

SCHEU BUSINESS CENTER ENERGY CONSERVATION ANALYSIS CITY OF RANCHO CUCAMONGA



**SCHEU BUSINESS CENTER
ENERGY CONSERVATION ANALYSIS
City of Rancho Cucamonga, California**

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1.0 Introduction

1.1 Purpose of Report and Study Objectives

The purpose of this energy conservation analysis is to review the energy implications of the proposed Scheu Business Center (project) and provide recommendations to reduce wasteful, inefficient and unnecessary consumption of energy during construction and operation. This analysis has been prepared within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.).

CEQA Guidelines, Appendix F, Energy Conservation, describes the framework within which energy conservation should be analyzed. The goal of conserving energy implies the wise and efficient use of energy through decreasing overall per capita energy consumption, decreasing reliance on fossil fuels (such as coal, natural gas and oil), and increasing reliance on renewable energy sources. This analysis considers energy impacts to include:

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction and operation.
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.

1.2 Site Location

The project site is located at the northeast corner of Archibald Avenue and 7th Street, in the City of Rancho Cucamonga, California. The project site is bounded by Acacia Street to the north, 7th Street to the south, existing industrial land uses to the east, and Archibald Ave to the west. The Cucamonga Valley Water District operates a public utilities/well site at the northeast corner of Archibald Avenue and Acacia Street, adjacent to the site.

The project location map is provided in Exhibit A.

1.3 Project Description

The project consists of constructing and operating four (4) warehouse and light industrial use buildings, totaling approximately 240,060 square feet.

The site plan used for this analysis, provided by GAA Architects., is illustrated in Exhibit B.

Table 1
Land Use Summary

Land Use	Quantity	Metric ¹
General Light Industrial	240,0600	Square Feet
Parking Lot Area	336,450	Square Feet

Construction of the project was originally estimated to begin in the year 2018 and last approximately 14 months. However, due to delays in the application process, the construction timing has been pushed back. For purposes of this analysis, and to be consistent with the methodology used in the Scheu Business Center Air Quality and Greenhouse Gas Analysis, construction timing and energy usage is based on 2018 start date. This results in a worst case assessment of energy usage, as fuel consumption and energy standards continue to become more stringent as time goes on.

Construction activities are expected to consist of site preparation, grading, building construction, paving, and architectural coating. The project requires the import of approximately 33,500 cubic yards of earthwork material.

1.4 Utility Providers

The project will be served by the following utility providers, as shown in Table 2.

**Table 2
Utility Providers**

Utility	Provider
Electricity	Southern California Edison
Natural Gas	Southern California Gas Company
Water	Cucamonga Valley Water District

1.5 Summary of CEQA Impacts

Table 3 provides a summary of the project’s impact to Energy resources, per the impact criteria described in CEQA Guidelines, Appendix G.

**Table 3
CEQA Energy Impact Criteria**

Energy Impact Criteria	Potentially Significant	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			X	

1.6 Recommended Mitigation Measures

The project is expected to result in less than less than significant energy impacts and no mitigation is required.

1.7 Recommended Project Design Features

The following recommended project design features include standard rules and requirements, best practices and recognized design features for reducing energy demand. Design features are assumed to be part of the conditions of approval for the project.

The following energy design features are recommended:

Construction Design Features:

- DF-1.** All construction equipment shall be maintained in proper tune.
- DF-2.** All construction vehicles shall be prohibited from excessive idling. Excessive idling is defined as five (5) minutes or longer.
- DF-3.** Carpooling shall be encouraged for construction workers
- DF-4.** Establish an electricity supply to the construction site and use electric powered equipment instead of diesel-powered equipment or generators, where feasible.

Operational Design Features:

- DF-5.** Comply with the mandatory requirements of California's Building Energy Efficiency Standards and Green Building (CALGreen) Standards, including mandatory installation of electric vehicle service equipment (EVSE).
- DF-6.** Implement water conservation strategies, including low flow fixtures and toilets, water efficient irrigation systems, drought tolerant/native landscaping, and reduce the amount of turf.
- DF-7.** Use electric landscaping equipment, such as lawn mowers and leaf blowers, wherever possible.

2.0 Energy Setting

2.1 Background Information

There are many different types and sources of energy produced and consumed in the United States. The U.S. Energy Information Administration (EIA) categorizes energy by primary and secondary sources, renewable and nonrenewable sources, and by the different types of fossil fuels.¹

Primary energy is captured directly from natural resources and includes fossil fuels, nuclear energy, and renewable sources of energy. Electricity is a secondary energy source that results from the transformation of primary energy sources.

A renewable energy source includes solar energy from the sun, geothermal energy from heat inside the earth, wind energy, biomass from plants, and hydropower from flowing water. Nonrenewable energy sources include petroleum products, hydrocarbon gas liquids, natural gas, coal, and nuclear energy.

Fossil fuels are non-renewable resources formed by organic matter over millions of years and include oil, coal and natural gas.

The U.S. EIA defines the five energy consuming sectors within the U.S. as follows:

- **Industrial Sector:** Includes facilities and equipment used for manufacturing, agriculture, mining, and construction.
- **Transportation Sector:** Includes vehicles that transport people or goods, such as cars, trucks, buses, motorcycles, trains, aircraft, boats, barges, and ships.
- **Residential Sector:** Includes homes and apartments.
- **Commercial Sector:** Includes offices, malls, stores, schools, hospitals, hotels, warehouses, restaurants, and places of worship and public assembly.
- **Electric Power Sector:** Consumes primary energy to generate most of the electricity the other four sectors consume.

Energy sources are measured in different physical units: liquid fuels are measured in barrels or gallons, natural gas in cubic feet, coal in short tons, and electricity in kilowatts and kilowatt-hours. In the United States, British thermal units (Btu), a measure of heat energy, is commonly used for comparing different types of energy to each other.

¹ U.S. Energy Information Administration (EIA). https://www.eia.gov/energyexplained/?page=us_energy_home#tab1

**Table 4
Btu Conversion Factors¹**

Energy source/fuel	Btu Conversion Factor²
Electricity	1 kilowatthour = 3,412 Btu
Natural gas	1 cubic foot = 1,037 Btu 1 therm = 100,000 Btu
Motor gasoline	1 gallon = 120,429 Btu ³
Diesel fuel	1 gallon = 137,381 Btu
Heating oil	1 gallon = 138,500 Btu
Propane	1 gallon = 91,333 Btu
Wood	1 cord = 20,000,000 Btu ⁴

¹ Source: https://www.eia.gov/energyexplained/index.php?page=about_btu.

² Weighted averages for energy sources/fuels by end-use sectors, 2015. Conversion are approximate.

³ Gasoline sold at retail in the United States, with about 10% ethanol content by volume.

⁴ A cord of wood is a volume unit and does not take wood density or moisture content into account. Wood heat content varies significantly with moisture content.

2.2 U.S. Energy Statistics

U.S. energy production and consumption data provide context for the project within the broader domestic energy setting. Calendar year 2017 is the most current data published by the U.S. EIA.

Table 5 shows the total U.S. primary energy consumption for Year 2017.

**Table 5
U.S. Primary Energy Consumption (Year 2017)¹**

Primary Energy Source	Energy Consumption	
	Btu (in Quadrillions)	Percentage
Total Fossil Fuel Consumption	78.04	79.9%
Petroleum (Excluding Biofuels)	36.17	37.0%
Natural Gas (Excluding Supplemental Gaseous Fuels)	28.03	28.7%
Coal	13.84	14.2%
Total Renewable Energy Consumption	11.17	11.4%
Biomass Energy	5.08	5.2%
Hydroelectric Power	2.77	2.8%
Wind Energy	2.34	2.4%
Solar Energy	0.77	0.8%
Geothermal Energy	0.21	0.2%
Nuclear Electric Power	8.42	8.6%
Total Primary Energy Consumption	97.63	100%

¹ U.S EIA website. <https://www.eia.gov/totalenergy/data/browser/index.php?tbl=T01.03#/?f=A>

Fossil fuels are the main source of energy produced and consumed in the U.S., and in year 2017, the U.S. produced almost 90 percent of the total energy it consumed domestically; with crude oil imports primarily making up the difference.² Also notable in year 2017, is that renewable energy production, mainly attributed to wind and solar, reached new record highs.²

Electricity is produced from many different energy sources and technologies. In 2017, the generation of electric power consumed approximately 38.1 percent of all energy domestically.³

Table 6 shows the amount of electricity generated by primary energy sources in the U.S. for year 2017.

