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# CA3 BACKUP GENERATING FACILITY SMALL POWER PLANT EXEMPTION

## Committee Proposed Decision

Part 4 of 4

CALIFORNIA
ENERGY COMMISSION
Gavin Newsom, Governor

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# Section 5

Alternatives

# 5 Alternatives

## 5.1 Introduction

This section evaluates a reasonable range of potentially feasible alternatives to the CA3 Data Center/Backup Generating Facility (CA3DC/CA3BGF). Both together are known as CA3 or the project. Alternatives considered but dismissed for full analysis due to reliability concerns include biodiesel fuel, fuel cells, and battery energy storage systems. Alternatives selected for more detailed analysis were limited to the "No Project/No Build Alternative," as required by the California Environmental Quality Act (CEQA), and those that could feasibly attain most of the proposed project's basic objectives while reducing or avoiding any of its significant effects. The alternatives selected for detailed analysis are:

- Alternative 1: No Project/No Build Alternative
- Alternative 2: Renewable Diesel Fuel
- Alternative 3: Natural Gas Internal Combustion Engines

## 5.2 CEQA Requirements

CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.) require that an EIR consider and discuss alternatives to the proposed project. Section 15126.6 of the CEQA Guidelines provides that the alternatives analysis must include all of the following:

- Describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project;
- Evaluate the comparative merits of the alternatives;
- Focus on alternatives that would avoid or substantially lessen any significant effects of the project, even if these alternatives would impede to some degree attainment of the project objectives, or would be more costly; and
- Describe the rationale for selecting alternatives to be discussed and identify alternatives that were initially considered but then rejected from further evaluation.

CEQA requires that an EIR "consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation" (Cal. Code Regs., tit. 14, § 15126.6, subd. (a)). Alternatives may be eliminated from detailed consideration by the lead agency if they fail to meet most of the basic project objectives, are infeasible, or could not avoid any significant environmental effects (Cal. Code Regs., tit. 14, § 15126.6, subd. (c)). In addressing the feasibility of alternatives, factors that may be taken into account are: site suitability; economic viability; availability of infrastructure; general plan consistency; other plans or regulatory limitations; jurisdictional boundaries; and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(1)).

The range of potentially feasible alternatives selected for analysis is governed by a "rule of reason," requiring the evaluation of only those alternatives "necessary to permit a reasoned choice" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)). Also, an EIR "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(3)).

The lead agency is also required to evaluate the impacts of the "No Project" alternative. Analyzing a "No Project" alternative allows decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(1)). "The 'no project' analysis shall discuss the existing conditions at the time the notice of preparation is published…as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives" (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(2)).

## 5.3 Project Objectives and Alternatives Screening

The ideal process to select alternatives to include in the analysis begins with the establishment of project objectives. Section 15124 of the CEQA Guidelines addresses the requirement for an EIR to contain a statement of objectives, as follows:

> *A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project and may discuss the project benefits.*

The applicant's overall project goal is to develop a state-of-the-art data center providing greater than 99.999 percent reliability for its customers, with mission-critical space to support their servers, including space conditioning and a steady stream of high-quality power supply. The applicant's project objectives are as follows:

- Develop a state-of-the-art data center large enough to meet projected growth;
- Develop the data center on land that has been zoned for data center use at a location acceptable to the City of Santa Clara;
- Develop a data center that can be constructed in two phases, which can be timed to match projected customer growth; and
- Incorporate the most reliable and flexible form of backup electric generating technology considering the following evaluation criteria:
    - Commercial Availability and Feasibility. The selected backup electric generation technology must currently be in use and proven as an accepted industry standard for technology sufficient to receive commercial guarantees in a form and amount

acceptable to financing entities. It must be operational within a reasonable timeframe where permits and approvals are required.

