APPENDIX A

AIR QUALITY AND GREENHOUSE GAS EMISSION ASSESSMENT

SOLAR4AMERICA ICE FACILITY EXPANSION AIR QUALITY AND GREENHOUSE GAS EMISSION ASSESSMENT

San José, California

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Introduction

The purpose of this report is to address air quality and greenhouse gas (GHG) impacts associated with the construction of two additional ice rinks and medical office uses at the existing Solar4America Ice Facility located at 1500 S. 10th Street in central San José, California. The air quality impacts from this project would be associated with demolition of the existing uses at the site, construction of the new buildings and infrastructure, and operation of the project. Air pollutants and GHG emissions associated with construction and operation of the project were predicted using models. The project site is not located within 1,000 feet of any sensitive receptors; therefore, health risk issues associated with project construction and operation were qualitatively addressed. The analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Project Description

The proposed project is the construction of two additional ice rinks and medical office uses at the existing Solar4America Ice Facility. The project would add approximately 200,800 square feet of new space to the existing 180,000 square foot facility including a community/practice ice rink (Rink 5) and a competition rink for the San Jose Barracuda (Rink 6). Approximately 3,000 square feet of existing facility space would be demolished, resulting in an approximately 377,800 square foot facility.

The proposed project also includes associated ancillary uses such as locker rooms, restrooms, reception and ticket lobbies, concessions/commissary/merchandise sales, bar/restaurant/lounge concepts, security/event offices, team training areas, support services, and loading dock and utility areas. Approximately 20,000 square feet of the expansion would include medical office uses to be leased to a 3rd party tenant and include a reception/lobby area, restrooms, offices, exam and physical therapy rooms, and support services.

Rink 5 would be two stories in height to allow for approximately 100 spectator seats and a homework/study room and a bar/restaurant concept on the second floor. Rink 6 would be three stories in height to allow capacity for approximately 4,213 spectators (seats, suites, and boxes). The rink would also be used as a community practice rink when not used by the San Jose Barracuda . The project intends to obtain LEED Silver certification or higher in accordance with City requirements.

The maximum number of parking spaces to be required by the facility after the expansion is 1,727. The project would reconfigure the existing parking on the site, resulting in a total of approximately 605 on-site parking spaces, including reserved spaces for professional hockey players and staff. Approximately 164 of the parking spaces would be spaces to be shared with the Excite Ballpark when events occur at the ballpark. The remaining spaces would be provided in a future 4-story, 1,500-space parking structure to be constructed by San Jose State University (SJSU) at the northeast corner of the intersection of S. 10th and Alma Streets.

[1] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

A long-term parking use agreement will be required between Sharks Ice and SJSU to guarantee that this parking will be available for use by Solar4America patrons when the new rinks are operational. It is assumed that if the parking structure is not completed by the time the Solar4America project is constructed, alternative parking in the project area will be identified. The garage will be operated by Sharks Ice during Solar4America events.

The project also includes the installation of one, 650 kW emergency generator with a 660-gallon fuel tank and sound-attenuating enclosure.

Setting

The project is located in Santa Clara County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_X). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the

California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

Regulatory Agencies

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.[2] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the CARB (a part of the California Environmental Protection Agency [EPA]) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has published California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.[3]

San José Envision 2040 General Plan

The San José Envision 2040 General Plan includes goals, policies, and actions to reduce exposure of the City's sensitive population to exposure of air pollution and toxic air contaminants or TACs. The following goals, policies, and actions are applicable to the proposed project and this assessment:

Applicable Goals – Air Pollutant Emission Reduction

Goal MS-10 Minimize emissions from new development.

Applicable Policies – Air Pollutant Emission Reduction

MS-10.1 Assess projected air emissions from new development in conformance with the Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines and relative to state and federal standards. Identify and implement feasible air emission reduction measures.

[2] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: November 21, 2014.
[3] Bay Area Air Quality Management District. 2017. *BAAQMD CEQA Air Quality Guidelines*. May.

MS-10.2 Consider the cumulative air quality impacts from proposed developments for proposed land use designation changes and new development, consistent with the region's Clean Air Plan and State law.

MS-10.3 Promote the expansion and improvement of public transportation services and facilities, where appropriate, to both encourage energy conservation and reduce air pollution.

Applicable Goals – Toxic Air Contaminants

Goal MS-11 Minimize exposure of people to air pollution and toxic air contaminants such as ozone, carbon monoxide, lead, and particulate matter.

Applicable Policies – Toxic Air Contaminants

MS-11.2 For projects that emit toxic air contaminants, require project proponents to prepare health risk assessments in accordance with BAAQMD-recommended procedures as part of environmental review and employ effective mitigation to reduce possible health risks to a less than significant level. Alternatively, require new projects (such as, but not limited to, industrial, manufacturing, and processing facilities) that are sources of TACs to be located an adequate distance from residential areas and other sensitive receptors.

MS-11.5 Encourage the use of pollution absorbing trees and vegetation in buffer areas between substantial sources of TACs and sensitive land uses.

Actions – Toxic Air Contaminants

MS-11.7 Consult with BAAQMD to identify stationary and mobile TAC sources and determine the need for and requirements of a health risk assessment for proposed developments.

MS-11.8 For new projects that generate truck traffic, require signage which reminds drivers that the State truck idling law limits truck idling to five minutes.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. The closest sensitive receptors to the project site are single-family residences, which are about 1,300 feet northwest on E. Humboldt Street.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District's 2011 *CEQA Air Quality Guidelines*. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the *CEQA Air Quality Guidelines* in 2017 to include the latest significance thresholds, which were used in this analysis and are summarized in Table 1. The commercial use would not be considered a sensitive receptor, so health risk standards would not apply to the proposed use.

Table 1. Air Quality Significance Thresholds

Criteria Air Pollutant	**Construction Thresholds**	**Operational Thresholds**	
	Average Daily Emissions (lbs./day)	**Average Daily Emissions (lbs./day)**	**Annual Average Emissions (tons/year)**
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)**	
Excess Cancer Risk	>10.0 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual $PM_{2.5}$	>0.3 µg/m^3	>0.8 µg/m^3	
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) 660 metric tons annually or 2.6 metric tons per capita (for 2030) *		

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.

*BAAQMD does not have a recommended post-2020 GHG threshold.

Construction & Operational Period Emissions: Criteria Air Pollutants

The Bay Area is considered a non-attainment area for ground-level ozone and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NO_X), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from construction and operation of the site assuming full build-out of the project. The project land use types and size, and anticipated construction schedule were input to CalEEMod. Separate model runs were developed for construction and operational inputs because of the unique traffic generating features of the project. The model construction output from CalEEMod along with construction inputs are included as *Attachment 1*.

Construction CalEEMod Inputs

Land Use Inputs

The project is unique in that it includes ice skate rinks that have different uses on a daily basis with common interior areas, amenity spaces on several floors, and medical office uses. The proposed project land uses were input into CalEEMod to predict construction emissions, which included 213,350 sf entered as "Arena", 20,000 sf entered as "Medical Office Building", and 86,300 sf f entered as "Parking Lot." The total construction acreage is 10 acres.

