

Memorandum

Date: Thursday, October 29, 2020

Project: Arrow Maintenance Facility Zero Emission Multiple Unit Vehicle Upgrades

To: San Bernardino County Transportation Authority

From: HDR Engineering, Inc.

Subject: Air Quality and Greenhouse Gas Analysis

HDR prepared this air quality and greenhouse gas analysis study in support of San Bernardino County Transportation Authority's (SBCTA) proposed Arrow Maintenance Facility (AMF) Zero Emission Multiple-Unit (ZEMU) Vehicle Upgrades Project (Project). This memorandum provides the results, findings, and recommendations of the air quality and greenhouse gas analysis.

Project Overview

SBCTA is proposing modifications to its AMF to facilitate the integration of a hydrogen (H₂) fuel ZEMU rail vehicle into SBCTA's planned Arrow service. SBCTA is the lead agency for the project under the California Environmental Quality Act (CEQA). Pursuant to CEQA, it is necessary for the lead agency to determine whether a proposed project may have a significant effect on the environment (PRC 21082.2[a]).

Project Location

The project site is located in San Bernardino, California, near the intersection of North J Street and 3rd Street. The project site is located on the east end of the San Bernardino Santa Fe Depot. The majority of the construction activities would occur within the existing SCRRA's footprint (APNs: 013823115, 013823111, 013823113, and 013823114), and comprising 3.61 acres. The anticipated limits of construction related ground disturbance would primarily be limited to SBCTA's property, including temporary work areas.

Project Description

The AMF will include a large train housing facility for maintenance and refueling of passenger trains. SBCTA is currently in the process of constructing the AMF, also previously referred to as the Inland Empire Maintenance Facility (IEMF), which will service SBCTA's diesel multiple unit (DMU) rail vehicle fleet for the Arrow service. SBCTA's proposed project, operated by Southern California Regional Rail Authority (SCRRA) includes integration of the ZEMU rail vehicle into the Arrow service in 2024, and associated modifications and upgrades to the AMF to facilitate H₂ storage, mobile refueling, and required safety improvements. Attachment A provides a detailed description of the proposed Project.

Regulatory Setting

Federal Clean Air Act

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and California Air Resources Board (CARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM) which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM₁₀) and particles of 2.5 micrometers and smaller (PM_{2.5}), and sulfur dioxide (SO₂). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H₂S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA. In addition to this environmental analysis, a parallel “Conformity” requirement under the FCAA also applies.

The FCAA requires U.S. EPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved. The U.S. EPA has classified the South Coast Air Basin (SCAB) as attainment/maintenance for CO, PM₁₀, and NO₂, and nonattainment for O₃ and PM_{2.5}.

California Clean Air Act

In California, the California Clean Air Act (CCAA) is administered by CARB at the State level and by the air quality management districts and air pollution control districts at the regional and local levels. The CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the State requirements of the FCAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. CAAQS are generally more stringent than the corresponding federal standards. The CCAA requires CARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard and are not used as a basis for designating areas as nonattainment. Under the CCAA, the Los Angeles County portion of the SCAB is designated as a nonattainment area for O₃, Pb, PM_{2.5}, and PM₁₀.

South Coast Air Quality Management District

The 1977 Lewis Air Quality Management Act created the South Coast Air Quality Management District (SCAQMD) to coordinate air quality planning efforts throughout Southern California. Specifically, the SCAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed to attain and maintain State and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations that regulate stationary sources, area sources, point sources, and certain mobile source emissions. The SCAQMD is also responsible for establishing stationary source permitting requirements and for ensuring that new, modified, or relocated stationary sources do not create net emission increases.

AIR QUALITY MANAGEMENT PLAN

All areas designated as nonattainment under the CCAA are required to prepare plans showing how the area would meet the CAAQS by its attainment dates. The Air Quality Management Plan (AQMP) is the SCAQMD plan for improving regional air quality. It addresses CCAA requirements and demonstrates attainment with State and federal ambient air quality standards. The AQMP is prepared by SCAQMD and the Southern California Association of Governments (SCAG).

The 2016 Air Quality Management Plan was adopted by the SCAQMD Governing Board on March 3, 2017. It incorporates the latest scientific and technological information and planning assumptions, including the 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and updated emission inventory methodologies for various source categories. The 2016 AQMP includes the integrated strategies and measures needed to meet the NAAQS.

Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions, particularly those generated from the production and use of fossil fuels. GHG emissions are typically measured in terms of pounds or tons of "CO₂ equivalents" (CO₂e).

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF₆), HFC-23 (fluoroform), HFC-134a (1,1,1,2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles) make up the largest source of GHG-emitting sources. The dominant GHG emitted is CO₂, mostly from fossil fuel combustion.

There are typically two terms used when discussing the impacts of climate change: “Greenhouse Gas Mitigation” and “Adaptation.” “Greenhouse Gas Mitigation” is a term for reducing GHG emissions to reduce or “mitigate” the impacts of climate change. “Adaptation” refers to the effort of planning for and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).

There are four primary strategies for reducing GHG emissions from transportation sources: 1) improving the transportation system and operational efficiencies, 2) reducing travel activity, 3) transitioning to lower GHG-emitting fuels, and 4) improving vehicle technologies/efficiency. To be most effective, integration of the four strategies is recommended.

Greenhouse gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere (“atmospheric lifetime”). The GWP of each gas is measured relative to CO₂, the most abundant GHG.

Methodology and Significance Criteria

For the purposes of this air quality and greenhouse gas emissions analysis and in following Appendix G of the CEQA Guidelines, as amended, the Project would have an adverse effect on air quality or global climate change if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for O₃ precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Generate greenhouse gas emissions, either directly or indirectly, that may have an adverse effect on the environment; or
- Conflict with applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

SCAQMD Guidelines

Specific criteria for determining whether the potential air quality impacts of a project are significant are set forth in the SCAQMD’s *CEQA Air Quality Handbook*. Table 1 lists the daily thresholds for construction and operational emissions that have been established by the SCAQMD and will be used in the analysis of air quality impacts for the proposed Project to determine significance.

Table 1. SCAQMD Air Quality Thresholds of Significance

Pollutant	Construction (pounds/day)	Operation (pounds/day)
Oxides of Nitrogen (NO _x)	100	55
Volatile Organic Compounds (VOC)	75	55
PM ₁₀	150	150
PM _{2.5}	55	55
Oxides of Sulfur (SO _x)	150	150
CO	550	550

Source: SCAQMD CEQA Air Quality Handbook, <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook>, accessed February 2018.

LOCALIZED SIGNIFICANCE THRESHOLDS

SCAQMD has developed localized significance threshold (LST) methodology and mass rate look-up tables by source receptor area (SRA) that can be used by public agencies to determine whether or not a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area. LSTs are derived based on the location of the activity (i.e., the SRA); the emission rates of NO_x, CO, PM_{2.5}, and PM₁₀; the size of the Project Study Area, and the distance to the nearest exposed individual. The Project Study Area is located within SRA No. 23 (Metropolitan Riverside County). Ground disturbance associated with project construction would be limited within the 3.61-acre project site boundaries. The closest sensitive land uses to the project site are homes located to the south and southwest at a distance of approximately 400 feet (120 meters). Table 2 lists the LST emission rates for a 2 acre site located within 100 meters of a sensitive use.