Table 6
U.S. Electricity Generation, by Source (Year 2017)¹

Energy Source	Electricity Generation	
	Thousand Megawatt-hours	Percentage
Natural Gas	1,308,884	32.3%
Coal	1,205,835	29.7%
Petroleum	21,390	0.5%
Nuclear	804,950	19.8%
Hydroelectric (Conventional, less pumped storage)	293,838	7.2%
Solar (Utility-scale and small-scale generation)	77,276	1.9%
Renewable Sources (Excluding hydro and solar)	332,991	8.2%
Other	13,094	0.3%
Total Electricity Generation (2017)	4,058,258	100%

¹ U.S. EIA website. <https://www.eia.gov/totalenergy/data/browser/index.php?tbl=T07.02A#/?f=A>

2.3 California Energy Statistics

California produced about 2,431 trillion Btu of total energy in year 2016 and consumed over 7,830 trillion Btu, making it the second highest consumer of energy in the country, behind only Texas. However, due in part to its mild climate and energy efficiency programs, California ranks 48th in per capita energy consumption.⁴ Overall, California is a net importer of energy, and consumes more energy than it produces. Energy is imported into California in various forms including natural gas, crude oil and electricity.

² U.S. Energy Information Administration (EIA). https://www.eia.gov/energyexplained/index.php?page=us_energy_home

³ U.S. Energy Information Administration (EIA). https://www.eia.gov/energyexplained/?page=us_energy_home#tab1

⁴ U.S. Energy Information Administration (EIA). <https://www.eia.gov/state/?sid=CA#tabs-1>

Natural Gas is primarily imported via pipelines from Canada, the Rocky Mountains, New Mexico and Texas. Natural gas is the primary source of electricity generated in California.⁵

Crude oil is primarily imported from Alaska, Mexico, Canada, South America and the Middle East. Crude oil is refined at one of the seventeen (17) in-state oil refineries that meet California’s strict clean fuel regulations. Refined petroleum products, including gasoline, are also imported from numerous other domestic and foreign sources that are equipped to meet California’s fuel standards.⁵

Electricity is imported via transmission lines from the Northwest (Alberta, British Columbia, Idaho, Montana, Oregon, South Dakota, Washington, and Wyoming) and Southwest (Arizona, Baja California, Colorado, Mexico, Nevada, New Mexico, Texas, and Utah) regions of the U.S.⁵

Table 7 shows the State of California’s energy consumption estimates for year 2016.

**Table 7
California Energy Consumption by Source (Year 2016)¹**

Primary Energy Source	Energy Consumption	
	Btu (in Trillions)	Percentage
Total Fossil Fuel Consumption	5,756.7	73.5%
Coal	32.1	0.4%
Natural Gas	2,248.4	28.7%
Motor Gasoline excl. Ethanol	1,714.4	21.9%
Distillate Fuel Oil	560.4	7.2%
Jet Fuel	672.6	8.6%
Hydrocarbon Gas Liquids (HGL)	57.7	0.7%
Residual Fuel	145.8	1.9%
Other Petroleum	325.3	4.2%
Total Renewable Energy Consumption	1,046.7	13.4%
Hydroelectric Power	267.2	3.4%
Biomass	279.8	3.6%
Solar	267.1	3.4%
Wind	124.7	1.6%
Geothermal	107.9	1.4%
Nuclear Electric Power	197.8	2.5%
Net Electricity Imports and Interstate Flow	829.0	10.6%
Total	7,830.2	100.0%

¹ U.S CIA website. https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_sum/html/sum_btu_totcb.html&sid=CA

⁵ California Energy Commission. <https://www.energy.ca.gov/almanac/>

Table 8 shows the sources and fuel types for California’s system-wide generation of electricity for year 2017.

Table 8
California Electric Generation in Gigawatt Hours (Year 2017)¹

Fuel Type	California In-State Generation (GWh) ²	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	California Energy Mix (GWh)	California Power Mix
Coal	302	0.15%	409	11,364	12,075	4.13%
Large Hydro	36,920	17.89%	4,531	1,536	42,987	14.72%
Natural Gas	89,564	43.40%	46	8,705	98,315	33.67%
Nuclear	17,925	8.69%	0	8,594	26,519	9.08%
Oil	33	0.02%	0	0	33	0.01%
Other (Petroleum Coke/Waste Heat)	409	0.20%	0	0	409	0.14%
Renewables	61,183	29.65%	12,502	10,999	84,684	29.00%
Biomass	5,827	2.82%	1,015	32	6,874	2.35%
Geothermal	11,745	5.69%	23	937	12,705	4.35%
Small Hydro	6,413	3.11%	1,449	5	7,867	2.70%
Solar	24,331	11.79%	0	5,465	29,796	10.20%
Wind	12,867	6.24%	10,015	4,560	27,442	9.40%
Unspecified Sources of Power	N/A	N/A	22,385	4,632	27,017	9.25%
Total	206,336	100.00%	39,873	45,830	292,039	100.00%

¹ California Energy Commission. CEC-1304 Power Plant Owners Reporting Form and SB 1305 Reporting Regulations. https://www.energy.ca.gov/almanac/electricity_data/total_system_power.html

² In-state generation is reported generation from units one megawatt and larger.

2.4 Southern California Edison

Southern California Edison (SCE) provides electricity service to approximately 180 cities in 15 counties in central, coastal and Southern California; including the project site.⁶ According to the California Energy Commission (CEC), SCE consumed approximately 84,291.608168 GWh of electricity in 2017; which is approximately 28.8% of the State’s total electricity usage.⁷

Table 9 shows SCE’s electricity generation by energy source for year 2017.

⁶ Southern California Edison. <https://www.sce.com/about-us>

⁷ California Energy Commission. <http://www.ecdms.energy.ca.gov/elecbyutil.aspx>

**Table 9
Southern California Edison Electricity Generation (Year 2017)¹**

Energy Resource	SCE Electricity Generation	
	GWh ²	Power Mix
Eligible Renewable	26,973.31	32%
Biomass & Biowaste	-	0%
Geothermal	6,743.33	8%
Eligible Hydroelectric	8.43	0%
Solar	10,957.91	13%
Wind	8,429.16	10%
Coal	-	0%
Large Hydroelectric	6,743.33	8%
Natural Gas	16,858.32	20%
Nuclear	5,057.50	6%
Other	-	0%
Unspecified Sources of Power ³	28,659.15	34%
Total	84,291.61	100%

¹ Source: California Energy Commission 2017 SCE Power Content Label.

https://www.energy.ca.gov/pcl/labels/2017_labels/SCE_2017_PCL.pdf

California Energy Commission Electricity Consumption by Entity, SCE, Year 2017, All Sectors

<http://www.ecdms.energy.ca.gov/elecbyutil.aspx>

² GWh generated by energy resources estimated based on total energy consumption and power mix.

³ "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.

2.5 Southern California Gas Company

The Southern California Gas Company (SCG) is the nation's largest natural gas distribution utility, providing service to 21.8 million customers in 220 cities and 12 counties from San Luis Obispo to the Mexican border; including service to the project site. SCG owns and operates 3,526 miles of transmission pipelines, 49,715 miles of distribution pipelines and 48,888 miles of service lines. SCG also operates eleven transmission compressor stations

and four underground storage facilities with a combined capacity to store 134.1 billion cubic feet of natural gas.⁸

Table 10 shows SCG’s natural gas usage by sector for year 2017.