Construction Inputs

CalEEMod computes annual emissions for construction that are based on the project type, size and acreage. Inputs to CalEEMod were developed that take into account demolition of the on-site uses, excavation, and the tall building construction. CalEEMod provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. The construction build-out scenario, including equipment list and schedule, is provided in *Attachment 1*.

Construction phases include demolition, site preparation, trenching, grading and excavation, exterior building construction, interior building construction, and paving. For demolition, it was estimated that 5,200 tons would be removed. The project would involve removal of up to 14,000 cubic yards of material, exported by truck. In addition, 1,800 cement truck tips and 360 asphalt truck trips were entered into the model.

The construction schedule assumed that the earliest possible start date would be January 2020 and the project would be built out over a period of approximately 2 years, or about 500 construction workdays. The first earliest operational year was assumed to be 2022.

Operational CalEEMod Inputs

Operational air emissions from the project would be generated primarily from autos driven by future employees, customers, and vendors. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to estimate emissions from operation of the proposed project assuming full build-out.

Land Uses

Operational emissions were modeled separately for each use. Rink 5 was modeled as a 49,380-sf "Arena." Rink 6 was modeled as a 154,010-sf "Arena" two ways: (1) for typical practices similar to Rink 5 on 331 days per year and (2) for 34 events per year with an average of 3,000 attendees. The Medical Office Building was modeled as a 20,000-sf "Medical Office Building."

Operational Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest the project could possibly be constructed and begin operating would be 2022. Emissions associated with build-out later than 2022 would be lower.

Operational Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates, which were input to the model using the daily trip generation rate provided by Hexagon Transportation Consultants, Inc. (see Attachment 2). Rink 5 was assumed to generate 391 trips per day, each day of the week and 365 days per year. The same trip generation was applied to Rink 6, but for only 331 days per year. For average events, 3,000 attendees were assumed. Hexagon predicted 2,696 trips for a completely full arena event with 4,213 attendees and a 20-percent trip reduction for Transportation Demand Management (TDM) programs applied. This rate was ratioed to the 3,000-average attendee scenario. The trip rate provided for the medical office building was used and adjusted for weekends. The Saturday and Sunday trip rates for the Medical Office Building were computed by multiplying the trip rate by the ratio of the CalEEMod default rates for Saturday and Sunday trips to the default weekday rate. CalEEMod default trip lengths and trip types were used.

Energy

CalEEMod defaults for energy use were used, which include the 2016 Title 24 Building Standards. Indirect emissions from electricity were computed in CalEEMod. The model has a default rate of 641.3 pounds of CO_2 per megawatt of electricity produced, which is based on PG&E's 2008

emissions rate. The rate was adjusted to account for PG&E's projected 2020 CO_2 intensity rate. This 2020 rate is based, in part, on the requirement of a renewable energy portfolio standard of 33 percent by the year 2020. The derived 2020 rate for PG&E was estimated at 290 pounds of CO_2 per megawatt of electricity delivered.[4]

Emergency Generator Engine

The project would include an emergency generator used for back up electrical power in the event of a power outage. This generator is assumed to use a diesel-powered engine to produce electricity. The exact size and type have not been identified, but the engine powering the generator is assumed to be 1,000 horsepower (large enough to generate up to 750 kilowatts of electricity). Operation of a diesel generator would be a source of both air pollutant and TAC emissions. The generator would be operated for testing and maintenance purposes, with a maximum of 50 hours per year of non-emergency operation under normal conditions. During testing periods, the engine would typically be run for less than one hour under light engine loads. The generator engine would be required to meet U.S. EPA emission standards and consume commercially available California low sulfur diesel fuel. The emissions from the operation of the generator were calculated using CalEEMod.

Other Inputs

Default model assumptions for emissions associated with solid waste generation and water/wastewater use were applied to the project. Water/wastewater use was changed to 100% aerobic conditions to represent wastewater treatment plant conditions.

Construction Period Emissions

Annual emissions predicted using CalEEMod and the estimated 475 construction workdays are reported in Table 2. Average daily emissions were computed by dividing the total construction emissions by the number of construction days. Table 2 shows average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 2, predicted construction period emissions would not exceed the BAAQMD significance thresholds.

Table 2. Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total construction emissions (tons)	1.8 tons	4.9 tons	0.2 tons	0.2 tons
Average daily emissions (pounds)[1]	**7.1 lbs./day**	**19.8 lbs./day**	**0.8 lbs./day**	**0.8 lbs./day**
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Notes: [1]Assumes 475 workdays.

[4] Pacific Gas & Electric, 2015. *Greenhouse Gas Emission Factors: Guidance for PG&E Customers*. November.

Additionally, construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions. *Mitigation Measure AQ-1 would implement BAAQMD-recommended best management practices*.

Mitigation Measure AQ-1: **Include measures to control dust and exhaust during construction.**

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. Additional measures are identified to reduce construction equipment exhaust emissions. The contractor shall implement the following best management practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action

within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Effectiveness of Mitigation Measure AQ-1

The measures included above would be consistent with BAAQMD-recommended basic control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines.

Operational Period Emissions

Operational emissions are shown in terms of annual emissions in tons per year and average daily emissions in pounds per day. The contribution from each operational component is shown in Table 3. Operational emissions would not exceed the BAAQMD significance thresholds. This would be considered a *less-than-significant* impact.

Table 3. Operational Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
Annual Emissions				
Rink 5	0.4 tons	0.4 tons	0.3 tons	0.1 tons
Rink 6 (typical)	0.4 tons	0.4 tons	0.3 tons	0.1 tons
Rink 6 (events)	0.1 tons	0.2 tons	0.3 tons	0.1 tons
Medical Office Building	0.2 tons	0.5 tons	0.4 tons	0.1 tons
Total Annual Emissions	1.15 tons	2.07 tons	1.10 tons	0.31 tons
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Project Operational Emissions (*lbs/day*)[1]	6.3 lbs.	11.3 lbs.	6.0 lbs.	1.7 lbs.
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	*No*	*No*	*No*	*No*

Notes: [1] Assumes 365-day operation.

Community Risk Impacts

Project impacts related to increased community risk can occur either by introducing a new sensitive receptor, such as a residential use, in proximity to an existing source of TACs or by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity. The project would not introduce new sensitive receptors. The project would generate automobile traffic and infrequent truck traffic and introduce a diesel generator.

BAAQMD has developed community risk thresholds that evaluate increased cancer risk, non-cancer adverse health impacts in terms of a hazard index and annual $PM_{2.5}$ concentrations (see Table 1). Project construction would be a temporary source of TAC and $PM_{2.5}$ emissions. Most on-site construction equipment would be diesel-powered. DPM that would be emitted from this

equipment and trucks used during construction, is a TAC that can elevate cancer risk and $PM_{2.5}$ concentrations.