Table 2. SCAQMD Localized Significance Thresholds

Pollutant	Construction (pounds/day)	Operation (pounds/day)
Oxides of Nitrogen (NO _x)	264	264
CO	2,232	2,232
PM ₁₀	38	10
PM _{2.5}	10	3

Source: SCAQMD, 2020.

LOCAL CARBON MONOXIDE CONCENTRATIONS

The significance of localized project impacts under CEQA depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. If ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a

State or federal standard, project emissions are considered significant if they increase 1-hour CO concentrations by 1.0 ppm or more or 8-hour CO concentrations by 0.45 ppm or more. The following are applicable local emission concentration standards for CO:

- California State 1-hour CO standard of 20.0 ppm
- California State 8-hour CO standard of 9.0 ppm

GREENHOUSE GAS EMISSION THRESHOLD

The SCAQMD's Interim Thresholds for commercial, residential, mixed use and industrial development projects are as follows:

- Industrial Projects – 10,000 metric tons (MT) of carbon monoxide equivalent (CO_{2e}) per year
- Residential, Commercial, and Mixed Use Projects (including parks, warehouses, etc.) 3,000 MT CO_{2e} per year

The Project is not an industrial development. Therefore, for purposes of this analysis, both direct and indirect GHG emissions from the proposed Project are discussed in the context of the 3,000 MT threshold levels.

INCREMENTAL HEALTH RISK SIGNIFICANCE THRESHOLD

The SCAQMD CEQA Air Quality Handbook¹ lists significance thresholds for toxic air contaminants (TACs). TACs refer to a diverse group of air pollutants that are capable of causing chronic and acute adverse effects on human health. They include both organic and inorganic chemical substances that may be emitted from a variety of common sources including gasoline stations, motor vehicles, dry cleaners, and painting operations that may use substances such as ammonia, asbestos, benzene, cadmium, lead, and trichloroethylene. The SCAQMD's TAC thresholds are as follows:

- Maximum Incremental Cancer Risk \geq 10 in 1 million
- Cancer Burden > 0.5 excess cancer cases
- Chronic & Acute Hazard Index \geq 1.0

Air Quality Impact Analysis

This section evaluates the potential air quality impacts of the proposed Project following the methodology and criteria described above.

Would the proposed Project conflict with or obstruct implementation of the applicable air quality plan?

For a project to be consistent with the 2016 AQMP, the pollutants emitted from a project should not exceed the SCAQMD daily threshold or cause a significant impact on air quality (SCAQMD 2016). However, if feasible mitigation measures are implemented and shown to reduce the impact level from significant to less than significant, a project is deemed consistent with AQMP. As discussed below, the Project's short-term construction and long-term operational emissions would

¹ <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook>, Accessed February 2018.

not exceed the SCAQMD's significance thresholds. Therefore, implementation of the Project will not conflict with the 2016 AQMP. This is considered a less than significant impact.

Would the proposed Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

CONSTRUCTION

The most recent version of the CalEEMod model (Version 2016.3.2) was used to calculate the construction emissions. The construction-related emissions generated during peak construction days for the proposed project are presented in Table 3. Because construction operations on-site must comply with dust control and other measures prescribed by SCAQMD Rules 402 and 403 to ensure that short-term construction impacts are minimized, compliance with these rules is assumed in Table 3. The PM10 and PM2.5 emissions incorporate 55 percent control of fugitive dust as a result of watering and associated dust-control measures. The emissions presented in Table 3 are based on the best information available at the time of calculations and specify that the schedule for all improvements is anticipated to commence in 2023 and extend for a duration of up to six months. Project construction would consist of the construction a hydrogen refueling pad, safety upgrades to the AMF, and associated utility connections. Ground disturbance associated with project construction would be limited within the 3.61-acre project site boundaries. Site clearance would involve removal of asphalt which would not require extensive grading, cut and fill, or import or export of soils.

Table 3. Construction Period Emissions

Construction	Criteria Pollutants (Pounds per day)						CO ₂ e
	ROG	NO _x	CO	SO _x	PM ₁₀ ^a	PM _{2.5} ^a	
Regional Emissions							
Peak Daily Emissions	4.28	41.49	31.6	0.05	6.1	3.89	5,083
SCAQMD Threshold	75	100	550	150	150	55	N/A
Exceed Threshold?	No	No	No	No	No	No	N/A
Localized Emissions^b							
Peak Daily Emissions	1.14	10.16	11.48	0.024	1.122	0.646	2,351
SCAQMD Threshold	N/A	264	2,232	N/A	38	10	N/A
Exceed Threshold?	N/A	No	No	N/A	No	No	N/A
Notes:							
^a PM ₁₀ and PM _{2.5} emissions estimates assume compliance with SCAQMD Rule 403.							
^b Localized emissions thresholds are based on the following: source receptor area 23, 2-acre site area, and 100 meter receptor distance.							
Source: HDR 2020; CalEEMod output sheets provided in Attachment B.							

As shown in Table 3, both localized and regional construction emissions would remain below SCAQMD significance thresholds, and are considered less than significant. No mitigation measures are required. However, as noted above, the construction activities are required to comply with SCAQMD Rules 402 and 403.

OPERATIONS

When compared to a standard DMU, the operation of the ZEMU train would result in a 100 percent reduction in the localized exhaust emissions as it will replace one DMU in daily operation. However, there are emissions associated with the production and transport of the hydrogen fuel. Maintaining the assumption that liquid H₂ is used as the fuel for the ZEMU trains, Table 4 lists the emissions associated with the existing DMU and those associated with the production and transport of the hydrogen fuel. These emissions are for a single round trip between the San Bernardino Transit Center (SBTC) and Redlands. As shown, the use of a ZEMU would result in a net reduction in emissions. Therefore, the project's long-term impact would be less than significant.

Table 4. Roundtrip Emissions (including well-to-wheel emissions)

Emission	Total DMU Emissions (in pounds)	Total ZEMU emissions (in pounds)	Net reduction (in pounds)
GHGs	607.55	493.22	114.33
NO _x : Total	6.46	0.25	6.21
PM _{2.5} : Total	0.19	0.02	0.17
PM ₁₀ : Total	0.20	0.02	0.18
CO: Total	0.96	0.18	0.78
VOC: Total	0.31	0.06	0.25

Note: Emissions data provided in Low- or Zero-Emission Multiple-Unit Feasibility Study Prepared for SBCTA by Center for Railway Research and Education, Eli Broad College of Business, Michigan State University.

Additional gains in reduced energy needs in well to wheel could be achieved if on-site fuel production was possible. However, because the use of ZEMU trains is a pilot program on-site production is not currently considered feasible.

Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

As discussed in the response above, the proposed project would result in short-term temporary air emissions associated with the construction phase. However, due to the relatively limited scale of construction required for the proposed project, the level of emissions generated during the construction phase would not exceed SCAQMD significance thresholds. Furthermore, the proposed project would not generate substantial emissions during operations. Therefore, the proposed project would not contribute to a cumulatively considerable net increase of any criteria pollutant that the project region is non-attainment under (ozone and PM₁₀) and a less than significant impact is identified.

Would the project expose sensitive receptors to substantial pollutant concentrations?

Construction activities would result in short-term project-generated emissions of diesel particulate matter (DPM) from the exhaust of off-road heavy-duty diesel equipment. DPM contains gaseous hazardous air pollutants including acetaldehyde, acrolein, benzene, 1, 3-butadiene, formaldehyde and polycyclic aromatic hydrocarbons. The dose to which receptors are exposed is the primary

factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Thus, the risks estimated for a maximally exposed individual (MEI) are higher if a fixed exposure occurs over a longer time period. Health risk assessments, which determine the exposure of sensitive receptors to hazardous air pollutant (HAP) emissions, are typically based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the Project.