Table 10
Southern California Gas Company
Natural Gas Consumption, by Sector (Year 2017)¹

Sector	SCG Natural Gas Usage – Year 2017	
	(Millions of Therms) ²	(Trillions of Btu) ²
Agriculture & Water Pump	69.433349	6.9433349
Commercial Building	895.861774	89.5861774
Commercial Other	72.182937	7.2182937
Industry	1,716.567095	171.6567095
Mining & Construction	229.745824	22.9745824
Residential	2,158.052907	215.8052907
Total Usage	5,141.843886	514.1843886

¹ Source: California Energy Commission. <http://www.ecdms.energy.ca.gov/gasbyutil.aspx>

² 1 therm = 100,000 Btu

⁸ Southern California Gas Company. <https://www.socalgas.com/about-us/company-profile>

3.0 Regulatory Setting

Energy is controlled through various federal and state laws and regulations. This section provides a brief overview of key energy legislation and policies at the federal and state levels over the past 50 years.

3.1 Federal Regulations

Table 11
U.S. Energy Policy Legislative Acts

Date	Legislative Act and Description
1975	<p>Energy Policy and Conservation Act</p> <p>Established the Strategic Petroleum Reserve and mandated vehicle fuel economy standards</p>
1978	<p>National Energy Act</p> <p>Established tax incentives and disincentives, alternative fuel programs, energy efficiency initiatives, and other regulatory and market-based initiatives in response to the oil crisis earlier in the decade. Comprised of 5 statutes:</p> <p>Energy Tax Act</p> <p style="padding-left: 20px;">Created the Gas Guzzler tax for vehicles with mileage below specified levels and offered income tax credit for citizens using solar, wind, or geothermal energy sources at home</p> <p>Natural Gas Policy Act</p> <p style="padding-left: 20px;">Set up wellhead pricing maximums, rules for allocating costs of high-cost gas to industrial consumers, and provided authority to high priority users in times of supply emergency; gave FERC jurisdiction over almost all natural gas production</p> <p>National Energy Conservation Policy Act</p> <p style="padding-left: 20px;">Replaced Minimum Energy Performance Standards (MEPS) set forth in the EPCA of 1975, changed energy standards from voluntary to mandatory, Required federal agencies to do energy audits of their operations, Provided loans for families to purchase solar heating or cooling systems, and Established grants for schools, hospitals, local governments, and public housing authorities willing to use energy conservation measures</p> <p>Power Plant and Industrial Fuel Use Act</p> <p style="padding-left: 20px;">Restricted construction of power plants fueled primarily by oil or natural gas and instead encouraged power plants fueled by coal, nuclear, and alternative fuels and restricted use of oil and natural gas in industrial boilers. Repealed in 1987 with the Natural Gas Utilization Act</p> <p>Public Utility Regulatory Policies Act</p> <p style="padding-left: 20px;">Promoted use of renewable energy, encouraged cogeneration plants.</p>
1980	<p>Energy Security Act</p> <p>Title I: US Synthetic Fuels Corporation Act</p> <p style="padding-left: 20px;">Established the Synthetic Fuels Corporation (which only existed until 1985) for the purpose of partnering with industry for the creation of a market for domestically-produced synthetic liquid fuels; moved research and development for synthetic fuels away from the Department of Energy and into this public-private partnership with the hopes of speeding up results.</p> <p>Title II: Biomass Energy and Alcohol Fuels Act</p> <p style="padding-left: 20px;">Provided loan guarantees for small-scale biomass energy projects; established the Office of Alcohol Fuels, the Office of Energy from Municipal Waste.</p>

**Table 11
U.S. Energy Policy Legislative Acts**

Date	Legislative Act and Description
	<p>Title III: Energy Targets Required the submission of energy targets for net imports.</p> <p>Title IV: Renewable Initiatives Established incentives for the use of renewable energy resources</p> <p>Title V: Solar Energy and Energy Conservation Encouraged energy conservation and the use of solar energy, reducing dependence on foreign energy supplies.</p> <p>Title VI: Geothermal Energy Act Authorized loans from the Geothermal Resources Development Fund for exploration and determination of economic viability of a geothermal reservoir, cancels loan if reservoir is deemed unacceptable for development.</p> <p>Title VII: Acid Precipitation Program Established a task force to study the causes and risks of acid precipitation</p> <p>Title VIII: Strategic Petroleum Reserve Established that 500,000,000 barrels of crude oil must be in storage before any can be sold and calls for the reserve to increase its supply 100,000 barrels per day until the storage capacity is reached</p>
1992	<p>Energy Policy Act Amended the National Energy Conservation Policy Act of 1978. Created framework for wholesale electricity generation. Provided financial incentives to users/developers of clean-fuel vehicles; repealed alternative minimum tax for some producers. Intended to expand the use of natural gas.</p>
2002	<p>Farm Security and Rural Investment Act (Farm Bill) Included \$405 million in mandatory funding over the following 5 years for the procurement of bio-based products, grants and loans for renewable energy and energy efficiency projects, research and development and the bioenergy program. Included, for reasons of national energy and security, rural economic development, and environmental sustainability in light of climate change impacts.</p>
2005	<p>Energy Policy Act Offers tax benefits to individuals who increase energy efficiency in existing homes, buy or lease hybrid/alternative vehicles, required all public utilities to offer net metering on request, increased required amounts of renewable fuel in gasoline sold in the US, and encourages more domestic energy production</p>
2007	<p>Energy Independence and Security Act Increased CAFE standards to 35 mpg (fleet-wide for passenger autos and light trucks) by 2020; instituted new conservation measures for federal fleet vehicles; authorized increased taxpayer-funded biofuel production (36 billion gallons by 2022 - 21 billion of which must be derived from non-cornstarch products). Revised standards for appliances and lighting; all federal buildings must use Energy Star lighting products; training for green jobs; loans for small business energy efficiency improvements.</p>
2008	<p>Food, Conservation, and Energy Act (Farm Bill) Includes provisions for loan guarantees for bio-refineries, payments to support expansion of advanced biofuels, expands the existing Rural Energy for America Program, provides grant monies for biofuel and bio-based product research and development</p>

Table 11
U.S. Energy Policy Legislative Acts

Date	Legislative Act and Description
2009	The American Recovery and Reinvestment Act of 2009 \$800 billion economic stimulus package aimed at job creation and the promotion of investment and consumer spending; included \$4.3 billion in tax credits to homeowners for energy efficiency improvements in 2009-2010, \$300 million for reducing diesel engine emissions, \$21.5 billion for energy infrastructure, \$27.2 billion for energy efficiency and renewable energy research and investment, \$2 billion in research for DOE, \$600 million in research for NOAA
2015	The Clean Power Plan The first comprehensive plan to reduce carbon emissions from power plants by 32% in 2030, compared to 2005 levels. Currently in the process of being repealed by the Trump administration.

¹ Source: Robinson, Brandi. Penn State University. <https://www.e-education.psu.edu/geog432/node/116>

3.2 State of California Regulations

California has a long standing history of support for energy conservation and renewable energy.

Table 10 provides a summary of some of the key legislative acts, policies and regulations in the State of California for encouraging energy conservation and renewable energy.

Table 12
California Energy Policy Legislative Acts and Regulations

Date	Legislative Act and Description
1974	Warren-Alquist Act Established the California Energy Commission (CEC) as the state’s primary energy policy and planning agency. Responsible for preparing State Energy Plan. CEC’s goals are to reduce energy costs and environmental impacts of energy use, while ensuring a safe, resilient, and reliable supply of energy.
1978	Title 24 of the California Code of Regulations Establishes the Renewable Portfolio Standard (RPS) program, requiring 20% of retail sales from renewable energy by 2017.
2002	Senate Bill 1078 Required 20% of retail sales from renewable energy by 2017.
2003	Energy Action Plan I Accelerated the 20% renewable deadline to 2010.
2005	Energy Action Plan II Recommended further goal of 33% renewable by 2020.
2006	Senate Bill 107 Codified the accelerated 20% renewable by 2010 deadline into law.