In applying the community risk thresholds, BAAQMD recommends that sensitive receptors within 1,000 feet of a project be considered. The closest sensitive receptors to the project are located beyond 1,000 feet at about 1,300 feet. A health risk assessment of the project construction activities was not conducted since sensitive receptors are not located near the site. Given the large distance and temporary nature of this impact, community risk caused by construction is considered ***less than significant***. It should be noted that Mitigation Measure AQ-1 would reduce the emissions of TACs and $PM_{2.5}$ during construction.

Operational Traffic

BAAQMD CEQA Air Quality Guidelines recommend projects evaluate roadway impacts where traffic volumes exceed 20,000 vehicles per day. The project, on average, would generate 1,620 daily trips. The project traffic would not cause health risk impacts along roadways serving the project as the total project traffic projections are below the BAAQMD screening volumes. Therefore, health risk levels are below the BAAQMD thresholds of 10 chances per million and 0.3 $\mu g/m^3$.

Operational Emergency Generator Modeling

The project would include an emergency generator. The size of the generator has not been determined; therefore, they were assumed to be 1,000-horsepower. Operation of a diesel generator would be a source of TAC emissions. The generator would be operated for testing and maintenance purposes, with a maximum of 50 hours per year of non-emergency operation under normal conditions. During testing periods, the engine would typically be run for less than one hour under light engine loads.

The generator engine would be required to meet U.S. EPA emission standards and consume commercially available California low sulfur diesel fuel. The emissions from the operation of the generator were calculated using the CalEEMod model. This diesel engine would be subject to CARB's Stationary Diesel Airborne Toxics Control Measure (ATCM) and require permits from the BAAQMD, since it will be equipped with an engine larger than 50 hp. As part of the BAAQMD permit requirements for toxics screening analysis, the engine emissions will have to meet Best Available Control Technology for Toxics (TBACT) and pass the toxic risk screening level of less than ten in a million. The risk assessment would be prepared by BAAQMD. Depending on results, BAAQMD would set limits for DPM emissions (e.g., more restricted engine operation periods). Sources of air pollutant emissions complying with all applicable BAAQMD regulations generally will not be considered to have a significant air quality commu**nity risk impact.**

The project site, where the generator would be located, is not within 1,000 feet of sensitive receptors; therefore, an analysis of health risk impacts from the generator was not necessary to show less than significant health risk impacts.

Greenhouse Gases

Setting

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate. The most common GHGs are carbon dioxide (CO_2) and water vapor but there are also several others, most importantly methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO_2 and N_2O are byproducts of fossil fuel combustion.
- N_2O is associated with agricultural operations such as fertilization of crops.
- CH_4 is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of CO_2 equivalents (CO_2e).

An expanding body of scientific research supports the theory that global climate change is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California are adversely affected by the global warming trend. Increased precipitation and sea level rise will increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes and drought; and increased levels of air pollution.

Recent Regulatory Actions

Assembly Bill 32 (AB 32), California Global Warming Solutions Act (2006)

AB 32, the Global Warming Solutions Act of 2006, codified the State's GHG emissions target by directing CARB to reduce the State's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, the CARB, CEC, California Public Utilities Commission (CPUC), and Building Standards

Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State's main strategies to reduce GHGs from business-as-usual emissions projected in 2020 back down to 1990 levels. Business-as-usual (BAU) is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.

Senate Bill 375, California's Regional Transportation and Land Use Planning Efforts (2008)

California enacted legislation (SB 375) to expand the efforts of AB 32 by controlling indirect GHG emissions caused by urban sprawl. SB 375 provides incentives for local governments and applicants to implement new conscientiously planned growth patterns. This includes incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The legislation also allows applicants to bypass certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Development of more alternative transportation options that would reduce vehicle trips and miles traveled, along with traffic congestion, would be encouraged. SB 375 enhances CARB's ability to reach the AB 32 goals by directing the agency in developing regional GHG emission reduction targets to be achieved from the transportation sector for 2020 and 2035. CARB works with the metropolitan planning organizations (e.g. Association of Bay Area Governments [ABAG] and Metropolitan Transportation Commission [MTC]) to align their regional transportation, housing, and land use plans to reduce vehicle miles traveled and demonstrate the region's ability to attain its GHG reduction targets. A similar process is used to reduce transportation emissions of ozone precursor pollutants in the Bay Area.

SB 350 Renewable Portfolio Standards

In September 2015, the California Legislature passed SB 350, which increases the states Renewables Portfolio Standard (RPS) for content of electrical generation from the 33 percent target for 2020 to a 50 percent renewables target by 2030.

Executive Order EO-B-30-15 (2015) and SB 32 GHG Reduction Targets

In April 2015, Governor Brown signed Executive Order which extended the goals of AB 32, setting a greenhouse gas emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed SB 32, which legislatively established the GHG reduction target of 40 percent of 1990 levels by 2030. In November 2017, CARB issued *California's 2017 Climate Change Scoping Plan*. While the State is on track to exceed the AB 32 scoping plan 2020 targets, this plan is an update to reflect the enacted SB 32 reduction target.

The new Scoping Plan establishes a strategy that will reduce GHG emissions in California to meet the 2030 target (note that the AB 32 Scoping Plan only addressed 2020 targets and a long-term

goal). Key features of this plan are:

- Cap and Trade program places a firm limit on 80 percent of the State's emissions;
- Achieving a 50-percent Renewable Portfolio Standard by 2030 (currently at about 29 percent statewide);
- Increase energy efficiency in existing buildings;
- Develop fuels with an 18-percent reduction in carbon intensity;
- Develop more high-density, transit oriented housing;
- Develop walkable and bikable communities;
- Greatly increase the number of electric vehicles on the road and reduce oil demand in half;
- Increase zero-emissions transit so that 100 percent of new buses are zero emissions;
- Reduce freight-related emissions by transitioning to zero emissions where feasible and near-zero emissions with renewable fuels everywhere else; and
- Reduce "super pollutants" by reducing methane and hydrofluorocarbons or HFCs by 40 percent.

In the updated Scoping Plan, CARB recommends statewide targets of no more than 6 metric tons CO_2e per capita (statewide) by 2030 and no more than 2 metric tons CO_2e per capita by 2050. The statewide per capita targets account for all emissions sectors in the State, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 and the longer-term State emissions reduction goal of 80 percent below 1990 levels by 2050.

Significance Thresholds

The BAAQMD's CEQA Air Quality Guidelines recommended a GHG threshold of 1,100 metric tons or 4.6 metric tons (MT) per capita. These thresholds were developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate. Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a "Substantial Progress" efficiency metric of 2.6 MT CO_2e/year/service population and a bright-line threshold of 660 MT CO_{2e}/year based on the GHG reduction goals of EO B-30-15. The service population metric of 2.6 is calculated for 2030 based on the 1990 inventory and the projected 2030 statewide population and employment levels.[5] The 2030 bright-line threshold is a 40 percent reduction of the 2020 1,100 MT CO_{2e}/year threshold.

