (Urban Crossroads 2020), and from compression-ignition engine brake-specific fuel consumptions factors for engines between 0 to 100 horsepower and greater than 100 horsepower (U.S. EPA 2018). Fuel consumed for all construction equipment is assumed to be diesel fuel.

[2] Fuel demand rate for hauling and vendor trips (cut material imports) is derived from hauling and vendor trip number, hauling and vendor trip length, and hauling and vendor vehicle class from "Trips and VMT" Table contained in Section 3.0, *Construction Detail*, of the CalEEMod results (Urban Crossroads 2020). The fuel economy for hauling and vendor trip vehicles is derived from the United States Department of Transportation (U.S. DOT 2018). Fuel consumed for all hauling trucks is assumed to be diesel fuel.

[3] The fuel economy for worker trip vehicles is derived from the U.S. Department of Transportation National Transportation Statistics (24 mpg) (U.S. DOT 2018). Fuel consumed for all worker trips is assumed to be gasoline fuel.

[4] CaRFG CA-GREET 3.0 fuel specification of 109,786 Btu/gallon used to identify conversion rate for fuel energy consumption for worker trips specified above (California Air Resources Board [CARB] 2015). Low-sulfur Diesel CA-GREET 3.0 fuel specification of 127,464 Btu/gallon used to identify conversion rate for fuel energy consumption for construction equipment specified above (Schremp 2017).
Notes: Totals may not add up due to rounding.
Source: Attachment A

The construction energy estimates are conservative because the construction equipment used in each phase of construction was assumed to be operating every day of construction. According to the California Annual Retail Fuel Outlet Report Results (CEC-A15), retail diesel sales in Riverside County totaled approximately 132 million gallons while retail gasoline sales totaled approximately 1.05 billion

gallons in 2018 (CEC 2019b). Therefore, fuel consumption associated with project construction would account for approximately 0.04 percent of annual retail diesel sales and approximately 0.001 percent of annual retail gasoline sales in Riverside County.

Construction equipment would be maintained to applicable standards and construction activity and associated fuel consumption and energy use would be temporary and typical of construction sites. It is also reasonable to assume that contractors would avoid wasteful, inefficient, and unnecessary fuel consumption during construction to reduce construction costs. Therefore, the project would not involve the inefficient, wasteful, and unnecessary use of energy during construction, and the construction-phase impact related to energy consumption would be less than significant.

Operational Energy Demand

The project would involve operation of eight commercial facilities: an eight-pump gas-fueling canopy, a convenience store and quick service restaurant, an express car wash, a bank, office/retail, retail/dining, and two retail and drive-thru buildings. This development would increase energy demand relative to existing, undeveloped conditions on the project site due to greater electricity, natural gas, and gasoline consumption. Natural gas and electricity would be used for building heating and cooling systems, lighting, appliances, water use, and the overall operation of the buildings. Gasoline consumption would be attributed to the trips generated by commercial land uses on the project site. The estimated number of average daily trips associated with the project from CalEEMod was used to determine the energy consumption associated with fuel use from the operation of the project. According to the CalEEMod calculations, the project would result in an estimated 4,592,214 annual VMT (Urban Crossroads 2020). Table 5 shows the estimated total annual fuel consumption for the project using the estimated VMT with the assumed vehicle fleet mix obtained from CalEEMod. As shown in Table 5, total annual fuel consumption is estimated at 194,123 gallons of gasoline and 69,317 gallons of diesel. Operational fuel consumption associated with the project would represent less than 0.02 percent of Riverside County's annual retail gasoline sales and less than 0.05 percent of the County's annual retail diesel sales. Operation-related energy calculations are included in Attachment A.