Table 12
California Energy Policy Legislative Acts and Regulations

Date	Legislative Act and Description
2008	Executive Order S-14-08 Signed by Gov. Schwarzenegger, requires 33% renewables by 2020.
2009	Executive Order S-21-09 Directs the California Air Resources Board, under its AB 32 authority, to adopt regulations by July 31, 2010, consistent with the 33% renewable energy target established in Executive Order S-14-08.
2011	Senate Bill X1-2 Signed by Gov. Edmund G. Brown, Jr., codifies 33% renewable by 2020 RPS
2015	Senate Bill 350 – Clean Energy and Pollution Reduction Act of 2015 Signed by Gov. Edmund G. Brown, Jr. codifies 50% by 2030 RPS
2018	Senate Bill 100 Signed by Gov. Edmund G. Brown, Jr. codifies 60% by 2030 & 100% by 2045 RPS

¹ Source: California Energy Commission. <https://www.energy.ca.gov/renewables/index.html>

4.0 Project Energy Consumption

4.1 Energy Consumption Methodology

The three (3) main types of energy expected to be consumed by the project include electricity, natural gas and petroleum products in the form of gasoline and diesel fuel. Energy usage for the proposed project is calculated based on the *Scheu Business Center Air Quality and Greenhouse Gas Analysis*, prepared by RK, April 26, 2019.

The California Emissions Estimator Model Version 2016.3.2 (CalEEMod) is used to calculate energy usage from project construction and operational activities.

The CalEEMod Annual Reports for the project are provided in Appendix A.

4.2 Electricity Consumption

The project will use electricity for many different operational activities including, but not limited to, building heating and cooling, lighting, appliances, electronics, mechanical equipment, electric vehicle charging, and parking lot lighting. Indirect electricity usage will also occur to supply, distribute, and treat water and wastewater. Electricity will be provided through Southern California Edison.

Temporary electricity usage for construction activities may include lighting, electric equipment and mobile office uses, however, CalEEMod does not calculate electricity usage during construction, which is expected to be short-term and relatively minor compared to the operational demand. Therefore, electricity usage during construction is not counted in this analysis.

Table 13 shows the project's estimated operational electricity consumption in kilowatt-hours per year (kWh/year) and millions of Btu per year.

**Table 13
Project Electricity Consumption**

Land Use/Activity	Electricity Consumption ¹	
	(kWhr/yr) ²	(MBtu/yr) ²
General Light Industrial	2,436,610	8,313.713
Parking Lot	117,757	401.787
Water Supply and Treatment	795,131	2,712.987
Electric Vehicle Service Equipment (EVSE) ³	169,170	577.208
Total	3,518,668	12,005.695

¹ Source: Briggs Road at Highway 74 Gas Station and Commercial Center Air Quality and GHG Impact Study, prepared by RK, August 2018.

² kWhr/yr = Kilowatt Hours per Year

MBtu/yr = Million British Thermal Units per Year

³ Water supply and treatment includes indirect electricity for supply, treatment and distribution of water and wastewater

⁴ EVSE electricity estimates based on U.S. Department of Energy Costs Associated with Non-Residential Electric Vehicle Supply Equipment, November 2015, Appendix C, Electricity Consumption Examples.

https://afdc.energy.gov/files/u/publication/evse_cost_report_2015.pdf

⁵ Assumes 15 charging spaces per CALGreen requirements, Section 5.106.5.3.3.

4.3 Natural Gas Consumption

The project will use natural gas for building heating and cooling, cooking and kitchen appliances and water heating. Natural gas is not expected to be used during construction in any significant quantities and is not included in the overall calculation of the project's natural gas consumption.

Table 14 shows the project's estimated operational natural gas consumption in millions of Btu per year.

**Table 14
Project Natural Gas Consumption**

Land Use/Activity	Natural Gas Consumption ¹ (MBtu/yr) ²
General Light Industrial	7,799.550
Total	7,799.550

¹ Source: Briggs Road at Highway 74 Gas Station and Commercial Center Air Quality and GHG Impact Study, prepared by RK, August 2018.

² MBtu/yr = Millions of British Thermal Units per Year

4.4 Petroleum Consumption

The project's energy consumption from petroleum products is primarily associated with transportation related activities. This includes gasoline and diesel fuel usage for auto and truck trips during construction and operation and off-road equipment usage during construction.

4.4.1 Construction

Construction of the project is estimated last approximately 14 months and consist of site preparation, grading, building construction, paving, and architectural coating phases. Construction activities will consume energy in the form of motor vehicle fuel (gasoline and diesel) for off-road construction equipment and on-road vehicle trips. Vehicle trips include workers and vendors traveling to and from the job-site, as well as from truck trips associated with the hauling of approximately 33,500 cubic yards of soil to be imported during site grading.

Table 15 shows the project's energy consumption for all off-road equipment during construction. For purposes of this analysis, all off-road equipment is assumed to run on diesel fuel. Table 16 shows the project's energy consumption from on-road vehicle trips during construction.

**TABLE 15
Construction Off-Road Equipment Energy Consumption**

Phase ¹	Phase Duration (Days) ¹	Equipment ¹	Amount ¹	Hours/Day ¹	Horsepower (HP) ¹	Load Factor ¹	HP-hrs ²	Fuel Consumption Rate ³ (hp-hr/gal)	Diesel Fuel Consumption (gal.)	Diesel Fuel Consumption by Phase (gal.)	MBtu ⁴																																																																																																																										
Site Preparation	10	Rubber Tired Dozers	3	8	247	0.40	23,712.0	18.5	1,281.7	1,902.5	261.371																																																																																																																										
		Tractors/Loaders/Backhoes	4	8	97	0.37	11,484.8		620.8			Grading	30	Excavators	2	8	158	0.38	28,819.2	1,557.8	6,047.1	830.756	Graders	1	8	187	0.41	18,400.8	994.6	Rubber Tired Dozers	1	8	247	0.40	23,712.0	1,281.7	Scrapers	2	8	367	0.48	84,556.8	1,281.7	Tractors/Loaders/Backhoes	2	8	97	0.37	17,227.2	931.2	Building Construction	240	Cranes	2	7	231	0.29	225,086.4	12,166.8	49,792.1	6,840.487	Forklifts	4	8	89	0.20	136,704.0	7,389.4	Generator Sets	2	8	84	0.74	238,694.4	12,902.4	Tractors/Loaders/Backhoes	4	7	97	0.37	241,180.8	13,036.8	Welders	2	8	46	0.45	79,488.0	4,296.6	Paving	20	Pavers	2	8	130	0.42	17,472.0	944.4	2,292.2	314.910	Paving Equipment	2	8	132	0.36	15,206.4	822.0	Rollers	2	8	80	0.38	9,728.0	525.8	Architectural Coating	20	Air Compressors	1	6	78	0.48	4,492.8	242.9	242.9	33.364	Total Energy Requirements							
Grading	30	Excavators	2	8	158	0.38	28,819.2		1,557.8	6,047.1	830.756																																																																																																																										
		Graders	1	8	187	0.41	18,400.8		994.6																																																																																																																												
		Rubber Tired Dozers	1	8	247	0.40	23,712.0		1,281.7																																																																																																																												
		Scrapers	2	8	367	0.48	84,556.8		1,281.7																																																																																																																												
		Tractors/Loaders/Backhoes	2	8	97	0.37	17,227.2		931.2																																																																																																																												
Building Construction	240	Cranes	2	7	231	0.29	225,086.4		12,166.8	49,792.1	6,840.487																																																																																																																										
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		Generator Sets	2	8	84	0.74	238,694.4		12,902.4																																																																																																																												
		Tractors/Loaders/Backhoes	4	7	97	0.37	241,180.8		13,036.8																																																																																																																												
		Welders	2	8	46	0.45	79,488.0		4,296.6																																																																																																																												
Paving	20	Pavers	2	8	130	0.42	17,472.0	944.4	2,292.2	314.910																																																																																																																											
		Paving Equipment	2	8	132	0.36	15,206.4	822.0																																																																																																																													
		Rollers	2	8	80	0.38	9,728.0	525.8																																																																																																																													
Architectural Coating	20	Air Compressors	1	6	78	0.48	4,492.8	242.9	242.9	33.364																																																																																																																											
Total Energy Requirements									60,276.8	8,280.887																																																																																																																											

¹ Source: Scheu Business Center Air Quality and GHG Impact Study. (CalEEMod v.2016.3.2)

² HP-hrs = Horsepower Hours.