Greenhouse Gas Emissions Analysis

GHG emissions associated with development of the proposed project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic within the project vicinity, the generator, energy and water usage, and solid waste

[5] Association of Environmental Professionals, 2016. *Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. April.

disposal. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.

CalEEMod Modeling

CalEEMod was used to predict GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were input to the model, as described above. CalEEMod output is included in *Attachment 2*.

Service Population Emissions

The project service population efficiency rate is based on the number of future full-time commercial and retail employees. The number of new workers was estimated at up to 18 for the MOB and 15 for the regular operation of the rinks.

Stationary Sources

Stationary sources that are permitted by BAAQMD are assessed separate from other project-related emissions. The project would include an emergency generator that is anticipated to emit 19 metric tons per year of CO2e. These emissions are compared against the BAAQMD threshold of 10,000 metric tons per year for BAAQMD-permitted stationary equipment.

Construction Emissions

GHG emissions associated with construction were computed to be 909 MT of CO_2e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction-related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable. Best management practices assumed to be incorporated into construction of the proposed project include but are not limited to: using local building materials of at least 10 percent and recycling or reusing at least 50 percent of construction waste or demolition materials.

Operational Emissions

The CalEEMod model, along with the project vehicle trip generation rates, was used to estimate daily emissions associated with operation of the fully-developed site under the proposed project. As shown in Table 5, annual new emissions resulting from operation of the proposed project are predicted to be 1,597 MT of CO_2e in 2022 and 1,388 MT of CO_2e in 2030. The service population emission for the year 2022 and 2030 are predicted to be 48.4 and 42.1 MT/CO_{2e}/year/service population, respectively since the project has so few full-time employees. The project would exceed the 2030 operational annual emissions bright-line threshold of 660 MT CO_2e/year and the service population emissions "Substantial Progress" efficiency metric of 2.6 MT CO_2e/year/service population.

Table 5. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	Proposed Project in 2022	Proposed Project in 2030
Area	<1	<1
Energy Consumption	387	337
Mobile	1,057	848
Solid Waste Generation	111	111
Water Usage	72	72
Total	1,597	1,388
Bright-Line Significance Threshold	**660**	
Service Population Emissions	*48.4*	*42.1*
Significance Threshold	**2.6**	
Stationary Sources	19	19

Supporting Documentation

Attachment 1 includes the CalEEMod output for project construction along with the construction modeling assumptions.

Attachment 2 includes the operational criteria air pollutant and GHG emissions. The operational output for 2022 and 2030 project uses are also included in this attachment. Also included are any modeling assumptions.

Attachment 1: Construction CalEEMod Modeling Output and Assumptions

Project Name: Sharks Ice 5&6

Project Size

	Dwelling Units		total project acres disturbed
	s.f. residential		s.f. retail
233,345	s.f. office/commercial		s.f. other, specify:
	s.f. other, specify:		
	s.f. parking garage		spaces
86,300	s.f. parking lot		spaces

Construction Hours 7 am to 7 pm

Complete ALL Portions in Yellow

Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Comments
	Demolition	**Start Date:**	**1/6/2020**	**Total phase:**	**45**		**Overall Import/Export Volumes**
		End Date:	**3/6/2020**				
1	Concrete/Industrial Saws	81	0.73	8	3	0.5	**Demolition Volume**
1	Excavators	162	0.38	8	10	1.8	Square footage of buildings to be demolished
1	Rubber-Tired Dozers	255	0.4	8	10	1.8	(or total tons to be hauled)
1	Tractors/Loaders/Backhoes	97	0.37	8	10	1.8	**336,000** square feet *or*
							5,200tons Hauling volume (tons)
	Site Preperation	**Start Date:**	**1/6/2020**	**Total phase:**	**45**		Any pavement demolished and hauled? **?** **tons**
		End Date:	**3/6/2020**				**Soil Hauling Volume**
1	Graders	174	0.41	8	10	1.8	
1	Rubber Tired Dozers	255	0.4	8	10	1.8	Export volume = **INCL BELOW** cubic yards?
1	Tractors/Loaders/Backhoes	97	0.37	8	10	1.8	Import volume = **0** cubic yards?
	Grading / Excavation	**Start Date:**	**1/6/2020**	**Total phase:**	**45**		
		End Date:	**3/6/2020**				**Soil Hauling Volume**
2	Scrapers	361	0.48	8	10	1.8	
1	Excavators	162	0.38	8	5	0.9	Export volume = **14,000** cubic yards?
1	Graders	174	0.41	8	50	8.9	Import volume = **0** cubic yards?
1	Rubber Tired Dozers	255	0.4	8	10	1.8	
1	Tractors/Loaders/Backhoes	97	0.37	8	50	8.9	
	Other Equipment?						
	Trenching	**Start Date:**	**1/6/2020**	**Total phase:**	**45**		
		End Date:	**3/6/2020**				
1	Tractor/Loader/Backhoe	97	0.37	8	40	7.1	
2	Excavators	162	0.38	8	40	7.1	
	Other Equipment?						
	Building - Exterior	**Start Date:**	**3/6/2020**	**Total phase:**	**185**		**Cement Trucks? 900 Total Round-Trips**
		End Date:	**12/1/2020**				
2	Cranes	226	0.29	8	120	5.2	Electric? (Y/N) N Otherwise assumed diesel
4	Forklifts	89	0.2	8	120	5.2	Liquid Propane (LPG)? (Y/N) N Otherwise Assumed diesel
1	Generator Sets	84	0.74	8	150	6.5	Or temporary line power? (Y/N) Y
	Tractors/Loaders/Backhoes	97	0.37	N/A	N/A		otherwise, assume diesel generator
4	Welders	46	0.45	8	120	5.2	
	Other Equipment?					0.0	
	Building - Interior/Architectural Coating	**Start Date:**	**12/1/2020**	**Total phase:**	**285**		
		End Date:	**1/25/2022**				
4	Air Compressors	78	0.48	8	285	8.0	
4	Aerial Lift	62	0.31	8	285	8.0	
	Other Equipment?						
	Paving	**Start Date:**	**11/26/2021**	**Total phase:**	**45**		
		Start Date:	**1/25/2022**				
1	Cement and Mortar Mixers	9	0.56	8	15	2.7	
1	Pavers	125	0.42	8	5	0.9	**Asphalt 3,720 tons cubic yards or 180 round trips?**
1	Paving Equipment	130	0.36	8	5	0.9	
1	Rollers	80	0.38	8	5	0.9	
1	Tractors/Loaders/Backhoes	97	0.37	8	5	0.9	
	Other Equipment?						