The closest sensitive receptors² to the project site are located at a distance of approximately 400 feet. Additionally, as presented earlier in Table 3, maximum daily particulate emissions, which include DPM, would be relatively low. Furthermore, the construction period would be relatively short (approximately six months), especially when compared to 70 years. Combined with the highly dispersive properties of DPM, construction-related emissions of HAPs would not expose sensitive receptors to substantial emissions of HAPs. A less than significant impact is identified for this issue area.

Create objectionable odors affecting a substantial number of people?

Land uses commonly considered to be potential sources of odorous emissions include wastewater treatment plants, sanitary landfills, food processing facilities, chemical manufacturing plants, rendering plants, paint/coating operations, and concentrated agricultural feeding operations and dairies (CARB 2005). During the construction phase, emissions from construction equipment could be produced and affect nearby sensitive receptors. In the event of a leak, hydrogen is odorless, colorless, and tasteless; this would not have any effect on nearby sensitive receptors. No impact would occur to any receptors nearby.

Greenhouse Gas Emissions

Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

During construction of the project, GHG emissions would be emitted through the operation of construction equipment, on-site heavy duty vehicles, equipment hauling materials to and from the project site, grading, utility engines, and asphalt paving, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Furthermore, CH₄ is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

The most recent version of the CalEEMod model (Version 2016.3.2) was used to calculate the construction emissions. The construction-related GHG emissions generated during peak construction days for the proposed project are present in Table 5.

² Sensitive receptors include land uses, such as residential areas and schools, where individuals are more susceptible to the effects of adjacent land uses and exposed for prolonged durations.

Table 5. Construction GHG Emissions

Year	Pollutant Emissions (Metric Tons/year)			
	CO ₂	CH ₄	N ₂ O	CO ₂ e
2023	387.4	0.07	0.0	389.2

SCAQMD's GHG emissions policy for construction activities is to amortize emissions over a 30 year lifetime. When amortized, the project's annual construction emissions would be 13 metric tons. Therefore, the estimated construction GHG emissions from the proposed project are well below SCAQMD's 3,000 metric tons/year significance threshold and are not anticipated to directly result in a significant impact.

As shown in Table 4, the replacement of a standard DMU with the proposed ZEMU would result in a net decrease in operational GHG emissions. Therefore, a less than significant impact is identified for this issue area.

Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As described above, construction of the proposed project would not substantially increase GHG emissions in the project area. In addition, once operational, the replacement of a standard DMU with the proposed ZEMU would result in a net decrease in operational GHG emissions. Therefore, the implementation of the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG. No impact is identified for this issue area.

References

California Air Resources Board (CARB). 2005. *CEQA Air Quality and Land Use Handbook: A Community Health Perspective*. Available: <https://www.arb.ca.gov/ch/handbook.pdf>. Accessed September 25, 2019

Low- or Zero-Emission Multiple-Unit Feasibility Study Feasibility Report 2019. December 30, 2019. Prepared for: San Bernardino County Transportation Authority, Prepared by: Center for Railway Research and Education, Eli Broad College of Business, Michigan State University, and Birmingham Centre for Railway Research and Education, University of Birmingham

Attachment A: Project Description

1.1 Project Overview

The San Bernardino County Transportation Authority (SBCTA) is proposing the Arrow Maintenance Facility (AMF) Zero Emission Multiple Unit (ZEMU) Vehicle Upgrades Project (Project) to facilitate the integration of a hydrogen (H₂) fuel zero emission multiple unit rail vehicle into the planned Arrow service. SBCTA is currently constructing the AMF, previously referred to as the Inland Empire Maintenance Facility (IEMF), which will service SBCTA's diesel multiple unit (DMU) rail vehicle fleet for the Arrow service and start operations in 2021. The Southern California Regional Rail Authority (SCRRA) will operate and dispatch the Arrow service in coordination with SCRRA's existing Metrolink service. The proposed Project includes integration of the ZEMU rail vehicle into the Arrow service in 2024, and associated modifications and upgrades to the AMF to facilitate interim H₂ storage, refueling, required safety improvements. Operations of the proposed ZEMU vehicle on SCRRA's San Gabriel subdivision would follow FRA safety regulations and overlay with DMU and Metrolink passenger train service.

1.2 Project Location

The AMF or Project site is located in San Bernardino, California, near the intersection of North J Street and 3rd Street (Figure 1). The Project site is located to the northeast of the San Bernardino Santa Fe Depot and Metrolink Station platforms. The limits of the Project would generally be confined to SBCTA's existing AMF site (Assessor Parcel Numbers: 013823115, 013823111, 013823113, and 013823114). Figure 2 depicts the Project site and immediate Project vicinity. Figure 3 illustrates the Project site, portions of the Project site subject to ZEMU-related improvements, and the approximate location of the ZEMU H₂ Refueling Area.