- Technical Feasibility. The selected backup electric generation technology must utilize systems that are compatible with one another.
- Reliability. The selected backup electric generation technology must be extremely reliable in the case of an emergency loss of electricity from the utility.
  - The CA3BGF must provide a higher reliability than 99.999 percent in order for the CA3DC to achieve an overall reliability of equal to or greater than 99.999 percent reliability.
  - The CA3BGF must provide reliability to the greatest extent feasible during natural disasters, including earthquakes.
  - The selected back-up electric generation technology must have a proven built-in resilience so if any of the back-up unit fails due to external or internal failure, the system will have redundancy to continue to operate without interruption.
  - The CA3DC must have on-site means to sustain power for 24 hours minimum in failure mode, inclusive of utility outage.

## 5.4 Reliability and Risk Factors

The most important data center criterion is reliability. Crucial services, such as 911, offices of emergency management, and utilities infrastructure, are increasingly using data centers for their operation. The selected backup electric generation technology must be extremely reliable in the case of an emergency loss of electricity from the utility. Data center customers demand the most reliable data storage service available, and data center insurers are willing to underwrite only proven technologies with an extremely low probability of operational failure. Any alternative backup generation technology would be measured against proven available technologies, such as the current technology proposed. Should the reliability of that technology not match that of the proposed technology, it would not be considered a viable alternative.

Risk factors that affect the reliable operation of backup generators include the following: failure to start; failure to run due to various technical issues; and failure to run due to a lack of fuel supply (NREL 2021). Any alternative technology must have proven operational hours, a reliable source of fuel supply, and redundancy capabilities. Sufficiently mitigating these risks would ensure that data center operation is not interrupted during a utility power failure.

## 5.5 Environmental Impacts of the Proposed Project

This EIR evaluates the potential environmental impacts of the proposed project. Project impacts would be less than significant with the following proposed mitigation measures:

- **Air Quality** – Proposed mitigation measure **AQ-1** would reduce air quality impacts during project construction. This measure requires the incorporation of the local air

district's best management practices to control fugitive dust. This measure also incorporates exhaust control measures to reduce emissions from construction equipment. During readiness testing and maintenance, the oxides of nitrogen (NOx [as an ozone precursor]) emissions of the standby generators would be fully offset through the permitting process with the Bay Area Air Quality Management District (BAAQMD). With the implementation of **AQ-1** during construction and NOx offsets for readiness testing and maintenance through the local air district's permitting requirements, the project would not cause a cumulatively considerable net increase of any criteria air pollutant and impacts would be reduced to less than significant with mitigation incorporated.

- **Biological Resources** – Proposed mitigation measure **BIO-1** would ensure that potential construction impacts to protected bird and raptor species would be less than significant. **BIO-1** includes requirements to conduct tree removal outside the nesting period if possible, to conduct nesting bird surveys prior to the initiation of any construction activities during the nesting period, and to establish buffers to avoid the disturbance of nesting birds if active nests are detected.

  Proposed mitigation measure **BIO-2** would reduce construction impacts to protected bat species, if present at the site, to less than significant. **BIO-2** includes requirements to conduct bat clearance surveys prior to the demolition of buildings or removal of trees. It also requires the development of a Bat Mitigation and Monitoring Plan detailing exclusion methods, roost removal procedures, and compensatory mitigation methods for the permanent impacts of roost removal.

  The implementation of mitigation measures **BIO-3** and **BIO-4** would reduce construction impacts on trees covered by city of Santa Clara General Plan policies 5.10.1-P4 and 5.3.1-P10 to less than significant. **BIO-3** requires the applicant to obtain the appropriate tree removal permits from the city of Santa Clara for the removal of all healthy mature trees and mitigate for tree removal as required by the city. **BIO-4** requires the applicant to implement tree protection measures for the trees that are to remain in place as required by the city of Santa Clara through its tree removal permits and Architectural Review.

- **Cultural and Tribal Cultural Resources** – Proposed mitigation measure **CUL-1** requires qualified professionals to survey the exposed ground surface for cultural resources once the demolition of existing structures is complete. It also requires test excavation to determine the presence or absence of buried cultural resources and procedures for avoidance measures and construction monitoring. This measure would reduce impacts to any discovered historical resources and unique archaeological resources to a less than significant level. In addition to mitigation measure **CUL-1**, mitigation measure **CUL-2** requires specific protocols to minimize or avoid impacts on inadvertently discovered human remains. Combined, mitigation measures **CUL-1** and **CUL-2** would reduce potential impacts to human remains to a less than significant level.