³ Source: Carl Moyer Program Guidelines. 2017 Revisions. Table D-21. <https://www.arb.ca.gov/msprog/moyer/guidelines/current.htm>

⁴ Mbtu = Millions of Btu; assuming 1 gallon of diesel fuel = 137,381 Btu.

**Table 16
Construction On-Road Trips Energy Consumption**

Construction Phase ¹	Phase Duration (Days) ¹	Trips/Day ¹	Trip Length ¹	VMT/Phase	Vehicle Class ¹	Vehicle Mix ¹	Average Fuel Economy (MPG) ²	Gasoline		Diesel		Total MBtu ³		
								Fuel Split ²	Fuel Consumption by Class (gal.)	Fuel Consumption by Phase (gal.)	Fuel Split ²		Fuel Consumption by class	Fuel Consumption by Phase
Worker Trips														
Site Preparation	10	18	14.7	2,646	LDA LDT1 LDT2	0.50 0.25 0.25	28.57 23.26 20.73	0.9926 0.9991 0.9986	45.96 28.41 31.87	106.24	0.0074 0.0009 0.0014	0.34 0.03 0.04	0.41	12.85
Grading	30	20	14.7	8,820	LDA LDT1 LDT2	0.50 0.25 0.25	28.57 23.26 20.73	0.9926 0.9991 0.9986	153.22 94.71 106.22	354.15	0.0074 0.0009 0.0014	1.14 0.09 0.15	1.38	42.84
Building Construction	240	242	14.7	853,776	LDA LDT1 LDT2	0.50 0.25 0.25	28.57 23.26 20.73	0.9926 0.9991 0.9986	14,831.26 9,168.18 10,281.97	34,281.41	0.0074 0.0009 0.0014	110.57 8.26 14.41	133.24	4,146.78
Paving	20	15	14.7	4,410	LDA LDT1 LDT2	0.50 0.25 0.25	28.57 23.26 20.73	0.9926 0.9991 0.9986	76.61 47.36 53.11	177.07	0.0074 0.0009 0.0014	0.57 0.04 0.07	0.69	21.42
Architectural Coating	20	48	14.7	14,112	LDA LDT1 LDT2	0.50 0.25 0.25	28.57 23.26 20.73	0.9926 0.9991 0.9986	245.14 151.54 169.95	566.63	0.0074 0.0009 0.0014	1.83 0.14 0.24	2.20	68.54
Sub-Total Worker Trips Energy Consumption								Gasoline (gal.)		35,485.51	Diesel (gal.)		137.92	4,292.43
Vendor Trips														
Building Construction	240	94	6.9	155,664	MHDT HHDT	0.50 0.50	8.50 5.85	0.1403 0.0097	1,284.69 129.05	1,413.74	0.8597 0.9903	7,872.02 13,175.56	21,047.58	3,061.79
Hauling Trips														
Grading	30	4,188.00	20.0	2,512,800	HHDT	1.00	5.85	0.0097	4,166.52	4,166.52	0.9903	425,371.94	425,371.94	58,939.79
Total On-Road Construction Trips Energy Usage								Gasoline (gal.)		41,065.77	Diesel (gal.)		446,557.44	66,294.02

¹ Source: Scheu Business Center Air Quality and GHG Impact Study. (CalEEMod v.2016.3.2)

² Source: EMFAC2014 Web Database. <https://www.arb.ca.gov/emfac/2014/>. (See Appendix B for more details.)

³ Mbtu = Millions of Btu; assuming 1 gallon of gasoline fuel = 120,429 Btu and 1 gallon of diesel fuel = 137,381 Btu

4.4.2 Operation

The project is expected to consume energy from the generation of operational auto and truck trips based on the land use mix described in the Briggs Road at Highway 74 Traffic Impact Study and the Briggs Road at Highway 74 Air Quality and Greenhouse Gas Analysis. Vehicle trips are associated with workers, customers and vendors/non-workers (i.e. delivery, service and maintenance vehicles, etc.) traveling to and from the site.

Table 17 shows the project’s energy consumption for all operational trips generated by the project on an annual basis.

**Table 17
Operational Trips Energy Consumption**

Vehicle Class ¹	Vehicle Mix ¹	Average Fuel Economy (MPG) ²	Annual VMT ¹	Gasoline		Diesel		MBtu/yr ³
				Fuel Split ²	Fuel Consumption (gal./yr)	Fuel Split ²	Fuel Consumption (gal./yr)	
LDA	54.17%	28.57	4,069,972	0.9926	76,603.10	0.0074	571.09	9,303.69
LDT1	3.90%	23.26		0.9991	6,815.70	0.0009	6.14	821.65
LDT2	17.86%	20.73		0.9986	35,019.81	0.0014	49.10	4,224.15
MDV	12.68%	15.42		0.9875	33,057.99	0.0125	418.46	4,038.63
LHD1	1.97%	14.08		0.6650	3,794.91	0.3350	1,911.72	719.65
LHD2	0.57%	14.35		0.5100	820.29	0.4900	788.13	207.06
MHD	1.71%	8.50		0.1403	1,146.74	0.8597	7,026.72	1,103.44
HHD	6.01%	5.85		0.0097	405.36	0.9903	41,383.86	5,734.17
OBUS	0.13%	7.25		0.4732	352.24	0.5268	392.14	96.29
UBUS	0.17%	4.86		0.3269	469.50	0.6731	966.72	189.35
MCY	0.62%	35.36		1.0000	718.69	0.0000	0.00	86.55
SBUS	0.08%	8.10		0.2133	88.21	0.7867	325.32	55.32
MH	0.12%	7.88		0.8345	501.27	0.1655	99.41	74.02
Total Operational Energy Usage From Transportation				Gasoline	159,793.81	Diesel	53,938.81	26,653.98

¹ Source: Scheu Business Center Air Quality and GHG Impact Study. (CalEEMod v.2016.3.2)

² Source: EMFAC2014 Web Database. <https://www.arb.ca.gov/emfac/2014/>. (See Appendix B for more details.)

³ MBtu/yr = Millions of Btu per year; assuming 1 gallon of gasoline fuel = 120,429 Btu and 1 gallon of diesel fuel = 137,381 Btu

4.5 Total Project Energy Consumption

The project's total energy consumption is calculated in MBtu and shown in Table 18. Total project energy consumption includes electricity, natural gas and petroleum usage during construction and operation.

Table 18
Total Project Energy Consumption¹

Activity	Energy Consumption (MBtu/yr)²
Construction³	74,574.90
Off-Road Equipment	8,280.89
On-Road Vehicle Trips	66,294.02
Operational	46,459.22
Electricity	12,005.70
Natural Gas	7,799.55
Petroleum	26,653.98

¹ See Tables 13-17 for more details.

² MBtu/yr = Millions of Btu per year

³ Assumes all construction activity will occur within one year time period.

5.0 Energy Impacts

5.1 Energy Impact Criteria

This analysis has been prepared within the context of the CEQA Guidelines, Appendix F, Energy Conservation, and Appendix G, Environmental Checklist Form. According to CEQA, the goal of conserving energy implies the wise and efficient use of energy through decreasing overall per capita energy consumption, decreasing reliance on fossil fuels (such as coal, natural gas and oil), and increasing reliance on renewable energy sources.

A significant environmental impact would result if the project would;

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

5.2 Energy Impact – 1

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

The project's impact is considered less than significant as the project will be required to comply with the mandatory requirements of California's Building Energy Efficiency Standards (Title 24, Part 6) and Green Building Standards (CALGreen, Title 24, Part 11). California's building energy efficiency standards are some of the strictest in the nation and the project's compliance with California's building code will ensure that wasteful, inefficient or unnecessary consumption of energy is minimized. The building standards code is designed to reduce the amount of energy needed to heat or cool a building, reduce energy usage for lighting and appliances and promote usage of energy from renewable sources.

The following recommended project design features are provided to help ensure that wasteful, inefficient or unnecessary consumption of energy is minimized.

Construction Design Features:

- DF-1.** All construction equipment shall be maintained in proper tune.
- DF-2.** All construction vehicles shall be prohibited from excessive idling. Excessive idling is defined as five (5) minutes or longer.
- DF-3.** Carpooling shall be encouraged for construction workers
- DF-4.** Establish an electricity supply to the construction site and use electric powered equipment instead of diesel-powered equipment or generators, where feasible.