Equipment listed in this sheet is to provide an example of inputs
It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate
Modify horepower or load factor, as appropriate

Typical Equipment Type & Load Factors

OFFROAD Equipment Type	HP	Load Factor
Aerial Lifts	62	0.31
Air Compressors	78	0.48
Bore/Drill Rigs	205	0.5
Cement and Mortar Mixers	9	0.56
Concrete/Industrial Saws	81	0.73
Cranes	226	0.29
Crawler Tractors	208	0.43
Crushing/Proc. Equipment	85	0.78
Dumpers/Tenders	16	0.38
Excavators	162	0.38
Forklifts	89	0.2
Generator Sets	84	0.74
Graders	174	0.41
Off-Highway Tractors	122	0.44
Off-Highway Trucks	400	0.38
Other Construction Equipment	171	0.42
Other General Industrial Equipment	150	0.34
Other Material Handling Equipment	167	0.4
Pavers	125	0.42
Paving Equipment	130	0.36
Plate Compactors	8	0.43
Pressure Washers	13	0.2
Pumps	84	0.74
Rollers	80	0.38
Rough Terrain Forklifts	100	0.4
Rubber Tired Dozers	255	0.4
Rubber Tired Loaders	199	0.36
Scrapers	361	0.48
Signal Boards	6	0.82
Skid Steer Loaders	64	0.37
Surfacing Equipment	253	0.3
Sweepers/Scrubbers	64	0.46
Tractors/Loaders/Backhoes	97	0.37
Trenchers	80	0.5
Welders	46	0.45

Sharks Ice Rinks 5 only - Santa Clara County, Annual

Sharks Ice Rinks 5 only

Santa Clara County, Annual

Operation

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Arena	49.38	1000sqft	15.87	49,376.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Rate

Land Use - Rink 5 only

Construction Phase - Operational Run

Off-road Equipment - Based on construction schedule and equipment list

Off-road Equipment - Based on construction schedule and equipment list

Trips and VMT - Based on construction schedule and equipment list

Demolition - Based on construction schedule and equipment list

Grading - Based on construction schedule and equipment list

Vehicle Trips - Based on 49.38 ksf

Water And Wastewater - wtp treatment

Solid Waste -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	24688	116673
tblAreaCoating	Area_Nonresidential_Interior	74064	350018
tblAreaCoating	Area_Parking	0	5178
tblConstructionPhase	NumDays	10.00	0.00
tblGrading	AcresOfGrading	0.00	5.06
tblLandUse	LandUseSquareFeet	49,380.00	49,376.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	UsageHours	8.00	1.80
tblOffRoadEquipment	UsageHours	8.00	1.80
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1,000.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	0.00	8.00
tblVehicleTrips	ST_TR	10.71	7.92
tblVehicleTrips	SU_TR	10.71	7.92
tblVehicleTrips	WD_TR	10.71	7.92
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

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	0.3164	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.4000e-004
Energy	7.0200e-003	0.0639	0.0536	3.8000e-004		4.8500e-003	4.8500e-003		4.8500e-003	4.8500e-003	0.0000	123.1572	123.1572	6.7000e-003	2.3800e-003	124.0351
Mobile	0.0858	0.3514	0.9305	3.1000e-003	0.2824	2.6700e-003	0.2851	0.0756	2.4900e-003	0.0781	0.0000	284.1578	284.1578	9.9600e-003	0.0000	284.4069
Stationary	0.0410	0.1835	0.1046	2.0000e-004		6.0400e-003	6.0400e-003		6.0400e-003	6.0400e-003	0.0000	19.0399	19.0399	2.6700e-003	0.0000	19.1066
Waste						0.0000	0.0000		0.0000	0.0000	0.2761	0.0000	0.2761	0.0163	0.0000	0.6840
Water						0.0000	0.0000		0.0000	0.0000	7.5259	15.7655	23.2914	0.0275	0.0167	28.9527
Total	**0.4502**	**0.5987**	**1.0892**	**3.6800e-003**	**0.2824**	**0.0136**	**0.2960**	**0.0756**	**0.0134**	**0.0890**	**7.8019**	**442.1213**	**449.9232**	**0.0631**	**0.0191**	**457.1863**

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	0.3164	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.4000e-004
Energy	7.0200e-003	0.0639	0.0536	3.8000e-004		4.8500e-003	4.8500e-003		4.8500e-003	4.8500e-003	0.0000	123.1572	123.1572	6.7000e-003	2.3800e-003	124.0351
Mobile	0.0858	0.3514	0.9305	3.1000e-003	0.2824	2.6700e-003	0.2851	0.0756	2.4900e-003	0.0781	0.0000	284.1578	284.1578	9.9600e-003	0.0000	284.4069
Stationary	0.0410	0.1835	0.1046	2.0000e-004		6.0400e-003	6.0400e-003		6.0400e-003	6.0400e-003	0.0000	19.0399	19.0399	2.6700e-003	0.0000	19.1066

Waste						0.0000	0.0000		0.0000	0.0000	0.2761	0.0000	0.2761	0.0163	0.0000	0.6840
Water						0.0000	0.0000		0.0000	0.0000	7.5259	15.7655	23.2914	0.0275	0.0167	28.9527
Total	**0.4502**	**0.5987**	**1.0892**	**3.6800e-003**	**0.2824**	**0.0136**	**0.2960**	**0.0756**	**0.0134**	**0.0890**	**7.8019**	**442.1213**	**449.9232**	**0.0631**	**0.0191**	**457.1863**

	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	N20	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**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.0858	0.3514	0.9305	3.1000e-003	0.2824	2.6700e-003	0.2851	0.0756	2.4900e-003	0.0781	0.0000	284.1578	284.1578	9.9600e-003	0.0000	284.4069
Unmitigated	0.0858	0.3514	0.9305	3.1000e-003	0.2824	2.6700e-003	0.2851	0.0756	2.4900e-003	0.0781	0.0000	284.1578	284.1578	9.9600e-003	0.0000	284.4069

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Arena	391.09	391.09	391.09	759,473	759,473
Total	391.09	391.09	391.09	759,473	759,473

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Arena	9.50	7.30	7.30	0.00	81.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Arena	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	53.6488	53.6488	5.3600e-003	1.1100e-003	54.1137
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	53.6488	53.6488	5.3600e-003	1.1100e-003	54.1137
NaturalGas Mitigated	7.0200e-003	0.0639	0.0536	3.8000e-004		4.8500e-003	4.8500e-003		4.8500e-003	4.8500e-003	0.0000	69.5084	69.5084	1.3300e-003	1.2700e-003	69.9215
NaturalGas Unmitigated	7.0200e-003	0.0639	0.0536	3.8000e-004		4.8500e-003	4.8500e-003		4.8500e-003	4.8500e-003	0.0000	69.5084	69.5084	1.3300e-003	1.2700e-003	69.9215