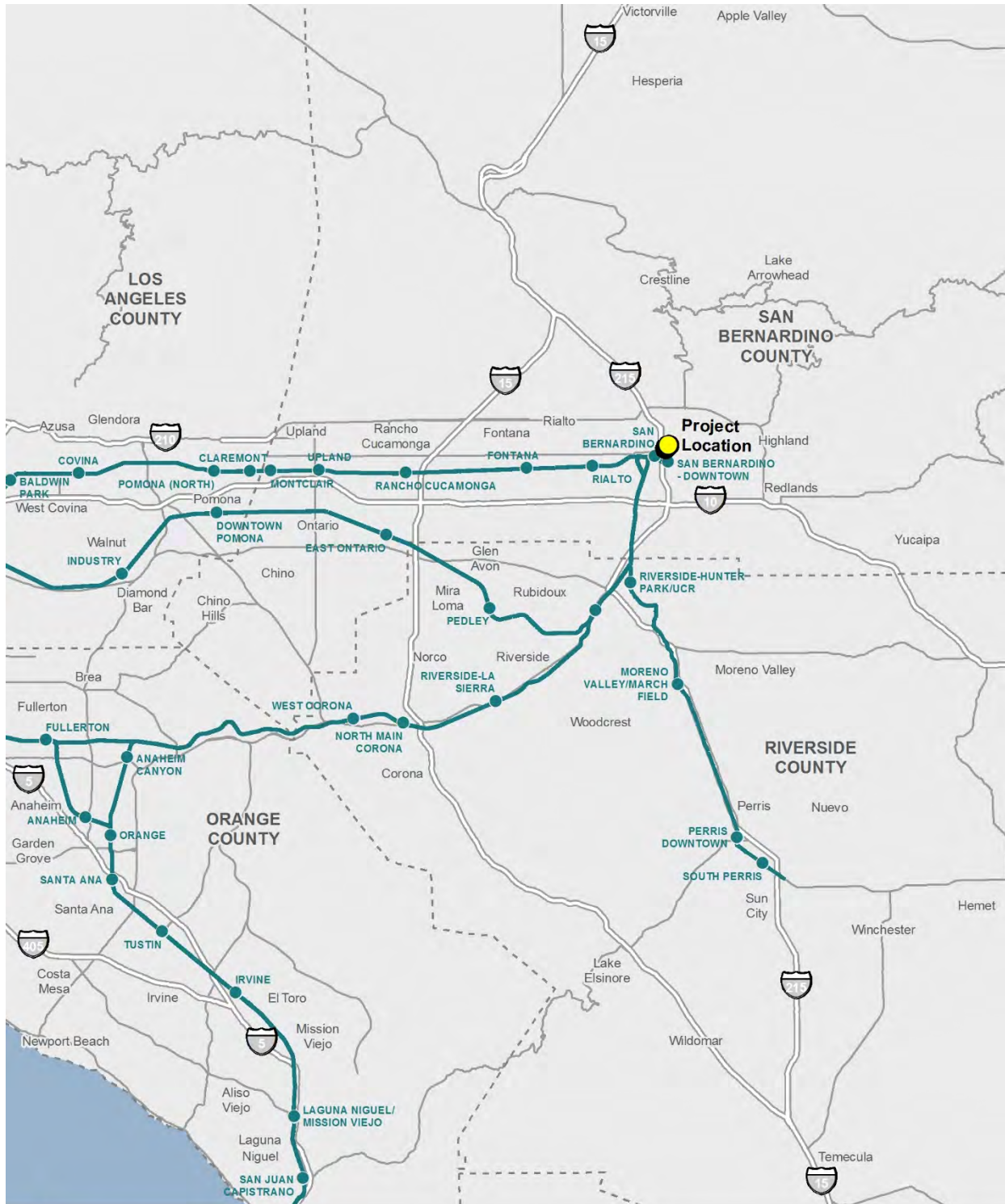
1.3 Project Goals and Objectives






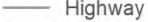
SBCTA's goal for the proposed Project is to integrate a ZEMU rail vehicle into the future operational fleet of the Arrow passenger rail service operated by the SCRRA. As part of Assembly Bill (AB) 398, the State's greenhouse gas (GHG) reduction goals were extended to June 30, 2030, and the reduction goal was increased to 40 percent of 1990 emissions. The goal of the ZEMU pilot Project is to demonstrate the feasibility of low-or-zero emission railway technology consistent with state guidelines. In conjunction with this overarching goal, SBCTA's objectives for implementing the Project include the following:

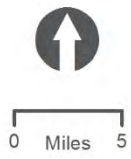
- Integrate zero- or low-emission technologies into the Arrow's service fleet to further improve localized air quality and reduce emissions of criteria air pollutants.
- Enhance the Arrow service's operational flexibility and reliability through the provision of a ZEMU rail vehicle to supplement SBCTA's DMUs.
- Support State of California's cap-and-trade programs through the provision and implementation of low- or zero-emissions technology for transit corridors traversing disadvantaged communities.
- Integrate safety improvements for hydrogen fuel use at the AMF.

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Figure 1. Regional Vicinity



-  Project Location
-  Metrolink Station
-  Metrolink Line
-  County Boundary
-  Interstate
-  Highway



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Figure 2. AMF Project Site

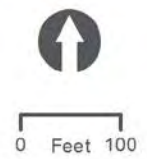


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Figure 3. Zero Emission Multiple Unit H2 Refueling Area



-  AMF Site
-  ZEMU Site Improvements
-  ZEMU Refueling Area



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1.4 Project Description

SBCTA's proposed Project includes integration of the ZEMU rail vehicle into the Arrow service in 2024, and modifications and upgrades to the AMF to facilitate H2 storage and refueling. This section contains a detailed description of the improvements comprising the proposed Project.

1.4.1 Project Background

The planned AMF includes a large train housing facility for maintenance and refueling of DMU passenger trains (Figure 4). SBCTA is currently in the process of constructing the AMF, which previously environmentally cleared under the name "IEMF." SBCTA environmentally cleared the reconstruction of IEMF in 2012 (State Clearinghouse No. 2011051024; SBCTA 2012). In 2019, SBCTA renamed the facility to AMF to correspond with the branding of the Arrow service. Figure 5 illustrates the DMU vehicle, which is similar in appearance as the proposed ZEMU vehicle. The AMF is currently under construction with a planned opening date of 2021.

1.4.2 Project Improvements

The Project would include reconfiguration of the AMF to allow for the integration and operation of one ZEMU train vehicle in the southern portion of the AMF. Specific improvements proposed as part of the Project are summarized below.

AMF Maintenance Building

In conjunction with the Project, multiple retrofits to the AMF maintenance building would be required to comply with state and local requirements to facilitate the use of H2 fuel for the ZEMU trains. Improvements to the AMF maintenance building would include: HVAC improvements (e. g. modified electrical equipment, fans, etc.), spark-proofing on electrical wiring, battery charging outside of the maintenance building, and installation of a H2 detection system.

Hydrogen Refueling Area

As part of the Project, SBCTA would construct a new H2 Refueling Area in the southern portion of the AMF to facilitate the refueling and operation of a pilot-test ZEMU train vehicle. The Refueling Area would be constructed to include additional space for: one charging station for the ZEMU onboard batteries, a H2 storage tank and associated fueling infrastructure including: a compressor, chiller, evaporator, fueling nozzle etc., minor spur track improvements, new piping, associated paving, electrical vault, sub-station, and back-up generator if required.

To provide flexibility for final design, SBCTA is considering the use of H2 in either gas or liquid form. For the purpose of analyses, SBCTA is considering the use and storage of liquid H2 due to the larger storage tank footprint and required infrastructure for compression when compared to gas. As provided on Figure 6, the storage tank with a capacity of 4,000 kilograms (kg) of H2. The storage tank would be a temporary fixture that would be replaced once empty; it will be hauled off site, and replaced with a full tank. The tank would connect to an on-site control systems, compressors, evaporators, and fueling hoses with each tank remaining on site for approximately two weeks prior replacement. If required, a liquid to gas conversion container may also be installed in the Refueling Area (Figure 7). A liquid to gas conversion container may also be required for the Project if liquid H2 is used for transport followed by conversion to gas onsite.

A new spur track may also be constructed to provide direct access to the proposed H2 Refueling Area within the southern portion of the AMF site.

Utilities

Existing utilities within the Project site include a storm drain and active petroleum line. To comply with local regulations and avoid conflicts, the Project may require improvements to existing storm drains, oil and grease separators, water (and fire) lines, and sanitary sewer lines. The Project's power requirements would be supplied by Southern California Edison via existing, on-site switch gear that would be refurbished and used for the ZEMU Refueling Area. Based on current SCRRRA utility accommodation standards and industry best practices, each utility line would be subject to removal, relocation, or protection in place.

Access

Existing circulation and access modifications may be required at the AMF to facilitate the internal movement of the H2 delivery trucks and interim onsite storage. These improvements may require a temporary construction easement (TCE) into the public right-of-way (ROW) on Third Street pending additional engineering design.

1.4.3 Construction

Project construction is anticipated to commence in 2023 and extend for up to one year. The City of Bernardino Noise Ordinance allows construction between the hours of 7:00 a.m. and 8:00 p.m. Most construction would coincide with the hours specified in the Noise Ordinance, unless construction exemptions are obtained for the Project. Additionally limited nighttime work may be required during non-revenue service hours to avoid conflicts with Arrow and Metrolink operations. For certain stages, limited construction during weekend and federal holidays may be required.

Ground disturbance associated with Project construction would be limited to the construction limits depicted on Figure 2. Site clearance would involve removal of asphalt and minor grading. Excavation for the Refueling Area foundation pad and utilities could extend up to five feet in depth. Construction staging would be located within the southern portion of the AMF site. Temporary lighting may be required during nighttime work, if required.