Although there are no known tribal cultural resources on or directly adjacent to the proposed site, ground disturbance associated with the proposed project could result in the exposure and/or destruction of buried, as-yet-unknown prehistoric archaeological resources that could qualify as tribal cultural resources. If these resources were to be exposed or destroyed, it would be a significant impact. The implementation of **CUL-1** and **CUL-2** would reduce potential impacts to buried, tribal cultural resources to a less-than-significant level.

- **Geology and Soils** – With the implementation of mitigation measure **GEO-1**, potential impacts to paleontological resources from trenching would be reduced to a less-than significant level. **GEO-1** includes protocols for worker training to identify potential fossil finds, notification of a qualified paleontologist to assess any finds, and if the resource is considered to be significant, development by the paleontologist of a plan for preservation and mitigation.
- **Greenhouse Gas Emissions** – This project would have a less than significant impact on greenhouse gas (GHG) emissions with the implementation of mitigation measures **GHG-1**, **GHG-2**, and **GHG-3**. **GHG-1** would require the applicant to limit the GHG emissions of the standby generators to the BAAQMD CEQA GHG threshold applicable at the time of permitting. **GHG-2** would require the applicant to use an increasing mix of renewable diesel and phase out the use of petroleum-based conventional diesel (conventional diesel). **GHG-3** would require the applicant to participate in Silicon Valley Power's (SVP) Large Customer Renewable Energy (LCRE) Program or other renewable energy program that accomplishes the same objective as SVP's LCRE Program for 100 percent carbon-free electricity or purchase ~~carbon offsets~~ renewable energy credits or similar instruments that accomplish the same goals of 100 percent carbon-free electricity. The implementation of **GHG-1**, **GHG-2**, and **GHG-3** would ensure the project complies with the BAAQMD CEQA GHG threshold, the city of Santa Clara Climate Action Plan, and other applicable regulatory programs and policies. Accordingly, staff concludes that with the implementation of **GHG-1**, **GHG-2**, and **GHG-3**, the project's GHG emissions would not have a significant direct or indirect impact on the environment. With the implementation of **GHG-1**, **GHG-2**, and **GHG-3**, impacts related to GHG emissions would be less than significant.
- **Hazards and Hazardous Materials** – With the implementation of **HAZ-1**, construction of the project would result in less than significant impacts to the public and the environment from hazards and hazardous materials. **HAZ-1** would require the preparation of a Site Management Plan (SMP), which would establish procedures for handling any contaminated groundwater or soil found during construction to minimize health risks. Records would be maintained for documenting compliance with the storage and handling of hazardous materials, and personnel would be required to follow health and safety procedures in the event of a release of hazardous materials.

  With the implementation of **HAZ-1**, construction of the project would create a less than significant impact to the public or the environment.
- **Noise** – The loudest construction activities could elevate the existing ambient noise levels at the nearest residences by up to 11 dBA and could be perceived as noisy,

although they would be less noisy than passing trains. The implementation of **NOI-1**, requiring a noise complaint and redress process, would ensure construction noise impacts as perceived by the community would be less than significant.

- **Transportation** – The operation of the project would generate vehicle miles travelled (VMT) that would exceed the city's thresholds. **TRANS-1** would require the implementation of a Transportation Demand Management (TDM) program requiring a 4-40 workweek (40 hours in 4 days) to reduce the project VMT to a level below the city's threshold. This would ensure that VMT generated by the project would be less than significant.

## 5.6 Alternatives Considered

Staff concluded that there would be no significant impacts from the project with the incorporation of mitigation. Nevertheless, staff considered several alternatives to the project for a more comprehensive analysis. The following discussion provides staff's analysis of these alternatives.