Operational Design Features:

- DF-5.** Comply with the mandatory requirements of California's Building Energy Efficiency Standards and Green Building (CALGreen) Standards, including mandatory installation of electric vehicle service equipment (EVSE).
- DF-6.** Implement water conservation strategies, including low flow fixtures and toilets, water efficient irrigation systems, drought tolerant/native landscaping, and reduce the amount of turf.
- DF-7.** Use electric landscaping equipment, such as lawn mowers and leaf blowers.

5.3 Energy Impact – 2

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

The project's impact is considered less than significant as the project will purchase electricity through Southern California Edison which is subject to the requirements of California Senate Bill 100 (SB 100). SB 100 is the most stringent and current energy legislation in California; requiring that renewable energy resources and zero-carbon

resources supply 100% of retail sales of electricity to California end-use customers and 100% of electricity procured to serve all state agencies by December 31, 2045.⁹

The project will further comply with the mandatory requirements of California's Green Building and Building Energy Efficiency standards that promote renewable energy and energy efficiency.

⁹ SB-100 California Renewables Portfolio Standard Program.
http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100

6.0 References

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Exhibits





Appendices

Appendix A

CalEEMod Annual Emissions Output

Scheu Business Center - San Bernardino-South Coast County, Annual

Scheu Business Center
San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	240.06	1000sqft	5.51	240,060.00	0
Parking Lot	336.45	1000sqft	7.72	336,449.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Scheu Business Center - San Bernardino-South Coast County, Annual

Project Characteristics -

Land Use - As per the site-plan

Grading - Net Import 33,500 CY.

Construction Phase - Construction phasing adjusted to meet Opening Year 2019 schedule.

Off-road Equipment - Construction equipment increased during building phase for shortened phase schedule.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Vehicle Trips - Weekday rate adjusted per Traffic Study and ITE 10th Edition.

Water And Wastewater - CalEEMod does not provide outdoor water usage for industrial buildings or parking lot. Outdoor water usage estimated to be additional 10% of indoor use.

Operational Off-Road Equipment - Industrial project assumes 1 forklift for each building suite/tenant on-site (10 total)

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation - Project will be required to comply with SCAQMD Rule 403 regarding fugitive dust control.

Scheu Business Center - San Bernardino-South Coast County, Annual

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	25
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	240.00
tblConstructionPhase	PhaseEndDate	7/17/2020	12/20/2019
tblConstructionPhase	PhaseEndDate	5/22/2020	10/25/2019
tblConstructionPhase	PhaseEndDate	3/29/2019	11/23/2018
tblConstructionPhase	PhaseEndDate	6/19/2020	11/22/2019
tblConstructionPhase	PhaseEndDate	2/15/2019	10/12/2018
tblConstructionPhase	PhaseStartDate	6/20/2020	11/23/2019
tblConstructionPhase	PhaseStartDate	3/30/2019	11/24/2018
tblConstructionPhase	PhaseStartDate	2/16/2019	10/13/2018
tblConstructionPhase	PhaseStartDate	5/23/2020	10/26/2019
tblConstructionPhase	PhaseStartDate	2/2/2019	10/1/2018
tblGrading	MaterialImported	0.00	33,500.00
tblLandUse	LandUseSquareFeet	336,450.00	336,449.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	10.00
tblSequestration	NumberOfNewTrees	0.00	158.00
tblVehicleTrips	WD_TR	6.97	4.96
tblWater	OutdoorWaterUseRate	0.00	5,551,387.50

2.0 Emissions Summary

Scheu Business Center - San Bernardino-South Coast County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-7-2019	4-6-2019	1.6958	1.6958
2	4-7-2019	7-6-2019	1.7146	1.7146
3	7-7-2019	9-30-2019	1.6204	1.6204
		Highest	1.7146	1.7146

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0059	7.0000e-005	7.4300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0153
Energy	0.0421	0.3823	0.3212	2.2900e-003		0.0291	0.0291		0.0291	0.0291	0.0000	1,230.0894	1,230.0894	0.0416	0.0146	1,235.4745
Mobile	0.4341	3.3055	6.0975	0.0210	1.5498	0.0221	1.5720	0.4154	0.0209	0.4363	0.0000	1,938.4850	1,938.4850	0.1017	0.0000	1,941.0269
Offroad	0.2090	1.8661	1.5602	1.9900e-003		0.1446	0.1446		0.1330	0.1330	0.0000	179.3505	179.3505	0.0567	0.0000	180.7691
Waste						0.0000	0.0000		0.0000	0.0000	60.4243	0.0000	60.4243	3.5710	0.0000	149.6987
Water						0.0000	0.0000		0.0000	0.0000	17.6120	249.9655	267.5775	1.8192	0.0449	326.4231
Total	1.6910	5.5540	7.9863	0.0253	1.5498	0.1958	1.7456	0.4154	0.1830	0.5984	78.0363	3,597.9048	3,675.9411	5.5903	0.0594	3,833.4076

Scheu Business Center - San Bernardino-South Coast County, Annual

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	111.8640
Total	111.8640

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2018	10/12/2018	5	10	
2	Grading	Grading	10/13/2018	11/23/2018	5	30	
3	Building Construction	Building Construction	11/24/2018	10/25/2019	5	240	
4	Paving	Paving	10/26/2019	11/22/2019	5	20	
5	Architectural Coating	Architectural Coating	11/23/2019	12/20/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 7.72

Scheu Business Center - San Bernardino-South Coast County, Annual

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 360,090; Non-Residential Outdoor: 120,030; Striped Parking Area: 20,187 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	4	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Building Construction	Welders	2	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	4,188.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	242.00	94.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	48.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

- Use Soil Stabilizer
- Replace Ground Cover
- Water Exposed Area
- Water Unpaved Roads
- Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	0.0228	0.2410	0.1124	1.9000e-004	0.0903	0.0129	0.1032	0.0497	0.0119	0.0615	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152

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3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	4.5000e-004	4.3800e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9038	0.9038	3.0000e-005	0.0000	0.9046
Total	5.3000e-004	4.5000e-004	4.3800e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9038	0.9038	3.0000e-005	0.0000	0.9046

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0346	0.0000	0.0346	0.0190	0.0000	0.0190	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	0.0228	0.2410	0.1124	1.9000e-004	0.0346	0.0129	0.0474	0.0190	0.0119	0.0308	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152

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3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	4.5000e-004	4.3800e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9038	0.9038	3.0000e-005	0.0000	0.9046
Total	5.3000e-004	4.5000e-004	4.3800e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9038	0.9038	3.0000e-005	0.0000	0.9046

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1320	0.0000	0.1320	0.0542	0.0000	0.0542	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	0.0764	0.8928	0.5263	9.3000e-004	0.1320	0.0395	0.1715	0.0542	0.0364	0.0906	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341

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3.3 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0152	0.6057	0.0895	1.6600e-003	0.0360	2.0700e-003	0.0381	9.9000e-003	1.9800e-003	0.0119	0.0000	160.0021	160.0021	9.2000e-003	0.0000	160.2321
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.4900e-003	0.0146	3.0000e-005	3.2900e-003	2.0000e-005	3.3100e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	3.0127	3.0127	1.1000e-004	0.0000	3.0154
Total	0.0170	0.6072	0.1041	1.6900e-003	0.0393	2.0900e-003	0.0414	0.0108	2.0000e-003	0.0128	0.0000	163.0148	163.0148	9.3100e-003	0.0000	163.2475

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0505	0.0000	0.0505	0.0207	0.0000	0.0207	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	0.0764	0.8928	0.5263	9.3000e-004	0.0505	0.0395	0.0900	0.0207	0.0364	0.0571	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340

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3.3 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0152	0.6057	0.0895	1.6600e-003	0.0360	2.0700e-003	0.0381	9.9000e-003	1.9800e-003	0.0119	0.0000	160.0021	160.0021	9.2000e-003	0.0000	160.2321
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.4900e-003	0.0146	3.0000e-005	3.2900e-003	2.0000e-005	3.3100e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	3.0127	3.0127	1.1000e-004	0.0000	3.0154
Total	0.0170	0.6072	0.1041	1.6900e-003	0.0393	2.0900e-003	0.0414	0.0108	2.0000e-003	0.0128	0.0000	163.0148	163.0148	9.3100e-003	0.0000	163.2475