1.4.4 Proposed Operations

The AMF is an approved facility and currently under construction. SBCTA's Arrow service is planned to start in 2021 with two DMUs in operation and a third for backup. The proposed Project would maintain the same capacity of trains in service; however, one of the two DMU trains would be replaced with a ZEMU train vehicle. ZEMU operations would commence in 2024 during non-revenue service with future revenue service starting on or after 2025.

Replacement of one DMU with the ZEMU rail vehicle would remove 25 average daily DMU rounds trips per day (or 50 total) consistent with SBCTA's certified environmental impact report (EIR) for the Redlands Passenger Rail Project (SBCTA 2015). The AMF would be modified to service the new ZEMU train vehicle within the southern portion of the AMF site.

Site access for employees would continue to be provided on Third Street on the southern side of the Project site near the Interstate 215 off ramp.

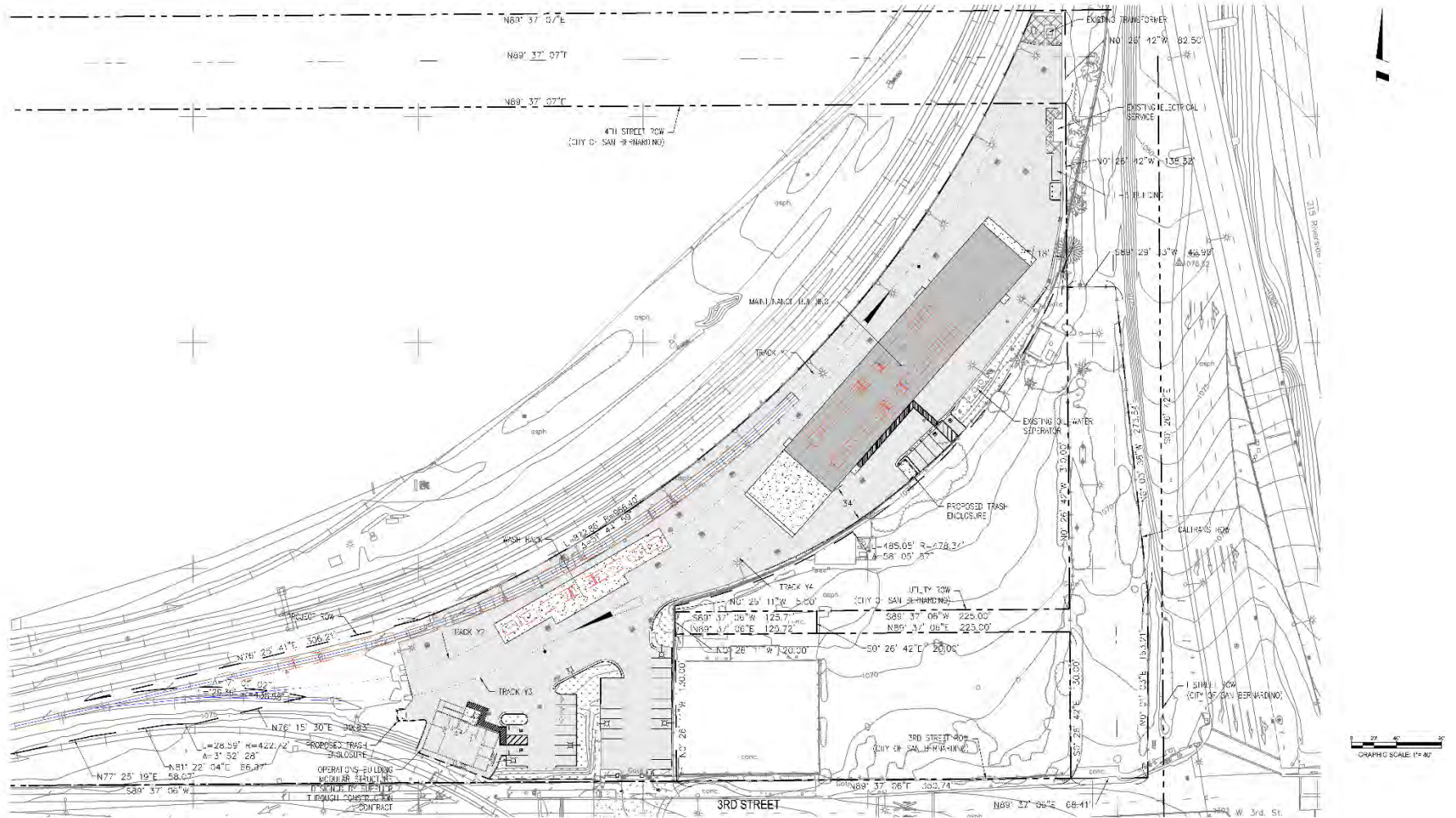
1.5 Permits and Approvals

The Project **may satisfy** the criteria for a Class 2 (Replacement or Reconstruction) Categorical Exemption under the California Environmental Quality Act (CEQA), per Section 15302 of the CEQA Guidelines, pending completion of technical studies. SBCTA will serve as the CEQA lead agency for the Project.

Other potential Project approvals and permits may include, but are not limited to, the following:

- Regional Water Quality Control Board (RWQCB), National Pollutant Discharge Elimination System (NPDES) General Construction and General Industrial Permits
- City of San Bernardino: Roadway encroachment, sanitary sewer discharge, water quality (low impact development), grading, and construction
- Southern California Edison (SCE): Onsite electrical modifications and upgrades
- South Coast Air Quality Management District (SCAQMD): Rule 403 Fugitive dust and other operating permits for facilities including but not limited to emergency diesel generators.
- Federal Railroad Administration (FRA): Approval of ZEMU vehicle and operation on the San Gabriel Subdivision

Figure 4. Approved Arrow Maintenance Facility



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Figure 5. Proposed Arrow Line Passenger Diesel Multiple Unit Train Vehicle



Figure 6. Representative Temporary Hydrogen Gas Storage Tank



Figure 7. Liquid to Gas Conversion Container



2 References

Federal Register. Volume 77 Number 231. November 30, 2012. Recorded on December 3, 2012.

San Bernardino County Transportation Authority (SBCTA). 2012. EA/EIR for the Downtown San Bernardino Passenger Rail Project. SCH No. 2011051024. Filed and posted on September 7, 2012.

———. 2015. EIS/EIR for the Redlands Passenger Rail Project. SCH No. 2012041012

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Attachment B: CalEEMod Outputs

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

SBCTA ZEMU Extended dates
South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.61	Acre	3.61	157,251.60	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Revised to meet 2024 op date

Construction Off-road Equipment Mitigation - Changed to match previous data

Mobile Land Use Mitigation -

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	230.00	200.00
tblConstructionPhase	PhaseEndDate	1/3/2024	11/22/2023
tblConstructionPhase	PhaseEndDate	1/29/2024	12/18/2023
tblConstructionPhase	PhaseStartDate	1/4/2024	11/23/2023

2.0 Emissions Summary

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-2-2023	4-1-2023	0.4530	0.4530
2	4-2-2023	7-1-2023	0.5909	0.5909
3	7-2-2023	9-30-2023	0.5909	0.5909
		Highest	0.5909	0.5909

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	0.0124	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Energy	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
Mobile	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0124	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

2.2 Overall Operational

Mitigated 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	0.0124	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Energy	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
Mobile	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0124	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/28/2023	2/3/2023	5	5	
2	Grading	Grading	2/4/2023	2/15/2023	5	8	
3	Building Construction	Building Construction	2/16/2023	11/22/2023	5	200	
4	Paving	Paving	11/23/2023	12/18/2023	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 3.61