### 5.6.1 Alternatives Considered and Not Evaluated Further

This subsection discusses alternatives initially considered but ultimately not evaluated further due to infeasibility, failure to reduce any impacts, and/or failure to meet the project objectives. As a result, these alternatives were not evaluated from an environmental impact perspective or compared with the proposed CA3GBF project. The alternatives considered but not evaluated further include an alternative project site and biodiesel fuel, fuel cell, and battery energy storage alternatives.

#### 5.6.1.1 Alternative Project Site

Although the impacts of the proposed project would be less than significant with mitigation, staff evaluated whether an alternative site location should be identified as a potentially feasible alternative to avoid or reduce potentially significant impacts. However, the project's impacts are the type that would not be avoided or lessened by proposing the project at another location, as some of the impacts are an inherent part of the project (e.g., air quality, GHG, construction noise) or would be similar at another location in the Santa Clara region (e.g., cultural and tribal resources, geology and soils [including paleontology]). Also, the applicant has already acquired the project site, zoned for the proposed use and located in close proximity to existing operational data centers, and acquiring an alternative site might be costly and infeasible if a suitable site (with needed infrastructure and consistent zoning) is not available for sale or lease within a reasonable timeframe, resulting in the project not meeting its project objectives. Finally, no alternative locations where environmental impacts would likely be avoided or substantially reduced compared to the project have been identified by the city of Santa Clara, public agencies, or members of the public.

For these reasons, further consideration of an alternative project site is not necessary. Staff concludes that further exploration of properties beyond the project site is unlikely to yield a different location for the project that could feasibly be developed as an alternative to the project that would reduce or avoid potentially significant impacts.

### 5.6.1.2 Biodiesel Fuel Alternative

Biodiesel is a domestically produced renewable fuel. Like renewable diesel, biodiesel can be manufactured from a variety of biomasses, such as vegetable oils, animal fats, and grease. However, biodiesel is not the same as renewable diesel. Biodiesel has different fuel properties than renewable diesel and must meet the definition of American Society for Testing and Materials (ASTM) D6751. Also, it is produced through transesterification, which is a chemical process that converts fats and oils into fatty acid methyl esters (U.S. EIA 2021). Biodiesel is generally blended with conventional diesel at a 5 percent to 20 percent ratio (Green Fleet 2021). Its physical properties are similar to those of conventional diesel, proposed for use by the applicant, but it is a cleaner burning fuel than conventional diesel. Biodiesel is compatible as an alternative fuel for diesel-fired emergency backup generators (gensets).

#### *Potential Feasibility Issues*

Biodiesel fuel currently suffers from technical problems, making it an unsuitable substitution for 100 percent petroleum-based, ultra-low sulfur diesel. Biodiesel fuel can be problematic for the genset's fuel system. It is harmful to rubber material, such as the hoses that transfer fuel, and the associated O-rings and seals that prevent fuel leaks. Additionally, this fuel suffers from stability issues when stored for long periods of time. Compared to conventional diesel, biodiesel is more hygroscopic (i.e., it attracts water) (Farm Energy 2021). Water can accumulate during transportation and storage. Moisture, if allowed to accumulate for a long time, will alter the fuel's chemical structure. Moreover, in cold weather conditions, the fuel thickens sooner than conventional diesel. Both conditions affect the function of the fuel filter, pump, and injectors in the fuel system of an engine. These issues would also increase the maintenance cycles and cost and can be a cause to void engine warranties. Additionally, biodiesel is expensive.

To date, the operating hours for biodiesel fuel use in data centers are minimal.

Finally, the production of biodiesel from plant material could have environmental impacts of its own; it is a water-intensive operation, as 2,500 liters of water would be needed to produce 1.0 liter of biodiesel fuel (UNESCO 2021).

Due to technical feasibility issues and potential additional environmental impacts, biodiesel fuel as an alternative was eliminated from further analysis.

### 5.6.1.3 Fuel Cell Alternatives

Fuel cells convert chemical energy into electrical energy. There are several types of fuel cells, which vary according to the types of electrochemical reactions that take place in

the cells, the types of catalysts required, the operating temperature range, the fuel requirements, and other factors affecting the applications suitable for the fuel cells.