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU/yr	tons/yr										MT/yr					
Arena	1.30254e+006	7.0200e-003	0.0639	0.0536	3.8000e-004		4.8500e-003	4.8500e-003		4.8500e-003	4.8500e-003	0.0000	69.5084	69.5084	1.3300e-003	1.2700e-003	69.9215
Total		**7.0200e-003**	**0.0639**	**0.0536**	**3.8000e-004**		**4.8500e-003**	**4.8500e-003**		**4.8500e-003**	**4.8500e-003**	**0.0000**	**69.5084**	**69.5084**	**1.3300e-003**	**1.2700e-003**	**69.9215**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Arena	1.30254e+006	7.0200e-003	0.0639	0.0536	3.8000e-004		4.8500e-003	4.8500e-003		4.8500e-003	4.8500e-003	0.0000	69.5084	69.5084	1.3300e-003	1.2700e-003	69.9215
Total		**7.0200e-003**	**0.0639**	**0.0536**	**3.8000e-004**		**4.8500e-003**	**4.8500e-003**		**4.8500e-003**	**4.8500e-003**	**0.0000**	**69.5084**	**69.5084**	**1.3300e-003**	**1.2700e-003**	**69.9215**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Arena	407846	53.6488	5.3600e-003	1.1100e-003	54.1137
Total		**53.6488**	**5.3600e-003**	**1.1100e-003**	**54.1137**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Arena	407846	53.6488	5.3600e-003	1.1100e-003	54.1137
Total		**53.6488**	**5.3600e-003**	**1.1100e-003**	**54.1137**

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	0.3164	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.4000e-004
Unmitigated	0.3164	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.4000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1235					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1928					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.4000e-004
Total	**0.3164**	**0.0000**	**4.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.8000e-004**	**8.8000e-004**	**0.0000**	**0.0000**	**9.4000e-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	tons/yr										MT/yr					
Architectural Coating	0.1235					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1928					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.8000e-004	8.8000e-004	0.0000	0.0000	9.4000e-004
Total	**0.3164**	**0.0000**	**4.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.8000e-004**	**8.8000e-004**	**0.0000**	**0.0000**	**9.4000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	23.2914	0.0275	0.0167	28.9527
Unmitigated	23.2914	0.0275	0.0167	28.9527

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Arena	21.2714 / 1.35775	23.2914	0.0275	0.0167	28.9527
Total		**23.2914**	**0.0275**	**0.0167**	**28.9527**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			

Arena	21.2714 / 1.35775	23.2914	0.0275	0.0167	28.9527
Total		**23.2914**	**0.0275**	**0.0167**	**28.9527**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2761	0.0163	0.0000	0.6840
Unmitigated	0.2761	0.0163	0.0000	0.6840

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Arena	1.36	0.2761	0.0163	0.0000	0.6840
Total		**0.2761**	**0.0163**	**0.0000**	**0.6840**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Arena	1.36	0.2761	0.0163	0.0000	0.6840
Total		**0.2761**	**0.0163**	**0.0000**	**0.6840**

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
Emergency Generator	1	0	50	1000	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.0410	0.1835	0.1046	2.0000e-004		6.0400e-003	6.0400e-003		6.0400e-003	6.0400e-003	0.0000	19.0399	19.0399	2.6700e-003	0.0000	19.1066
Total	**0.0410**	**0.1835**	**0.1046**	**2.0000e-004**		**6.0400e-003**	**6.0400e-003**		**6.0400e-003**	**6.0400e-003**	**0.0000**	**19.0399**	**19.0399**	**2.6700e-003**	**0.0000**	**19.1066**

11.0 Vegetation

Sharks Ice Rinks 6 Events only (34 days) - Santa Clara County, Annual

Sharks Ice Rinks 6 Events only (34 days)

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Arena	154.01	1000sqft	10.00	154,013.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Rate

Land Use - Rink 6 only

Construction Phase - Operational Run

Off-road Equipment - Based on construction schedule and equipment list

Off-road Equipment - Based on construction schedule and equipment list

Trips and VMT - Based on construction schedule and equipment list

Demolition - Based on construction schedule and equipment list

Grading - Based on construction schedule and equipment list

Vehicle Trips - Based on 154.013 ksf and adjusted peak traffic to 3,000seats from 4,213 and included TDM =1920 trips

Water And Wastewater - wtp treatment

Solid Waste -

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	1/14/2020	12/31/2019
tblLandUse	LotAcreage	49.50	10.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	WorkerTripNumber	0.00	18.00
tblVehicleTrips	ST_TR	10.71	12.46
tblVehicleTrips	SU_TR	10.71	12.46
tblVehicleTrips	WD_TR	10.71	12.46

2.0 Emissions Summary

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	0.6819	1.0000e-005	1.4200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7500e-003	2.7500e-003	1.0000e-005	0.0000	2.9300e-003
Energy	0.0219	0.1992	0.1673	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	384.1504	384.1504	0.0209	7.4400e-003	386.8889
Mobile	0.4212	1.7242	4.5659	0.0152	1.3858	0.0131	1.3988	0.3709	0.0122	0.3832	0.0000	1,394.3080	1,394.3080	0.0489	0.0000	1,395.5304
Waste						0.0000	0.0000		0.0000	0.0000	0.8607	0.0000	0.8607	0.0509	0.0000	2.1323

Water						0.0000	0.0000		0.0000	0.0000	21.0475	49.1707	70.2182	2.1667	0.0521	139.9002
Total	**1.1250**	**1.9233**	**4.7346**	**0.0164**	**1.3858**	**0.0282**	**1.4140**	**0.3709**	**0.0274**	**0.3983**	**21.9082**	**1,827.6318**	**1,849.5401**	**2.2874**	**0.0595**	**1,924.4546**

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	0.6819	1.0000e-005	1.4200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7500e-003	2.7500e-003	1.0000e-005	0.0000	2.9300e-003
Energy	0.0219	0.1992	0.1673	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	384.1504	384.1504	0.0209	7.4400e-003	386.8889
Mobile	0.4212	1.7242	4.5659	0.0152	1.3858	0.0131	1.3988	0.3709	0.0122	0.3832	0.0000	1,394.3080	1,394.3080	0.0489	0.0000	1,395.5304
Waste						0.0000	0.0000		0.0000	0.0000	0.8607	0.0000	0.8607	0.0509	0.0000	2.1323
Water						0.0000	0.0000		0.0000	0.0000	21.0475	49.1707	70.2182	2.1667	0.0521	139.9002
Total	**1.1250**	**1.9233**	**4.7346**	**0.0164**	**1.3858**	**0.0282**	**1.4140**	**0.3709**	**0.0274**	**0.3983**	**21.9082**	**1,827.6318**	**1,849.5401**	**2.2874**	**0.0595**	**1,924.4546**

	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	N20	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**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.4212	1.7242	4.5659	0.0152	1.3858	0.0131	1.3988	0.3709	0.0122	0.3832	0.0000	1,394.3080	1,394.3080	0.0489	0.0000	1,395.5304
Unmitigated	0.4212	1.7242	4.5659	0.0152	1.3858	0.0131	1.3988	0.3709	0.0122	0.3832	0.0000	1,394.3080	1,394.3080	0.0489	0.0000	1,395.5304

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Arena	1,919.00	1,919.00	1919.00	3,726,587	3,726,587
Total	1,919.00	1,919.00	1,919.00	3,726,587	3,726,587