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

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	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	66.00	26.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2023

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					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0688	0.0456	1.0000e-004		3.1700e-003	3.1700e-003		2.9100e-003	2.9100e-003	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303
Total	6.6500e-003	0.0688	0.0456	1.0000e-004	0.0452	3.1700e-003	0.0483	0.0248	2.9100e-003	0.0277	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

3.2 Site Preparation - 2023

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	1.7000e-004	1.1000e-004	1.3400e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3992	0.3992	1.0000e-005	0.0000	0.3994
Total	1.7000e-004	1.1000e-004	1.3400e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3992	0.3992	1.0000e-005	0.0000	0.3994

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					0.0203	0.0000	0.0203	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6500e-003	0.0688	0.0456	1.0000e-004		3.1700e-003	3.1700e-003		2.9100e-003	2.9100e-003	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303
Total	6.6500e-003	0.0688	0.0456	1.0000e-004	0.0203	3.1700e-003	0.0235	0.0112	2.9100e-003	0.0141	0.0000	8.3627	8.3627	2.7000e-003	0.0000	8.4303

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

3.2 Site Preparation - 2023

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	1.7000e-004	1.1000e-004	1.3400e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3992	0.3992	1.0000e-005	0.0000	0.3994
Total	1.7000e-004	1.1000e-004	1.3400e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3992	0.3992	1.0000e-005	0.0000	0.3994

3.3 Grading - 2023

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					0.0262	0.0000	0.0262	0.0135	0.0000	0.0135	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0717	0.0590	1.2000e-004		3.1000e-003	3.1000e-003		2.8500e-003	2.8500e-003	0.0000	10.4243	10.4243	3.3700e-003	0.0000	10.5085
Total	6.8400e-003	0.0717	0.0590	1.2000e-004	0.0262	3.1000e-003	0.0293	0.0135	2.8500e-003	0.0163	0.0000	10.4243	10.4243	3.3700e-003	0.0000	10.5085

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

3.3 Grading - 2023

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	2.2000e-004	1.5000e-004	1.7800e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5322	0.5322	1.0000e-005	0.0000	0.5325
Total	2.2000e-004	1.5000e-004	1.7800e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5322	0.5322	1.0000e-005	0.0000	0.5325

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					0.0118	0.0000	0.0118	6.0600e-003	0.0000	6.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0717	0.0590	1.2000e-004		3.1000e-003	3.1000e-003		2.8500e-003	2.8500e-003	0.0000	10.4242	10.4242	3.3700e-003	0.0000	10.5085
Total	6.8400e-003	0.0717	0.0590	1.2000e-004	0.0118	3.1000e-003	0.0149	6.0600e-003	2.8500e-003	8.9100e-003	0.0000	10.4242	10.4242	3.3700e-003	0.0000	10.5085

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3.3 Grading - 2023

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	2.2000e-004	1.5000e-004	1.7800e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5322	0.5322	1.0000e-005	0.0000	0.5325
Total	2.2000e-004	1.5000e-004	1.7800e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5322	0.5322	1.0000e-005	0.0000	0.5325

3.4 Building Construction - 2023

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	0.1573	1.4385	1.6244	2.6900e-003		0.0700	0.0700		0.0658	0.0658	0.0000	231.8048	231.8048	0.0551	0.0000	233.1833
Total	0.1573	1.4385	1.6244	2.6900e-003		0.0700	0.0700		0.0658	0.0658	0.0000	231.8048	231.8048	0.0551	0.0000	233.1833

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

3.4 Building Construction - 2023

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	5.1800e-003	0.1795	0.0527	6.3000e-004	0.0164	2.0000e-004	0.0166	4.7300e-003	2.0000e-004	4.9200e-003	0.0000	61.0227	61.0227	3.3600e-003	0.0000	61.1066
Worker	0.0243	0.0166	0.1958	6.5000e-004	0.0724	5.1000e-004	0.0729	0.0192	4.7000e-004	0.0197	0.0000	58.5443	58.5443	1.3800e-003	0.0000	58.5787
Total	0.0295	0.1961	0.2485	1.2800e-003	0.0888	7.1000e-004	0.0895	0.0240	6.7000e-004	0.0246	0.0000	119.5669	119.5669	4.7400e-003	0.0000	119.6853

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	0.1573	1.4385	1.6244	2.6900e-003		0.0700	0.0700		0.0658	0.0658	0.0000	231.8045	231.8045	0.0551	0.0000	233.1830
Total	0.1573	1.4385	1.6244	2.6900e-003		0.0700	0.0700		0.0658	0.0658	0.0000	231.8045	231.8045	0.0551	0.0000	233.1830

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

3.4 Building Construction - 2023

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	5.1800e-003	0.1795	0.0527	6.3000e-004	0.0164	2.0000e-004	0.0166	4.7300e-003	2.0000e-004	4.9200e-003	0.0000	61.0227	61.0227	3.3600e-003	0.0000	61.1066
Worker	0.0243	0.0166	0.1958	6.5000e-004	0.0724	5.1000e-004	0.0729	0.0192	4.7000e-004	0.0197	0.0000	58.5443	58.5443	1.3800e-003	0.0000	58.5787
Total	0.0295	0.1961	0.2485	1.2800e-003	0.0888	7.1000e-004	0.0895	0.0240	6.7000e-004	0.0246	0.0000	119.5669	119.5669	4.7400e-003	0.0000	119.6853

3.5 Paving - 2023

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	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

3.5 Paving - 2023

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	6.6000e-004	4.5000e-004	5.3400e-003	2.0000e-005	1.9700e-003	1.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.5967	1.5967	4.0000e-005	0.0000	1.5976
Total	6.6000e-004	4.5000e-004	5.3400e-003	2.0000e-005	1.9700e-003	1.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.5967	1.5967	4.0000e-005	0.0000	1.5976

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	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

3.5 Paving - 2023

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	6.6000e-004	4.5000e-004	5.3400e-003	2.0000e-005	1.9700e-003	1.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.5967	1.5967	4.0000e-005	0.0000	1.5976
Total	6.6000e-004	4.5000e-004	5.3400e-003	2.0000e-005	1.9700e-003	1.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.5967	1.5967	4.0000e-005	0.0000	1.5976

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

	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	0.0000	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
Unmitigated	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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Non-Asphalt Surfaces	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
Other Non-Asphalt Surfaces	0.550809	0.042355	0.203399	0.115606	0.014562	0.005806	0.021810	0.035336	0.002134	0.001736	0.004891	0.000712	0.000845

5.0 Energy Detail

Historical Energy Use: N

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

5.2 Energy by Land Use - Natural Gas

Mitigated

	Natural Gas 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					
Other Non-Asphalt Surfaces	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		0.0000	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

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.0124	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Unmitigated	0.0124	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

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	2.1900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Total	0.0124	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004

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	2.1900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Total	0.0124	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004

7.0 Water Detail

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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SBCTA ZEMU Extended dates - South Coast AQMD Air District, Annual

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

SBCTA ZEMU Extended dates
South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.61	Acre	3.61	157,251.60	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Revised to meet 2024 op date

Construction Off-road Equipment Mitigation - Changed to match previous data

Mobile Land Use Mitigation -

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	230.00	200.00
tblConstructionPhase	PhaseEndDate	1/3/2024	11/22/2023
tblConstructionPhase	PhaseEndDate	1/29/2024	12/18/2023
tblConstructionPhase	PhaseStartDate	1/4/2024	11/23/2023