The most promising types of fuel cells for powering data centers are solid oxide fuel cells (SOFCs) and polymer electrolyte membrane or proton exchange membrane (PEM) fuel cells (Microsoft 2021).

## Solid Oxide Fuel Cells Alternative

SOFCs are electrochemical devices that convert the chemical energy of a fuel and oxidant directly into electrical energy. They operate at high temperatures, as high as 2,100 degrees Fahrenheit. Operating at high temperatures enables the SOFCs to use a variety of fuels to produce hydrogen but also carbon oxides. SOFCs can use natural gas, biogas and gases made from coal as fuel (U.S. DOE 2020a), but more commonly use natural gas. SOFCs are resilient and not susceptible to carbon monoxide (CO) poisoning. CO is a product of the chemical reaction created by the fuel and steam molecules. CO poisoning affects the voltage output of other types of fuel cells, such as PEM fuel cells. Due to their resiliency against CO poisoning and because they operate at extremely high temperatures, SOFCs can reform fuel internally. This reduces the cost associated with adding a reformer to the system.

### *Potential Feasibility Issues*

SOFCs are typically configured and more suitable to serve as a prime base load power. To date, eBay's data center in Utah is using 30 200-kilowatt (kW) SOFCs to provide continuous base load power to the IT load, 6 megawatts (MW), 24 hours/day, all year round, with the electric grid as their backup power supply. Additionally, some data centers (i.e., Apple and Equinix) have supplemented their base load power demand (IT and cooling systems) with SOFCs but rely on the electric grid to support other loads, while retaining traditional uninterruptible power supply (UPS) and generators for emergency power (Data Center 2021). However, SOFCs providing power for 100 percent base load demand (i.e., IT and cooling systems) are not yet industry standard for large-scale data centers.

Because it takes time to reach critical operating temperatures, SOFCs have slow startup times requiring up to 60 minutes (GenCell 2021). Data centers must have a constant electricity supply, with even a momentary outage risking the loss of data; they, thus, require fast startup for their backup power generators. SOFCs also have a slow response to electricity demand (GenCell 2021). This can pose a problem for data centers, as their IT and cooling load demands constantly fluctuate, in addition to changes in environmental conditions (ambient air temperature and humidity). The internal temperature of the data center buildings must remain steady for the IT servers' optimal performance. The rapid changes in electricity demand could outpace the SOFCs' ability to provide the needed services offered by the data center.

The durability of the fuel cells is also an important factor that cannot be ignored. The high operating temperatures place stringent durability requirements on fuel cell materials. Outfitting SOFCs with durable materials is costly.

SOFCs would utilize the underground natural gas pipeline system. At least one pipeline connection would be needed to supply the project with natural gas. A second, independent pipeline connection may be needed for redundancy. The project site could interconnect with two independent gas distribution lines.

A crucial hurdle facing potential big users of SOFCs, such as data centers, is the lack of a sufficient supply of components. According to the Clean Energy Institute there is currently a limited production of SOFC components to meet the needs of major users (ZDNet 2021).

### PEM Fuel Cells Alternative

A suitable fuel cell technology for backup energy generation is PEM fuel cell technology (U.S. DOE 2020a). PEM fuel cells are available for low-power applications that require intermittent backup power. They are typically used in small applications, such as mobile services or small stationary applications, such as backup generators for communication towers. Their power capacity ranges between 10 and 125 kW. However, the technology has expanded to data center applications with fuel cell capacity up to 1.0 MW delivered in the size of a 40-foot International Organization for Standardization (ISO) container (GenSureHP 2021). For a 100-MW system, the footprint required would be 32,000 square feet, or approximately 0.73 acre. PEM fuel cells operate at low temperatures and require fuels that are carbon-free and rich in hydrogen content, preferably pure hydrogen, for maximum voltage output and quick start-up times that a data center generator requires in a backup capacity. Hydrogen can either be piped in or made on-site from a methane source, such as natural gas, or from water through electrolysis. These options are discussed in more detail below. Unlike SOFCs, CO poisoning is an important issue for PEM fuel cells because they cannot tolerate great amounts of CO (Fuel Cell 2021).