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	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
Arena	9.50	7.30	7.30	0.00	81.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Arena	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	167.3405	167.3405	0.0167	3.4600e-003	168.7906
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	167.3405	167.3405	0.0167	3.4600e-003	168.7906
NaturalGas Mitigated	0.0219	0.1992	0.1673	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.8098	216.8098	4.1600e-003	3.9700e-003	218.0982
NaturalGas Unmitigated	0.0219	0.1992	0.1673	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.8098	216.8098	4.1600e-003	3.9700e-003	218.0982

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Arena	4.06286e+006	0.0219	0.1992	0.1673	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.8098	216.8098	4.1600e-003	3.9700e-003	218.0982
Total		**0.0219**	**0.1992**	**0.1673**	**1.1900e-003**		**0.0151**	**0.0151**		**0.0151**	**0.0151**	**0.0000**	**216.8098**	**216.8098**	**4.1600e-003**	**3.9700e-003**	**218.0982**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU/yr	tons/yr										MT/yr					
Arena	4.06286e+006	0.0219	0.1992	0.1673	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.8098	216.8098	4.1600e-003	3.9700e-003	218.0982
Total		**0.0219**	**0.1992**	**0.1673**	**1.1900e-003**		**0.0151**	**0.0151**		**0.0151**	**0.0151**	**0.0000**	**216.8098**	**216.8098**	**4.1600e-003**	**3.9700e-003**	**218.0982**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Arena	1.27215e+006	167.3405	0.0167	3.4600e-003	168.7906
Total		**167.3405**	**0.0167**	**3.4600e-003**	**168.7906**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Arena	1.27215e+006	167.3405	0.0167	3.4600e-003	168.7906
Total		**167.3405**	**0.0167**	**3.4600e-003**	**168.7906**

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	0.6819	1.0000e-005	1.4200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7500e-003	2.7500e-003	1.0000e-005	0.0000	2.9300e-003
Unmitigated	0.6819	1.0000e-005	1.4200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7500e-003	2.7500e-003	1.0000e-005	0.0000	2.9300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0803					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6015					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.3000e-004	1.0000e-005	1.4200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7500e-003	2.7500e-003	1.0000e-005	0.0000	2.9300e-003
Total	**0.6819**	**1.0000e-005**	**1.4200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.7500e-003**	**2.7500e-003**	**1.0000e-005**	**0.0000**	**2.9300e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0803					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6015					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.3000e-004	1.0000e-005	1.4200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.7500e-003	2.7500e-003	1.0000e-005	0.0000	2.9300e-003
Total	**0.6819**	**1.0000e-005**	**1.4200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.7500e-003**	**2.7500e-003**	**1.0000e-005**	**0.0000**	**2.9300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	70.2182	2.1667	0.0521	139.9002
Unmitigated	70.2182	2.1667	0.0521	139.9002

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Arena	66.3429 / 4.23465	70.2182	2.1667	0.0521	139.9002
Total		**70.2182**	**2.1667**	**0.0521**	**139.9002**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Arena	66.3429 / 4.23465	70.2182	2.1667	0.0521	139.9002
Total		**70.2182**	**2.1667**	**0.0521**	**139.9002**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			

Mitigated	0.8607	0.0509	0.0000	2.1323
Unmitigated	0.8607	0.0509	0.0000	2.1323

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Arena	4.24	0.8607	0.0509	0.0000	2.1323
Total		**0.8607**	**0.0509**	**0.0000**	**2.1323**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Arena	4.24	0.8607	0.0509	0.0000	2.1323
Total		**0.8607**	**0.0509**	**0.0000**	**2.1323**

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

11.0 Vegetation

Sharks Ice Rinks 5&6 - MOB

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	20.00	1000sqft	0.46	20,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Rate

Land Use - New MOB

Construction Phase - Operation only

Off-road Equipment - Based on construction schedule and equipment list

Off-road Equipment - Based on construction schedule and equipment list

Trips and VMT - Based on construction schedule and equipment list

Demolition - Based on construction schedule and equipment list

Grading - Based on construction schedule and equipment list

Vehicle Trips - MOB = 34.8 weekday, 8.63,1.49

Energy Use -

Water And Wastewater - wtp treatment

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	1.00	0.00
tblConstructionPhase	PhaseEndDate	1/15/2020	1/14/2020
tblGrading	AcresOfGrading	0.00	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	WorkerTripNumber	0.00	5.00
tblVehicleTrips	ST_TR	8.96	8.63
tblVehicleTrips	SU_TR	1.55	1.49
tblVehicleTrips	WD_TR	36.13	34.80
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

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	0.0886	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Energy	1.7700e-003	0.0161	0.0135	1.0000e-004		1.2200e-003	1.2200e-003		1.2200e-003	1.2200e-003	0.0000	64.3791	64.3791	5.0300e-003	1.2900e-003	64.8894

Mobile	0.1157	0.4745	1.2586	4.2000e-003	0.3829	3.6100e-003	0.3865	0.1025	3.3700e-003	0.1059	0.0000	384.9873	384.9873	0.0135	0.0000	385.3242
Waste						0.0000	0.0000		0.0000	0.0000	43.8461	0.0000	43.8461	2.5912	0.0000	108.6267
Water						0.0000	0.0000		0.0000	0.0000	0.8879	2.0064	2.8943	3.2600e-003	1.9700e-003	3.5635
Total	**0.2061**	**0.4905**	**1.2722**	**4.3000e-003**	**0.3829**	**4.8300e-003**	**0.3877**	**0.1025**	**4.5900e-003**	**0.1071**	**44.7340**	**451.3731**	**496.1071**	**2.6130**	**3.2600e-003**	**562.4042**

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	0.0886	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Energy	1.7700e-003	0.0161	0.0135	1.0000e-004		1.2200e-003	1.2200e-003		1.2200e-003	1.2200e-003	0.0000	64.3791	64.3791	5.0300e-003	1.2900e-003	64.8894
Mobile	0.1157	0.4745	1.2586	4.2000e-003	0.3829	3.6100e-003	0.3865	0.1025	3.3700e-003	0.1059	0.0000	384.9873	384.9873	0.0135	0.0000	385.3242
Waste						0.0000	0.0000		0.0000	0.0000	43.8461	0.0000	43.8461	2.5912	0.0000	108.6267
Water						0.0000	0.0000		0.0000	0.0000	0.8879	2.0064	2.8943	3.2600e-003	1.9700e-003	3.5635
Total	**0.2061**	**0.4905**	**1.2722**	**4.3000e-003**	**0.3829**	**4.8300e-003**	**0.3877**	**0.1025**	**4.5900e-003**	**0.1071**	**44.7340**	**451.3731**	**496.1071**	**2.6130**	**3.2600e-003**	**562.4042**