2.0 Emissions Summary

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

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	lb/day										lb/day					
Area	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004
Energy	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
Mobile	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	0.0677	0.0000	3.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000	0.0000	8.4000e-004

Mitigated 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	lb/day										lb/day					
Area	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004
Energy	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
Mobile	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	0.0677	0.0000	3.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000	0.0000	8.4000e-004

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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	1/28/2023	2/3/2023	5	5	
2	Grading	Grading	2/4/2023	2/15/2023	5	8	
3	Building Construction	Building Construction	2/16/2023	11/22/2023	5	200	
4	Paving	Paving	11/23/2023	12/18/2023	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 3.61

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

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	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	66.00	26.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2023

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	2.6595	27.5242	18.2443	0.0381	18.0663	1.2660	19.3323	9.9307	1.1647	11.0954		3,687.308 1	3,687.308 1	1.1926		3,717.121 9

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

3.2 Site Preparation - 2023

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	lb/day										lb/day					
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
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
Worker	0.0670	0.0403	0.5791	1.8600e-003	0.2012	1.4000e-003	0.2026	0.0534	1.2900e-003	0.0547		185.0274	185.0274	4.3700e-003		185.1367
Total	0.0670	0.0403	0.5791	1.8600e-003	0.2012	1.4000e-003	0.2026	0.0534	1.2900e-003	0.0547		185.0274	185.0274	4.3700e-003		185.1367

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	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	2.6595	27.5242	18.2443	0.0381	8.1298	1.2660	9.3958	4.4688	1.1647	5.6336	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

3.2 Site Preparation - 2023

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	lb/day										lb/day					
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
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
Worker	0.0670	0.0403	0.5791	1.8600e-003	0.2012	1.4000e-003	0.2026	0.0534	1.2900e-003	0.0547		185.0274	185.0274	4.3700e-003		185.1367
Total	0.0670	0.0403	0.5791	1.8600e-003	0.2012	1.4000e-003	0.2026	0.0534	1.2900e-003	0.0547		185.0274	185.0274	4.3700e-003		185.1367

3.3 Grading - 2023

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	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	1.7109	17.9359	14.7507	0.0297	6.5523	0.7749	7.3273	3.3675	0.7129	4.0804		2,872.6910	2,872.6910	0.9291		2,895.9182

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

3.3 Grading - 2023

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	lb/day										lb/day					
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
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
Worker	0.0558	0.0336	0.4825	1.5500e-003	0.1677	1.1700e-003	0.1688	0.0445	1.0800e-003	0.0455		154.1895	154.1895	3.6400e-003		154.2806
Total	0.0558	0.0336	0.4825	1.5500e-003	0.1677	1.1700e-003	0.1688	0.0445	1.0800e-003	0.0455		154.1895	154.1895	3.6400e-003		154.2806

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	lb/day										lb/day					
Fugitive Dust					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	1.7109	17.9359	14.7507	0.0297	2.9486	0.7749	3.7235	1.5154	0.7129	2.2283	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

3.3 Grading - 2023

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	lb/day										lb/day					
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
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
Worker	0.0558	0.0336	0.4825	1.5500e-003	0.1677	1.1700e-003	0.1688	0.0445	1.0800e-003	0.0455		154.1895	154.1895	3.6400e-003		154.2806
Total	0.0558	0.0336	0.4825	1.5500e-003	0.1677	1.1700e-003	0.1688	0.0445	1.0800e-003	0.0455		154.1895	154.1895	3.6400e-003		154.2806

3.4 Building Construction - 2023

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

3.4 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.0506	1.7795	0.5011	6.3600e-003	0.1664	2.0000e-003	0.1684	0.0479	1.9100e-003	0.0498		680.8561	680.8561	0.0360		681.7553
Worker	0.2457	0.1477	2.1232	6.8100e-003	0.7377	5.1400e-003	0.7429	0.1957	4.7300e-003	0.2004		678.4339	678.4339	0.0160		678.8344
Total	0.2963	1.9272	2.6243	0.0132	0.9041	7.1400e-003	0.9113	0.2436	6.6400e-003	0.2502		1,359.2900	1,359.2900	0.0520		1,360.5897

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

3.4 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.0506	1.7795	0.5011	6.3600e-003	0.1664	2.0000e-003	0.1684	0.0479	1.9100e-003	0.0498		680.8561	680.8561	0.0360		681.7553
Worker	0.2457	0.1477	2.1232	6.8100e-003	0.7377	5.1400e-003	0.7429	0.1957	4.7300e-003	0.2004		678.4339	678.4339	0.0160		678.8344
Total	0.2963	1.9272	2.6243	0.0132	0.9041	7.1400e-003	0.9113	0.2436	6.6400e-003	0.2502		1,359.2900	1,359.2900	0.0520		1,360.5897

3.5 Paving - 2023

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	lb/day										lb/day					
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.4304	1,805.4304	0.5673		1,819.6122

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

3.5 Paving - 2023

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	lb/day										lb/day					
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
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
Worker	0.0745	0.0448	0.6434	2.0600e-003	0.2236	1.5600e-003	0.2251	0.0593	1.4300e-003	0.0607		205.5860	205.5860	4.8500e-003		205.7074
Total	0.0745	0.0448	0.6434	2.0600e-003	0.2236	1.5600e-003	0.2251	0.0593	1.4300e-003	0.0607		205.5860	205.5860	4.8500e-003		205.7074

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	lb/day										lb/day					
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

3.5 Paving - 2023

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	lb/day										lb/day					
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
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
Worker	0.0745	0.0448	0.6434	2.0600e-003	0.2236	1.5600e-003	0.2251	0.0593	1.4300e-003	0.0607		205.5860	205.5860	4.8500e-003		205.7074
Total	0.0745	0.0448	0.6434	2.0600e-003	0.2236	1.5600e-003	0.2251	0.0593	1.4300e-003	0.0607		205.5860	205.5860	4.8500e-003		205.7074

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

	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	lb/day										lb/day					
Mitigated	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
Unmitigated	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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Non-Asphalt Surfaces	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
Other Non-Asphalt Surfaces	0.550809	0.042355	0.203399	0.115606	0.014562	0.005806	0.021810	0.035336	0.002134	0.001736	0.004891	0.000712	0.000845

5.0 Energy Detail

Historical Energy Use: N

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

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	lb/day										lb/day					
NaturalGas Mitigated	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
NaturalGas Unmitigated	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

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	lb/day										lb/day					
Other Non-Asphalt Surfaces	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	
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

5.2 Energy by Land Use - NaturalGas

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	lb/day										lb/day					
Other Non-Asphalt Surfaces	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
Total		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

6.0 Area Detail

6.1 Mitigation Measures Area

	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	lb/day										lb/day					
Mitigated	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004
Unmitigated	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

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	lb/day										lb/day					
Architectural Coating	0.0120					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0557					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.0000e-005	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004
Total	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004

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	lb/day										lb/day					
Architectural Coating	0.0120					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0557					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.0000e-005	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004
Total	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004

7.0 Water Detail

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Summer

7.1 Mitigation Measures Water**8.0 Waste Detail**

8.1 Mitigation Measures Waste**9.0 Operational Offroad**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

SBCTA ZEMU Extended dates
South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.61	Acre	3.61	157,251.60	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Revised to meet 2024 op date

Construction Off-road Equipment Mitigation - Changed to match previous data

Mobile Land Use Mitigation -

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	230.00	200.00
tblConstructionPhase	PhaseEndDate	1/3/2024	11/22/2023
tblConstructionPhase	PhaseEndDate	1/29/2024	12/18/2023
tblConstructionPhase	PhaseStartDate	1/4/2024	11/23/2023