#### *Potential Feasibility Issues*

On-site fuel storage, the current pipeline infrastructure, and on-site generation of hydrogen would challenge the project's ability to provide fuel to the fuel cell.

**On-site Fuel Storage**. The simplest way to store large volumes of hydrogen would be to compress it. Hydrogen can be compressed to 240 times the gas volumes at atmospheric pressure. The gauge pressure of hydrogen stored as a high-pressure gas is 3600 pounds per square inch (psig) (Hydrogen Properties 2021). Assuming a PEM fuel cell consumes 0.8 normal cubic meter ($Nm^3$) of fuel per kilowatt-hour produced (Air Liquide 2021), the fuel consumption rate for a 1.0-MW fuel cell would be 800 normal cubic meters per hour. The proposed project would need fuel for up to 24 hours of fuel cell operation (the same as the backup duration for diesel). Therefore, the project site

would need approximately 3,000 cubic feet of compressed hydrogen[1], at 3600 psig, stored on-site per 1.0-MW fuel cell. Furthermore, the site would need approximately 300,000 cubic feet, or over 7 acre-feet of compressed hydrogen, for 100 MW of fuel cells (not including redundant fuel cells). The project would require a storage system that includes at least several pressure vessels to store such a large amount of compressed hydrogen. The storage space required for compressed hydrogen would not be feasible on the project site.

Alternatively, hydrogen could be stored in liquid form to reduce the storage footprint. Hydrogen can be liquified to 848 times less volume than gas at atmospheric conditions (Hydrogen Properties 2021). Liquefying hydrogen would reduce the volume and storage space. The project would need approximately 80,000 cubic feet, or 2 acre-feet, of liquid hydrogen gas (LHG) for 100 MW of fuel cells. Liquid hydrogen gas requires hydrogen to be cooled below its critical point of minus 400 degrees Fahrenheit. LHG would need to be stored and distributed in specialized equipment, including insulated storage tanks to keep the fuel in liquid state at atmospheric pressure, at a temperature of minus 423 degrees Fahrenheit. LHG would result in a smaller footprint than compressed hydrogen. However, problems exist with storing the liquid, such as boil-off losses due to heat leakage. For LHG to remain at a constant temperature and pressure, it must allow for natural evaporation known as boil-off gas (BOG). BOG is a loss of stored fuel that occurs when the ambient temperature heats the insulated tanks. LHG must release this gas to maintain its liquid state, and the release in gas occurs at a rate of approximately 1 percent per day (Hydrogen 2021a).

Safely managing compressed or liquefied hydrogen storage systems would require special expertise and equipment, which would add to the cost and complexity of the proposed project. The presence of such storage systems would also likely raise concerns of public safety and introduce new impacts not found in the proposed project.

Fuel storage equipment must comply with the standards specified by the National Fire Protection Association along with the Santa Clara City Code (City Code) to protect against hazardous material release, fire, and explosions during natural disasters and as the result of accidents. Additionally, permits for the storage of hazardous materials would be needed pursuant to the City Code.

**Pipeline Infrastructure**. For large applications, such as the proposed project, hydrogen would need to be supplied through multiple pipelines to mitigate on-site storage challenges and increase reliability. However, according to the U.S. Department of Energy (U.S. DOE 2020b), with approximately 1,600 miles of hydrogen pipeline currently operating in the United States, there are technical concerns related to pipeline transmission, including: the potential for hydrogen to embrittle the steel and welds used

1 Compressed hydrogen conversion: 800 cubic meter per hour x 24 hours x 1/240 compression ratio x 35.32 cubic feet per cubic meter = 2,826 cubic feet

to fabricate the pipelines; the need to control hydrogen permeating and leaks; and the need for lower cost, more reliable, and more durable hydrogen compression technology.