Table 5 Estimated Project Annual Transportation Energy Consumption

Vehicle Type[1]	Percent of Vehicle Trips[2]	Annual Vehicle Miles Traveled[3]	Average Fuel Economy (miles/gallon)[4]	Total Annual Fuel Consumption (gallons)	Total Fuel Consumption (MMBtu)[5]
Passenger Cars	54.6	2,505,177	24	104,382	11,460
Light/Medium Trucks	33.8	1,553,206	17.4	89,265	9,800
Heavy Trucks/Other	11.1	512,946	7.4	69,317	8,835
Motorcycles	0.5	20,881	43.9	476	52
Total	**100.0**	**4,592,214**	**–**	**--**	**30,147**

[1] Vehicle classes provided in CalEEMod do not correspond exactly to vehicle classes in DOT fuel consumption data, except for motorcycles. Therefore, it was assumed that passenger cars correspond to the light-duty, short-base vehicle class, light/medium trucks correspond to the light-duty long-base vehicle class, and heavy trucks/other correspond to the single unit, 2-axle 6-tire or more class. Fuel type for each class was categorized as gasoline, with the exception of "heavy trucks/other," which was categorized as diesel, as based on CalEEMod defaults.

[2] Percent of vehicle trips from Table 4.4 "Fleet Mix" in CalEEMod run (Urban Crossroads 2020).

[3] Mitigated annual VMT found in Table 4.2 "Trip Summary Information" in CalEEMod run (Urban Crossroads 2020).

[4] Average Fuel Economy: U.S. Department of Energy 2018.

[5] CaRFG fuel specification of 109,786 Btu/gallon used to identify conversion rate for fuel energy consumption for passenger cars and motorcycles. (CARB 2015). Low-sulfur Diesel CA-GREET 3.0 fuel specification of 127,464 Btu/gallon used to identify conversion rate for fuel energy consumption for light/medium trucks and heavy trucks/other (Shremp 2017).

Notes: Totals may not add up due to rounding.

Source: Attachment A

Operation of the project would consume approximately 0.98 GWh of electricity per year (Urban Crossroads 2020). The project would be served by MVU, which provided approximately 193 GWh of electricity in 2018. Therefore, project electricity demand would represent approximately 0.5 percent of MVU's annual electricity demand. The project would adhere to all energy efficiency measures required pursuant to updated CALGreen requirements. Additionally, MVU has not provided any indication that it cannot serve the project. Therefore, MVU would have sufficient supplies for the project and project operation would not place a significant demand on the electrical supply. Estimated natural gas consumption for the project would be approximately 4,085,364 kBTU (or 0.04 MMthm) per year (Urban Crossroads 2020)[2]. The project's natural gas demand would be served by SCG, which provided 5,156 MMthm in 2018. Project demand would represent less than 0.001 percent of SCG's natural gas demand; SCG has not provided any indication that it cannot serve the project. Therefore, SCG would have sufficient supplies for the project.

The project would comply with all standards set in California Building Code (CBC) Title 24, which would minimize the wasteful, inefficient, or unnecessary consumption of energy resources during operation**.** California's Green Building Standards Code (CALGreen; California Code of Regulations, Title 24, Part 11) requires implementation of energy efficient light fixtures and building materials into the design of new construction projects. Furthermore, the 2019 Building Energy Efficiency Standards (CBC Title 24, Part 6)

[2] Mitigated annual electricity usage found in Table 5.3 "Energy by Land Use – Electricity" in CalEEMod run under Greenhouse Gas Analysis. Mitigated annual natural gas usage found in Table 5.2 "Energy by Land Use – Natural Gas" in CalEEMod run under Greenhouse Gas Analysis.

requires newly constructed buildings to meet energy performance standards set by the Energy Commission. These standards are specifically crafted for new buildings to result in energy efficient performance so that the buildings do not result in wasteful, inefficient, or unnecessary consumption of energy. The standards are updated every three years and each iteration is more energy efficient than the previous standards. For example, according to the CEC, non-residential buildings would use about 30 percent less energy compared to 2016 standards (CEC 2018d). Furthermore, the project would further reduce its use of nonrenewable energy resources as the electricity generated by renewable resources provided by MVU continues to increase to comply with state requirements through Senate Bill 100, which requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

In conclusion, energy demand associated with construction of the project would be temporary and typical of construction projects and would not result in wasteful use of energy resources. Operation of the project would increase the use of energy in on the project site given that it would result in development on a currently undeveloped site. However, the increase would be in conformance with the latest version of California's Green Building Standards Code and Building Energy Efficiency Standards. In addition, MVU and SCG have sufficient supplies to serve the project. Therefore, the project would not result in wasteful, inefficient, or unnecessary energy consumption. This impact would be less than significant.