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0590	0.5074	0.3724	5.9000e-004		0.0315	0.0315		0.0298	0.0298	0.0000	51.7369	51.7369	0.0120	0.0000	52.0371
Total	0.0590	0.5074	0.3724	5.9000e-004		0.0315	0.0315		0.0298	0.0298	0.0000	51.7369	51.7369	0.0120	0.0000	52.0371

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3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0100e-003	0.1522	0.0346	3.3000e-004	7.7000e-003	1.0500e-003	8.7500e-003	2.2200e-003	1.0000e-003	3.2200e-003	0.0000	31.7348	31.7348	2.3100e-003	0.0000	31.7926
Worker	0.0186	0.0157	0.1533	3.5000e-004	0.0345	2.4000e-004	0.0347	9.1600e-003	2.3000e-004	9.3900e-003	0.0000	31.5929	31.5929	1.1500e-003	0.0000	31.6216
Total	0.0236	0.1678	0.1878	6.8000e-004	0.0422	1.2900e-003	0.0435	0.0114	1.2300e-003	0.0126	0.0000	63.3277	63.3277	3.4600e-003	0.0000	63.4143

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0590	0.5074	0.3724	5.9000e-004		0.0315	0.0315		0.0298	0.0298	0.0000	51.7369	51.7369	0.0120	0.0000	52.0370
Total	0.0590	0.5074	0.3724	5.9000e-004		0.0315	0.0315		0.0298	0.0298	0.0000	51.7369	51.7369	0.0120	0.0000	52.0370

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3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0100e-003	0.1522	0.0346	3.3000e-004	7.7000e-003	1.0500e-003	8.7500e-003	2.2200e-003	1.0000e-003	3.2200e-003	0.0000	31.7348	31.7348	2.3100e-003	0.0000	31.7926
Worker	0.0186	0.0157	0.1533	3.5000e-004	0.0345	2.4000e-004	0.0347	9.1600e-003	2.3000e-004	9.3900e-003	0.0000	31.5929	31.5929	1.1500e-003	0.0000	31.6216
Total	0.0236	0.1678	0.1878	6.8000e-004	0.0422	1.2900e-003	0.0435	0.0114	1.2300e-003	0.0126	0.0000	63.3277	63.3277	3.4600e-003	0.0000	63.4143

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4275	3.7675	2.9863	4.8500e-003		0.2231	0.2231		0.2109	0.2109	0.0000	421.5038	421.5038	0.0967	0.0000	423.9223
Total	0.4275	3.7675	2.9863	4.8500e-003		0.2231	0.2231		0.2109	0.2109	0.0000	421.5038	421.5038	0.0967	0.0000	423.9223

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3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0368	1.1746	0.2545	2.7000e-003	0.0634	7.2800e-003	0.0707	0.0183	6.9700e-003	0.0253	0.0000	258.5748	258.5748	0.0186	0.0000	259.0401
Worker	0.1389	0.1132	1.1155	2.7800e-003	0.2839	1.9500e-003	0.2859	0.0754	1.7900e-003	0.0772	0.0000	251.1887	251.1887	8.3000e-003	0.0000	251.3961
Total	0.1757	1.2879	1.3700	5.4800e-003	0.3473	9.2300e-003	0.3566	0.0937	8.7600e-003	0.1025	0.0000	509.7635	509.7635	0.0269	0.0000	510.4361

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4275	3.7675	2.9863	4.8500e-003		0.2231	0.2231		0.2109	0.2109	0.0000	421.5033	421.5033	0.0967	0.0000	423.9218
Total	0.4275	3.7675	2.9863	4.8500e-003		0.2231	0.2231		0.2109	0.2109	0.0000	421.5033	421.5033	0.0967	0.0000	423.9218

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3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0368	1.1746	0.2545	2.7000e-003	0.0634	7.2800e-003	0.0707	0.0183	6.9700e-003	0.0253	0.0000	258.5748	258.5748	0.0186	0.0000	259.0401
Worker	0.1389	0.1132	1.1155	2.7800e-003	0.2839	1.9500e-003	0.2859	0.0754	1.7900e-003	0.0772	0.0000	251.1887	251.1887	8.3000e-003	0.0000	251.3961
Total	0.1757	1.2879	1.3700	5.4800e-003	0.3473	9.2300e-003	0.3566	0.0937	8.7600e-003	0.1025	0.0000	509.7635	509.7635	0.0269	0.0000	510.4361

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0247	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371

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3.5 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	6.6000e-004	6.4600e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4551	1.4551	5.0000e-005	0.0000	1.4563
Total	8.0000e-004	6.6000e-004	6.4600e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4551	1.4551	5.0000e-005	0.0000	1.4563

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0247	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371

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3.5 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	6.6000e-004	6.4600e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4551	1.4551	5.0000e-005	0.0000	1.4563
Total	8.0000e-004	6.6000e-004	6.4600e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4551	1.4551	5.0000e-005	0.0000	1.4563

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1595					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6600e-003	0.0184	0.0184	3.0000e-005		1.2900e-003	1.2900e-003		1.2900e-003	1.2900e-003	0.0000	2.5533	2.5533	2.2000e-004	0.0000	2.5587
Total	1.1621	0.0184	0.0184	3.0000e-005		1.2900e-003	1.2900e-003		1.2900e-003	1.2900e-003	0.0000	2.5533	2.5533	2.2000e-004	0.0000	2.5587

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3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5700e-003	2.1000e-003	0.0207	5.0000e-005	5.2600e-003	4.0000e-005	5.3000e-003	1.4000e-003	3.0000e-005	1.4300e-003	0.0000	4.6563	4.6563	1.5000e-004	0.0000	4.6602
Total	2.5700e-003	2.1000e-003	0.0207	5.0000e-005	5.2600e-003	4.0000e-005	5.3000e-003	1.4000e-003	3.0000e-005	1.4300e-003	0.0000	4.6563	4.6563	1.5000e-004	0.0000	4.6602

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1595					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6600e-003	0.0184	0.0184	3.0000e-005		1.2900e-003	1.2900e-003		1.2900e-003	1.2900e-003	0.0000	2.5533	2.5533	2.2000e-004	0.0000	2.5586
Total	1.1621	0.0184	0.0184	3.0000e-005		1.2900e-003	1.2900e-003		1.2900e-003	1.2900e-003	0.0000	2.5533	2.5533	2.2000e-004	0.0000	2.5586

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3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5700e-003	2.1000e-003	0.0207	5.0000e-005	5.2600e-003	4.0000e-005	5.3000e-003	1.4000e-003	3.0000e-005	1.4300e-003	0.0000	4.6563	4.6563	1.5000e-004	0.0000	4.6602
Total	2.5700e-003	2.1000e-003	0.0207	5.0000e-005	5.2600e-003	4.0000e-005	5.3000e-003	1.4000e-003	3.0000e-005	1.4300e-003	0.0000	4.6563	4.6563	1.5000e-004	0.0000	4.6602

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4341	3.3055	6.0975	0.0210	1.5498	0.0221	1.5720	0.4154	0.0209	0.4363	0.0000	1,938.4850	1,938.4850	0.1017	0.0000	1,941.0269
Unmitigated	0.4341	3.3055	6.0975	0.0210	1.5498	0.0221	1.5720	0.4154	0.0209	0.4363	0.0000	1,938.4850	1,938.4850	0.1017	0.0000	1,941.0269

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	1,190.70	316.88	163.24	4,069,972	4,069,972
Parking Lot	0.00	0.00	0.00		
Total	1,190.70	316.88	163.24	4,069,972	4,069,972

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163
Parking Lot	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163