**On-site Generation (Reforming and Electrolysis).** Alternatively, hydrogen for PEM fuel cells can be supplied using other methods, such as reforming and electrolysis.

Reforming

Reforming is a process that uses existing fuels with hydrogen content to react with water, which produces hydrogen and carbon oxides as products.

Steam-methane reforming (SMR) is a type of reforming. It is a thermal process, combining steam with a methane source, such as natural gas, to produce hydrogen and carbon oxides. The project currently has access to two natural gas pipelines that could be used for SMR. Although SMR is typically used in SOFCs because of the resiliency of the SOFCs' interior components to high levels of CO, it is not suitable for PEM fuel cells. The CO can poison the PEM fuel cells' platinum on the electrode, which leads to lower voltage at a given electrical current density (Fuel Cell 2021). SMR could produce the desired hydrogen content for PEM fuel cells should further processing to remove undesired levels of CO be performed, or by using a larger PEM fuel cell where the same amount of CO would be spread over a larger electrode.

Methanol reforming, however, is the leading reforming technology candidate for PEM fuel cells because of its high efficiency and energy density (Fuel Cell 2021). Methanol is a liquid, like conventional diesel, and can be stored on-site. Methanol is reformed with water to produce hydrogen and carbon oxides.

Both SMR and methanol reforming consume energy during hydrogen production and produce carbon dioxide ($CO_2$) that may be released into the atmosphere. Also, additional equipment for both types of reforming would increase project costs.

Electrolysis

Electrolysis can also be used to produce the hydrogen needed for PEM fuel cells. It is a promising option for carbon-free hydrogen production, using electricity to cause the chemical reaction of splitting water into hydrogen and oxygen. The reaction takes place in a unit called an electrolyzer. Like fuel cells, electrolyzers consist of an anode and a cathode separated by an electrolyte. There are different types of electrolyzers mainly due to the different electrolyte materials, such as PEM, alkaline, and solid oxide, but their function is essentially the same—generating hydrogen (Hydrogen 2021b).

A 1.0-MW PEM electrolyzer, the size of a 40-foot ISO container[2], can generate 18 kilograms (kg), or 200 $Nm^3$, of hydrogen per hour. For every kg of hydrogen produced, 10 kg of water is needed. Additionally, the electrolyzer would need 49.9 kWh of energy

2 An ISO container is a container which has been built in accordance with the International Organization for Standardization regulations.

to produce 1 kg of hydrogen (GenFuel 2021). For a 100-MW system, the footprint required would be 32,000 square feet, or approximately 0.73 acre.

During a grid outage, energy for the electrolyzer to generate hydrogen fuel may not be available, rendering the fuel cell inoperable and the data center without power. Therefore, hydrogen may need to be produced and stored on-site for future use during emergency generation. Again, fuel storage equipment must comply with standards specified by the National Fire Protection Association along with the City Code to protect against hazardous material release, fire, and explosions during natural disasters and as the result of accidents. Additionally, permits for the storage of hazardous materials would be needed pursuant to the City Code. Additional equipment required for hydrogen electrolyzers would increase project costs.

In conclusion, advances in fuel cell technology have led to increases in PEM fuel cell capacity and applications. However, the technology has not shown proven operating hours for large-scale backup energy solutions used in data centers. Furthermore, fuel cells would require a more robust hydrogen fuel supply infrastructure to meet the reliability requirements of large-scale data centers. At this time further testing is needed to verify the compatibility and reliability of these fuel cells. To ensure system compatibility, more test sites or small hybrid power systems should be considered in data centers.

**SOFC and PEM Fuel Cells Feasibility Conclusion.** In summary, fuel cells for large-scale backup generation are not fully proven; thus, their reliability is undetermined. Data center customers demand the most reliable data storage service available, as reflected in the applicant's project objectives, which include the development of a highly reliable data center. Furthermore, data center insurers are not willing to provide insurance coverage unless data centers use proven technologies with an extremely low probability of operational failure. Securing fuel for the cells and storing it is a challenge requiring specialized expertise and increased costs for installing and maintaining systems that are expected to be used only infrequently. Because of the limitations described above, fuel cell technology is not currently a viable alternative to the proposed project's use of diesel-powered backup generators.