Threshold b:	Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

As discussed above under *Regulatory Setting*, SB 100 mandates 100 percent clean electricity for California by 2045. Because the project would be powered by the existing electricity grid, the project would eventually be powered by renewable energy mandated by SB 100 and would not conflict with this statewide plan. Additionally, the project would be subject to energy efficiency standards pursuant to CCR Title 24 requirements.

The City of Moreno Valley's CAS consists a variety of measures intended to reduce GHG emissions and improve energy efficiency. *Measure R2-E5: New Construction Commercial Energy Efficiency Requirements* facilitates the implementation of energy efficient design for all new commercial buildings to be 10 percent beyond the current Title 24 standards by requiring projects to complete a form outlining GHG reduction measures. Measures include installation of energy efficient appliances, solar water heaters, top quality windows and insulation, energy efficient lighting, and light-colored "cool" pavements, among others, with each measure allocated a certain number of points. Because the project would be required to be constructed under the 2019 CALGreen Standards, the project would not conflict with applicable energy efficiency measures detailed in the City's CAS energy efficiency best policies and practices.

The City's Strategy is described as a best practices tool of the General Plan's goals and policies, the foundation of planning land use decisions in Moreno Valley. As described above in *Regulatory Setting*, the City's General Plan contains policies targeting energy efficiency. As demonstrated in Table 6, the project would be consistent with applicable General Plan policies intended to encourage energy efficiency. As such, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and this impact would be less than significant.

Table 6 Project Consistency with Applicable General Plan Policies

Policies	Project Consistency
Goal 2.10	
▪ **Policy 2.10.4:** Landscaping and open spaces should be provided as an integral part of project design to enhance building design, public views, and interior spaces; provide buffers and transitions as needed; and facilitate energy and resource conservation.	**Consistent.** The project would comply with the City of Moreno Valley's landscaping requirements. The project will also incorporate the use of patio seating for the dine-in restaurant, which will be consistent with the use of open spaces.
Goal 2.13	
Policy 2.13.4: Encourage installation of advanced technology infrastructure, including, but not limited to, infrastructure for high speed internet access and solar energy	**Consistent.** The project would use energy from MVU. MVU has committed to diversify its portfolio of energy sources by increasing energy from wind and solar sources and obtained 36% of its power supply from renewable sources in 2018. The Project would not interfere with or obstruct MVU energy source diversification efforts and would comply with including advanced technology infrastructure.
Policy 6.7.6: Require building construction to comply with the energy conservation requirements of Title 24 of the California Administrative Code.	**Consistent.** The project includes energy efficient field lighting and fixtures that meet the current Title 24 Standards throughout the Project Site and would be a modern development with energy efficient boilers, heaters, and air conditioning systems.
Policy 7.5.1: Encourage building, site design, and landscaping techniques that provide passive heating and cooling to reduce energy demand	**Consistent.** The project would implement energy efficiency measures, such as lighting efficiency and HVAC system requirements, pursuant to the most recent Title 24 standards. Additionally, the project would be a modern development and incorporate energy efficient fixtures and lighting.
Policy 7.5.2: Encourage energy efficient modes of transportation and fixed facilities, including transit, bicycle, equestrian, and pedestrian transportation. Emphasize fuel efficiency in the acquisition and use of City-owned vehicles.	**Consistent.** The project would generate local employment opportunities for the nearby residences reducing commuter VTM and promoting energy efficient modes of bicycle and pedestrian transportation.
Policy 7.5.3: Locate areas planned for commercial, industrial and multiple family density residential development within areas of high transit potential and access	**Consistent.** The project site is located near multiple major roadways in Moreno Valley. The site is adjacent to the Alessandro and Chervil Bus Stop, which located along Chervil Court, and Alessandro and Lasselle Bus Stop, which is located along Alessandro Boulevard. Both bus stops are serviced by Riverside Transit Agency Route 20 and Route 40. Thus, the project would be within areas of high transit potential and access.
Policy 7.5.5: Encourage the use of solar power and other renewable energy systems	**Consistent.** This project would use energy from MVU which is committed to use solar power and renewable energy systems. The project would not interfere with or obstruct MVU energy source diversification efforts and, thus, would encourage the use of renewable energy systems.