	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	N20	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**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.1157	0.4745	1.2586	4.2000e-003	0.3829	3.6100e-003	0.3865	0.1025	3.3700e-003	0.1059	0.0000	384.9873	384.9873	0.0135	0.0000	385.3242
Unmitigated	0.1157	0.4745	1.2586	4.2000e-003	0.3829	3.6100e-003	0.3865	0.1025	3.3700e-003	0.1059	0.0000	384.9873	384.9873	0.0135	0.0000	385.3242

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Medical Office Building	696.00	172.60	29.80	1,029,625	1,029,625
Total	696.00	172.60	29.80	1,029,625	1,029,625

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	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
Medical Office Building	9.50	7.30	7.30	29.60	51.40	19.00	60	30	10

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Medical Office Building	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	46.9078	46.9078	4.6900e-003	9.7000e-004	47.3143
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	46.9078	46.9078	4.6900e-003	9.7000e-004	47.3143
NaturalGas Mitigated	1.7700e-003	0.0161	0.0135	1.0000e-004		1.2200e-003	1.2200e-003		1.2200e-003	1.2200e-003	0.0000	17.4713	17.4713	3.3000e-004	3.2000e-004	17.5751
NaturalGas Unmitigated	1.7700e-003	0.0161	0.0135	1.0000e-004		1.2200e-003	1.2200e-003		1.2200e-003	1.2200e-003	0.0000	17.4713	17.4713	3.3000e-004	3.2000e-004	17.5751

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Medical Office Building	327400	1.7700e-003	0.0161	0.0135	1.0000e-004		1.2200e-003	1.2200e-003		1.2200e-003	1.2200e-003	0.0000	17.4713	17.4713	3.3000e-004	3.2000e-004	17.5751
Total		**1.7700e-003**	**0.0161**	**0.0135**	**1.0000e-004**		**1.2200e-003**	**1.2200e-003**		**1.2200e-003**	**1.2200e-003**	**0.0000**	**17.4713**	**17.4713**	**3.3000e-004**	**3.2000e-004**	**17.5751**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU/yr	tons/yr										MT/yr					
Medical Office Building	327400	1.7700e-003	0.0161	0.0135	1.0000e-004		1.2200e-003	1.2200e-003		1.2200e-003	1.2200e-003	0.0000	17.4713	17.4713	3.3000e-004	3.2000e-004	17.5751
Total		**1.7700e-003**	**0.0161**	**0.0135**	**1.0000e-004**		**1.2200e-003**	**1.2200e-003**		**1.2200e-003**	**1.2200e-003**	**0.0000**	**17.4713**	**17.4713**	**3.3000e-004**	**3.2000e-004**	**17.5751**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Medical Office Building	356600	46.9078	4.6900e-003	9.7000e-004	47.3143
Total		**46.9078**	**4.6900e-003**	**9.7000e-004**	**47.3143**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Medical Office Building	356600	46.9078	4.6900e-003	9.7000e-004	47.3143
Total		**46.9078**	**4.6900e-003**	**9.7000e-004**	**47.3143**

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	0.0886	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Unmitigated	0.0886	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0104					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0781					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Total	**0.0886**	**0.0000**	**1.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.6000e-004**	**3.6000e-004**	**0.0000**	**0.0000**	**3.8000e-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	0.0104					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0781					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Total	**0.0886**	**0.0000**	**1.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.6000e-004**	**3.6000e-004**	**0.0000**	**0.0000**	**3.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	2.8943	3.2600e-003	1.9700e-003	3.5635
Unmitigated	2.8943	3.2600e-003	1.9700e-003	3.5635

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Medical Office Building	2.50961 / 0.478021	2.8943	3.2600e-003	1.9700e-003	3.5635
Total		**2.8943**	**3.2600e-003**	**1.9700e-003**	**3.5635**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Medical Office Building	2.50961 / 0.478021	2.8943	3.2600e-003	1.9700e-003	3.5635
Total		**2.8943**	**3.2600e-003**	**1.9700e-003**	**3.5635**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			

Mitigated	43.8461	2.5912	0.0000	108.6267
Unmitigated	43.8461	2.5912	0.0000	108.6267

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Medical Office Building	216	43.8461	2.5912	0.0000	108.6267
Total		**43.8461**	**2.5912**	**0.0000**	**108.6267**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Medical Office Building	216	43.8461	2.5912	0.0000	108.6267
Total		**43.8461**	**2.5912**	**0.0000**	**108.6267**

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

11.0 Vegetation

Attachment 2: Operational Emissions Computations

Solar4America

2022 GHG Emissions (MT)

	Rink 5	MOB	Rink 6	Rink6 Event	Total
Area	0	0	0	0	0
Energy Consumption	124	65	112	36	337
Mobile	284	385	258	130	1057
Stationary	19				19
Solid Waste Generation	1	109	1	0	111
Water Usage	29	4	26	13	72
					1597

2030 GHG Emissions (MT)

	Rink 5	MOB	Rink 6	Rink6 Event	Total
Area	0	0	0	0	0
Energy Consumption	124	65	112	36	337
Mobile	228	309	207	104	848
Stationary	19				19
Solid Waste Generation	1	109	1	0	111
Water Usage	29	4	26	13	72
					1388

Solar4America Trip Generation Estimates

Land Use	ITE Land Use Code	Size	Daily Rate	Daily Trip	PM Peak Hour Rate	PM Peak Hour Split In	PM Peak Hour Split Out	PM Peak Hour Trip In	PM Peak Hour Trip Out	PM Peak Hour Trip Total
PM Peak-hour Driveway Counts at Existing Site and Estimated Daily Trips										
Existing Site [1] [2]		4 Rinks	391.1	1,565	74.5	45%	55%	134	164	298
Estimates of Project Traffic										
Scenario 1: Peak Program with No Large Event at Competition Rink										
Rink 5 [1] [2]		1 Rink	391.1	391	74.5	45%	55%	34	41	75
Medical Office Building [3]	720	20,000 Square Feet	34.8	696	3.46	28%	72%	19	50	69
Net Project Trips				**1,087**				**53**	**91**	**144**
Scenario 2: Peak Program with Large Event at Competition Rink (4,213 occupied seats)										
Rink 6 (Arena) [4]	--	4,213 Occupied Seats		3,370				337	0	337
20% TDM Reduction				-674				-67	0	-67
Rink 5 [1] [2]		1 Rink	391.1	391	74.5	45%	55%	34	41	75
Medical Office Building [3]	720	20,000 Square Feet	34.8	696	3.46	28%	72%	19	50	69
Net Project Trips				**3,783**				**322**	**91**	**413**

Notes:

[1] Peak-hour rate based on driveway counts conducted at the existing ice hockey facility located on-site consisting of four rinks.

[2] Daily trip rate is estimated based on the assumption that there is similar hourly usage of the rinks between 4PM to 9PM. Minimal usage of rinks (approximately 25% of PM peak-hour trips) is assumed between 11AM to 4PM.

[3] Source: ITE *Trip Generation Manual*, 10th Edition 2017

[4] Assumes 2.5 occupants per vehicle and 20% inbound arrival at the arena during PM peak-hour period (before 6PM).