2.0 Emissions Summary

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

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	lb/day										lb/day					
Area	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004
Energy	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
Mobile	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	0.0677	0.0000	3.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000	0.0000	8.4000e-004

Mitigated 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	lb/day										lb/day					
Area	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004
Energy	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
Mobile	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	0.0677	0.0000	3.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000	0.0000	8.4000e-004

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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	1/28/2023	2/3/2023	5	5	
2	Grading	Grading	2/4/2023	2/15/2023	5	8	
3	Building Construction	Building Construction	2/16/2023	11/22/2023	5	200	
4	Paving	Paving	11/23/2023	12/18/2023	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 3.61

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

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	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	66.00	26.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2023

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	2.6595	27.5242	18.2443	0.0381	18.0663	1.2660	19.3323	9.9307	1.1647	11.0954		3,687.308 1	3,687.308 1	1.1926		3,717.121 9

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

3.2 Site Preparation - 2023

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	lb/day										lb/day					
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
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
Worker	0.0736	0.0441	0.5184	1.7400e-003	0.2012	1.4000e-003	0.2026	0.0534	1.2900e-003	0.0547		173.0334	173.0334	4.0600e-003		173.1350
Total	0.0736	0.0441	0.5184	1.7400e-003	0.2012	1.4000e-003	0.2026	0.0534	1.2900e-003	0.0547		173.0334	173.0334	4.0600e-003		173.1350

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	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	2.6595	27.5242	18.2443	0.0381	8.1298	1.2660	9.3958	4.4688	1.1647	5.6336	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

3.2 Site Preparation - 2023

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	lb/day										lb/day					
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
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
Worker	0.0736	0.0441	0.5184	1.7400e-003	0.2012	1.4000e-003	0.2026	0.0534	1.2900e-003	0.0547		173.0334	173.0334	4.0600e-003		173.1350
Total	0.0736	0.0441	0.5184	1.7400e-003	0.2012	1.4000e-003	0.2026	0.0534	1.2900e-003	0.0547		173.0334	173.0334	4.0600e-003		173.1350

3.3 Grading - 2023

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	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	1.7109	17.9359	14.7507	0.0297	6.5523	0.7749	7.3273	3.3675	0.7129	4.0804		2,872.6910	2,872.6910	0.9291		2,895.9182

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

3.3 Grading - 2023

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	lb/day										lb/day					
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
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
Worker	0.0614	0.0367	0.4320	1.4500e-003	0.1677	1.1700e-003	0.1688	0.0445	1.0800e-003	0.0455		144.1945	144.1945	3.3900e-003		144.2792
Total	0.0614	0.0367	0.4320	1.4500e-003	0.1677	1.1700e-003	0.1688	0.0445	1.0800e-003	0.0455		144.1945	144.1945	3.3900e-003		144.2792

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	lb/day										lb/day					
Fugitive Dust					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	1.7109	17.9359	14.7507	0.0297	2.9486	0.7749	3.7235	1.5154	0.7129	2.2283	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

3.3 Grading - 2023

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	lb/day										lb/day					
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
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
Worker	0.0614	0.0367	0.4320	1.4500e-003	0.1677	1.1700e-003	0.1688	0.0445	1.0800e-003	0.0455		144.1945	144.1945	3.3900e-003		144.2792
Total	0.0614	0.0367	0.4320	1.4500e-003	0.1677	1.1700e-003	0.1688	0.0445	1.0800e-003	0.0455		144.1945	144.1945	3.3900e-003		144.2792

3.4 Building Construction - 2023

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

3.4 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.0533	1.7681	0.5506	6.1800e-003	0.1664	2.1000e-003	0.1685	0.0479	2.0100e-003	0.0499		661.3403	661.3403	0.0383		662.2986
Worker	0.2700	0.1616	1.9008	6.3600e-003	0.7377	5.1400e-003	0.7429	0.1957	4.7300e-003	0.2004		634.4556	634.4556	0.0149		634.8283
Total	0.3233	1.9297	2.4514	0.0125	0.9041	7.2400e-003	0.9114	0.2436	6.7400e-003	0.2503		1,295.7960	1,295.7960	0.0532		1,297.1268

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

3.4 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.0533	1.7681	0.5506	6.1800e-003	0.1664	2.1000e-003	0.1685	0.0479	2.0100e-003	0.0499		661.3403	661.3403	0.0383		662.2986
Worker	0.2700	0.1616	1.9008	6.3600e-003	0.7377	5.1400e-003	0.7429	0.1957	4.7300e-003	0.2004		634.4556	634.4556	0.0149		634.8283
Total	0.3233	1.9297	2.4514	0.0125	0.9041	7.2400e-003	0.9114	0.2436	6.7400e-003	0.2503		1,295.7960	1,295.7960	0.0532		1,297.1268

3.5 Paving - 2023

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	lb/day										lb/day					
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.4304	1,805.4304	0.5673		1,819.6122

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

3.5 Paving - 2023

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	lb/day										lb/day					
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
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
Worker	0.0818	0.0490	0.5760	1.9300e-003	0.2236	1.5600e-003	0.2251	0.0593	1.4300e-003	0.0607		192.2593	192.2593	4.5200e-003		192.3722
Total	0.0818	0.0490	0.5760	1.9300e-003	0.2236	1.5600e-003	0.2251	0.0593	1.4300e-003	0.0607		192.2593	192.2593	4.5200e-003		192.3722

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	lb/day										lb/day					
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

3.5 Paving - 2023

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	lb/day										lb/day					
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
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
Worker	0.0818	0.0490	0.5760	1.9300e-003	0.2236	1.5600e-003	0.2251	0.0593	1.4300e-003	0.0607		192.2593	192.2593	4.5200e-003		192.3722
Total	0.0818	0.0490	0.5760	1.9300e-003	0.2236	1.5600e-003	0.2251	0.0593	1.4300e-003	0.0607		192.2593	192.2593	4.5200e-003		192.3722

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

	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	lb/day										lb/day					
Mitigated	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
Unmitigated	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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Non-Asphalt Surfaces	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
Other Non-Asphalt Surfaces	0.550809	0.042355	0.203399	0.115606	0.014562	0.005806	0.021810	0.035336	0.002134	0.001736	0.004891	0.000712	0.000845

5.0 Energy Detail

Historical Energy Use: N

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

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	lb/day										lb/day					
NaturalGas Mitigated	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
NaturalGas Unmitigated	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

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	lb/day										lb/day					
Other Non-Asphalt Surfaces	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	
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

5.2 Energy by Land Use - NaturalGas

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	lb/day										lb/day					
Other Non-Asphalt Surfaces	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
Total		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

6.0 Area Detail

6.1 Mitigation Measures Area

	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	lb/day										lb/day					
Mitigated	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004
Unmitigated	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

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	lb/day										lb/day					
Architectural Coating	0.0120					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0557					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.0000e-005	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004
Total	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004

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	lb/day										lb/day					
Architectural Coating	0.0120					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0557					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.0000e-005	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004
Total	0.0677	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.9000e-004	7.9000e-004	0.0000		8.4000e-004

7.0 Water Detail

SBCTA ZEMU Extended dates - South Coast AQMD Air District, Winter

7.1 Mitigation Measures Water**8.0 Waste Detail**

8.1 Mitigation Measures Waste**9.0 Operational Offroad**

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