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5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	813.8758	813.8758	0.0336	6.9500e-003	816.7875
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	813.8758	813.8758	0.0336	6.9500e-003	816.7875
NaturalGas Mitigated	0.0421	0.3823	0.3212	2.2900e-003		0.0291	0.0291		0.0291	0.0291	0.0000	416.2137	416.2137	7.9800e-003	7.6300e-003	418.6870
NaturalGas Unmitigated	0.0421	0.3823	0.3212	2.2900e-003		0.0291	0.0291		0.0291	0.0291	0.0000	416.2137	416.2137	7.9800e-003	7.6300e-003	418.6870

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5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	7.79955e+006	0.0421	0.3823	0.3212	2.2900e-003		0.0291	0.0291		0.0291	0.0291	0.0000	416.2137	416.2137	7.9800e-003	7.6300e-003	418.6870
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0421	0.3823	0.3212	2.2900e-003		0.0291	0.0291		0.0291	0.0291	0.0000	416.2137	416.2137	7.9800e-003	7.6300e-003	418.6870

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	7.79955e+006	0.0421	0.3823	0.3212	2.2900e-003		0.0291	0.0291		0.0291	0.0291	0.0000	416.2137	416.2137	7.9800e-003	7.6300e-003	418.6870
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0421	0.3823	0.3212	2.2900e-003		0.0291	0.0291		0.0291	0.0291	0.0000	416.2137	416.2137	7.9800e-003	7.6300e-003	418.6870

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5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	2.43661e+006	776.3558	0.0321	6.6300e-003	779.1333
Parking Lot	117757	37.5200	1.5500e-003	3.2000e-004	37.6542
Total		813.8758	0.0336	6.9500e-003	816.7875

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	2.43661e+006	776.3558	0.0321	6.6300e-003	779.1333
Parking Lot	117757	37.5200	1.5500e-003	3.2000e-004	37.6542
Total		813.8758	0.0336	6.9500e-003	816.7875

6.0 Area Detail

6.1 Mitigation Measures Area

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0059	7.0000e-005	7.4300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0153
Unmitigated	1.0059	7.0000e-005	7.4300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0153

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1160					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8892					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-004	7.0000e-005	7.4300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0153
Total	1.0059	7.0000e-005	7.4300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0153

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6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1160					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8892					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-004	7.0000e-005	7.4300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0153
Total	1.0059	7.0000e-005	7.4300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0153

7.0 Water Detail

7.1 Mitigation Measures Water

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	267.5775	1.8192	0.0449	326.4231
Unmitigated	267.5775	1.8192	0.0449	326.4231

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	55.5139 / 5.55139	267.5775	1.8192	0.0449	326.4231
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		267.5775	1.8192	0.0449	326.4231

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7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	55.5139 / 5.55139	267.5775	1.8192	0.0449	326.4231
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		267.5775	1.8192	0.0449	326.4231

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	60.4243	3.5710	0.0000	149.6987
Unmitigated	60.4243	3.5710	0.0000	149.6987

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8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	297.67	60.4243	3.5710	0.0000	149.6987
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		60.4243	3.5710	0.0000	149.6987

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	297.67	60.4243	3.5710	0.0000	149.6987
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		60.4243	3.5710	0.0000	149.6987

9.0 Operational Offroad

Scheu Business Center - San Bernardino-South Coast County, Annual

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Forklifts	10	8.00	260	89	0.20	Diesel

UnMitigated/Mitigated

Equipment Type	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Forklifts	0.2090	1.8661	1.5602	1.9900e-003		0.1446	0.1446		0.1330	0.1330	0.0000	179.3505	179.3505	0.0567	0.0000	180.7691
Total	0.2090	1.8661	1.5602	1.9900e-003		0.1446	0.1446		0.1330	0.1330	0.0000	179.3505	179.3505	0.0567	0.0000	180.7691

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Scheu Business Center - San Bernardino-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	111.8640	0.0000	0.0000	111.8640

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	158	111.8640	0.0000	0.0000	111.8640
Total		111.8640	0.0000	0.0000	111.8640

Appendix B

EMFAC2014 Vehicle Consumption Data

EMFAC2014 (v1.0.7) Emissions Inventory

Region Type: Air District

Region: South Coast AQMD

Calendar Year: 2020

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT	Fuel_Consumption	Fuel Split (Gas:Diesel)	MPG, by Fuel Type	MPG, Average
South Coast AQMD	2020	LDA	Aggregated	Aggregated	GAS	6241441.311	215630250.8	7791.379047	99.26%	27.68	28.57
South Coast AQMD	2020	LDA	Aggregated	Aggregated	DSL	58578.66528	2170199.073	58.44052993	0.74%	37.14	
South Coast AQMD	2020	LDA	Aggregated	Aggregated	ELEC	139480.2104	6499653.924	0			
South Coast AQMD	2020	LDT1	Aggregated	Aggregated	GAS	529468.9231	17839921.58	767.6565063	99.91%	23.24	23.26
South Coast AQMD	2020	LDT1	Aggregated	Aggregated	DSL	653.8523923	17424.66748	0.656771586	0.09%	26.53	
South Coast AQMD	2020	LDT1	Aggregated	Aggregated	ELEC	394.8926991	12300.5894	0			
South Coast AQMD	2020	LDT2	Aggregated	Aggregated	GAS	2196840.435	81691950.79	3942.87661	99.86%	20.72	20.73
South Coast AQMD	2020	LDT2	Aggregated	Aggregated	DSL	3707.582469	150823.0049	5.330165365	0.14%	28.30	
South Coast AQMD	2020	MDV	Aggregated	Aggregated	GAS	1480427.171	49182321.35	3206.973029	98.75%	15.34	15.42
South Coast AQMD	2020	MDV	Aggregated	Aggregated	DSL	22607.57726	887377.5364	40.62845112	1.25%	21.84	
South Coast AQMD	2020	LHDT1	Aggregated	Aggregated	GAS	122811.721	3538562.329	324.3272067	66.50%	10.91	14.08
South Coast AQMD	2020	LHDT1	Aggregated	Aggregated	DSL	93218.10849	3329186.678	163.383972	33.50%	20.38	
South Coast AQMD	2020	LHDT2	Aggregated	Aggregated	GAS	25139.08857	867472.8869	85.31303659	51.00%	10.17	14.35
South Coast AQMD	2020	LHDT2	Aggregated	Aggregated	DSL	39016.92297	1532624.982	81.98131358	49.00%	18.69	
South Coast AQMD	2020	MHDT	Aggregated	Aggregated	GAS	19760.80313	980184.6784	139.5109867	14.03%	7.03	8.50
South Coast AQMD	2020	MHDT	Aggregated	Aggregated	DSL	134726.0007	7469482.082	854.6440674	85.97%	8.74	
South Coast AQMD	2020	HHDT	Aggregated	Aggregated	GAS	802.1440496	104174.0551	22.12472978	0.97%	4.71	5.85
South Coast AQMD	2020	HHDT	Aggregated	Aggregated	DSL	94066.79161	13265170	2263.379935	99.03%	5.86	
South Coast AQMD	2020	OBUS	Aggregated	Aggregated	GAS	8436.227028	392438.6707	54.40171127	47.32%	7.21	7.25
South Coast AQMD	2020	OBUS	Aggregated	Aggregated	DSL	5358.43226	441411.1364	60.5737995	52.68%	7.29	
South Coast AQMD	2020	UBUS	Aggregated	Aggregated	GAS	2327.880438	267944.8976	53.57098395	32.69%	5.00	4.86
South Coast AQMD	2020	UBUS	Aggregated	Aggregated	DSL	4588.150023	527953.961	110.2967884	67.31%	4.79	
South Coast AQMD	2020	SBUS	Aggregated	Aggregated	GAS	2258.46776	86380.44602	7.601539992	21.33%	11.36	8.10
South Coast AQMD	2020	SBUS	Aggregated	Aggregated	DSL	5309.122191	202336.044	28.02826434	78.67%	7.22	
South Coast AQMD	2020	MCY	Aggregated	Aggregated	GAS	289961.5795	1955845.416	55.31831514	100.00%	35.36	35.36
South Coast AQMD	2020	MH	Aggregated	Aggregated	GAS	37922.10127	307217.3044	41.47456076	83.45%	7.41	7.88
South Coast AQMD	2020	MH	Aggregated	Aggregated	DSL	9968.340503	84286.45216	8.223037177	16.55%	10.25	