Source: City of Moreno Valley 2006

Conclusions and Recommendations

The project would not result in the wasteful, inefficient, or unnecessary use of energy, nor would it conflict with or obstruct a state or local plan for renewable energy or energy efficiency. As such, the project's impacts with respect to energy would be less than significant.

Sincerely,
Rincon Consultants, Inc.

Charles Holcombe, MBA
Senior Environmental Planner

Joe Power
Vice President/Principal

Attachments

Attachment A Construction and Operation Energy Calculations

References

California Air Resources Board (CARB). 2015. CA-Greet 2.0. September 29, 2015 https://www.arb.ca.gov/fuels/lcfs/ca-greet/ca-greet.htm. Accessed October 2020.

California Energy Commission (CEC). 2015. 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. https://ww2.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf. Accessed October 2020.

_____. 2017. Revised Transportation Energy Demand Forecast 2018-2030. https://efiling.energy.ca.gov/getdocument.aspx?tn=221893. Accessed October 2020.

_____. 2018a. Electricity Consumption by Entity. http://ecdms.energy.ca.gov/elecbyutil.aspx. Accessed October 2020.

_____. 2018b. Gas Consumption by Entity. http://ecdms.energy.ca.gov/gasbyutil.aspx. Accessed October 2020.

_____. 2018c. 2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings. https://ww2.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf. Accessed October 2020.

_____. 2018d. 2019 Building Energy Efficiency Standards Fact Sheet. https://ww2.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf. Accessed October 2020.

_____. 2019a. Total System Electric Generation. https://ww2.energy.ca.gov/almanac/electricity_data/total_system_power.html. Accessed October 2020.

_____. 2019b. California Retail Fuel Outlet annual Reporting (CEC-A15) Results. https://ww2.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html. Accessed October 2020.

Moreno Valley, City of. 2006. City of Moreno Valley General Plan. Adopted July 11, 2006. http://www.moreno-valley.ca.us/city_hall/general_plan.shtml. Accessed October 2020.

_____. 2012. City of Moreno Valley Energy Efficiency and Climate Action Strategy January 2012. http://www.moval.org/pdf/efficiency-climate112012nr.pdf. Accessed October 2020.

Energy Star. 2019. EnergyStar Major Milestones. https://www.energystar.gov/about/history/major-milestones. Accessed October 2020.

Schremp, Gordon. 2017. Senior Fuels Specialist, California Energy Commission. Personal communication via phone and email regarding fuel consumption data by county with Lance Park, Associate Planner, Rincon Consultants, Inc. August 22, 2017.

Southern California Gas (SCG). 2019. Natural Gas Transmission. https://www.socalgas.com/stay-safe/pipeline-and-storage-safety/natural-gas-transmission. Accessed September 2020.

Urban Crossroads. October 2020. *Moreno Valley Commercial Air Quality Impact and Greenhouse Gas Analysis.* City of Moreno Valley. Accessed October 2020.

U.S. Department of Transportation. 2018. National Transportation Statistics. https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/national-transportation-statistics/223001/ntsentire2018q4.pdf. Accessed October 2020.

U.S. Environmental Protection Agency (U.S. EPA). 2018. Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b. July 2018. https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf. Accessed October 2020.

VCA Green. 2018. 2019 Energy Code – A Quick Summary of Key Changes. https://vca-green.com/2019-energy-code-a-quick-summary-of-key-changes/. Accessed October 2020.

Attachment A

Construction and Operation Energy Calculations

Alessandro and Laselle Commercial Center Project

Last Updated: 10/19/2020

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors **[1]**:

HP: 0 to 100	0.0588		HP: Greater than 100	0.0529

Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT

Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Crawler Tractors	4	8	212	0.43	Site Prep	1,541.96
Rubber Tired Dozer	3	8	247	0.43	Site Prep	1,347.40
Graders	1	8	187	0.41	Grading	648.43
Crawler Tractors	3	8	212	0.43	Grading	2,312.94
Excavators	1	8	158	0.38	Grading	507.78
Rubber Tired Dozer	1	8	247	0.40	Grading	835.59
Cranes	1	8	231	0.29	Building Construction	6,515.48
Forklifts	3	8	89	0.20	Building Construction	5,773.94
Generator Sets	1	8	84	0.74	Building Construction	6,721.12
Tractors/Loaders/Backhoes	3	8	97	0.37	Building Construction	11,641.94
Welders	1	8	46	0.45	Building Construction	2,238.21
Pavers	2	8	130	0.42	Paving	923.55
Paving Equipment	2	8	132	0.36	Paving	803.80
Rollers	2	8	80	0.38	Paving	571.66
Air Compressors	1	8	78	0.48	Architectural Coating	352.02
					Total Fuel Used	**42,735.84**
						(Gallons)

Construction Phase	Days of Operation
Site Preparation Phase	10
Grading Phase	20
Building Constrcution (Food Garden and Apartments) Phase	230
Paving (Hotel) Phase	20
Architectural Coating (Hotel) Phase	20
Total Days	300

WORKER TRIPS

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Site Prep Phase	24.0	18	14.7	110.25
Grading Phase	24.0	15	14.7	183.75
Building Constrcution Phase	24.0	100	14.7	14087.50
Paving Phase	24.0	15	14.7	183.75
Architectural Coating Phase	24.0	20	14.7	245.00
			Total Fuel Used	**14,810.25**

HAULING AND VENDOR TRIPS

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
		HAULING TRIPS		
Site Prep Phase	7.4	0	20.0	0.00

Grading Phase	7.4	0		20.0	0.00
Building Constrcution Phase	7.4	0		20.0	0.00
Paving Phase	7.4	0		20.0	0.00
Architectural Coating Phase	7.4	0		20.0	0.00
			Fuel Used		**-**
			VENDOR TRIPS		
Site Prep Phase	7.4	0		6.9	0.00
Grading Phase	7.4	0		6.9	0.00
Building Constrcution Phase	7.4	40		6.9	8578.38
Paving Phase	7.4	0		6.9	0.00
Architectural Coating Phase	7.4	0		6.9	0.00
			Total		**8,578.38**

Total Gasoline Consumption (gallons)	**14,810.25**
Total Diesel Consumption (gallons)	**51,314.22**

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b* . July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2018. *National Transportation Statistics 2018* . Available at: https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/national-transportation-statistics/223001/ntsentire2018q4.pdf.

Alessandro and Laselle Commercial Center Project

Last Updated: 10/19/20

Populate one of the following tables (Leave the other blank):

Annual VMT		Daily Vehicle Trips
Annual VMT: 4,592,214	**OR**	Daily Vehicle Trips:
		Average Trip Distance:

Fleet Class	Fleet Mix
Light Duty Auto (LDA)	0.545527
Light Duty Truck 1 (LDT1)	0.036856
Light Duty Truck 2 (LDT2)	0.186032
Medium Duty Vehicle (MDV)	0.115338
Light Heavy Duty 1 (LHD1)	0.015222
Light Heavy Duty 2 (LHD2)	0.004970
Medium Heavy Duty (MHD)	0.017525
Heavy Heavy Duty (HHD)	0.069528
Other Bus (OBUS)	0.001397
Urban Bus (UBUS)	0.001160
School Bus (SBUS)	0.000932
Motorhome (MH)	0.000965
Motorcycle (MCY)	0.004547

Fuel Economy (MPG)	
Passenger Vehicles	24.0
Light-Med Duty Trucks	17.4
Heavy Trucks/Other	7.4
Motorcycles	43.9

Fleet Mix

Vehicle Type	Percent	Fuel Type	Annual VMT: VMT	Vehicle Trips: VMT	Fuel Consumption (Gallons)
Passenger Vehicles	*54.55%*	*Gasoline*	2505177	0.00	104382.36
Light-Medium Duty Trucks	*33.82%*	*Gasoline*	1553206	0.00	89264.72
Heavy Trucks/Other	*11.17%*	*Diesel*	512946	0.00	69316.99
Motorcycle	*0.45%*	*Gasoline*	20881	0.00	475.64

Total Gasoline Consumption (gallons)	**194122.73**
Total Diesel Consumption (gallons)	**69316.99**