### 5.6.1.4 Battery Energy Storage Alternatives

#### Standalone Battery Energy Storage Alternative

Batteries store chemical energy and convert it to electrical energy. They are used to supply power for many applications. Batteries come in many different shapes and sizes, and different battery types can have different chemical properties. Lithium-ion batteries in huge battery banks provide standby or emergency power and almost instantaneous startup times and are therefore considered suitable for data centers.

Data centers currently use UPS systems consisting of batteries to ensure a smooth transition from the grid to the gensets while the gensets synchronize to the data centers'

electrical busbars[3]. The UPS system proposed for the project is designed to provide up to five minutes of backup power at 100 percent load. UPS systems are proven and reliable to support genset start up, but they are currently limited in power supply duration.

A Battery Energy Storage System (BESS) would provide higher capacity and support longer outages for data center projects. A BESS can be designed to provide up to approximately 100 MWs of backup power and provides the quick start times that a data center requires.

A standalone BESS for a data center's load demands would require ample on-site storage space for long outage durations. To date, a 300-MW/1200 megawatt-hours (MWh) (supplying 300 MW continuously for 4 hours) BESS is the largest one successfully deployed (Power Magazine 2021). Until recently, the operational duration of battery systems has been in the range of four to six hours, not necessarily because battery systems do not have the potential to operate longer, but because a longer duration has not been demonstrated in large-scale data center applications requiring long-duration backup power. Staff is aware of a recent proposal, the Gilroy Backup Generating Facility (GBGF 2021), for two BESS facilities, each with a capacity of 50 MW and discharge capacity of 640 MWh for a total capacity of approximately 100 MW and a discharge duration of approximately 13 hours. The design of this proposal includes diesel-fired gensets to support the data center when the batteries are fully discharged and further backup generation is needed, prior to the electrical grid being restored.

### *Potential Feasibility Issues*

The employment of a standalone BESS for the project would be the first application of this technology for a project of this magnitude for long durations. The project proposes storing fuel on-site for approximately 24 hours of backup generation. A 6-MWh battery storage container requires approximately 380 square feet of space. To supply approximately 100 MW of uninterruptable power in case of 24 hours of grid outage, the project would need a 2,400-MWh battery system, assuming a 100-percent charging and discharging scenario. This translates to approximately 3.5 acres of battery storage space alone, not including the data center buildings and miscellaneous equipment and structures. The storage space could double or triple for the project to meet its reliability and backup generation duration requirements. This footprint could be reduced by stacking the batteries on top of each other; however, the stacked height would be limited. The stacked containers would need to be constructed such that they could be readily accessible for maintenance and potential fire response, while mitigating seismic concerns. Alternatively, the batteries could be stored in buildings to reduce their footprint, but they would then be subject to stricter building code fire protection requirements. Reducing the footprint would increase the project cost.

3 In electric power distribution, a busbar is a metallic strip or bar used to connect high voltage equipment at electrical switchyards, and low voltage equipment in battery banks.

Whether the batteries are single-stacked, double-stacked in containers, or stored in a building, the risk of fires, typically caused by thermal runaway, is apparent and currently trending in large-scale applications. Thermal runaway begins when the heat generated within a battery exceeds the amount of heat dissipated to its surroundings. If the cause of the excessive heat generated is not remedied (through heat transfer), the condition will worsen. The internal battery temperature will continue to rise, causing the battery current to rise, thereby creating a domino effect. The rise in temperature in a single battery will begin to affect other batteries in its proximity, and the pattern will continue, thus the term "runaway" (Mitsubishi 2021).

There are extensive mitigations, codes and standards, and a comprehensive regulatory framework in place that apply to battery storage to ensure the risk is less than significant. However, even a less than significant risk, such as thermal runaway, could affect the overall reliability of the data center and the assurance that data would not be lost. Loss of data would be very significant for an operation whose topmost goal is protecting the data against loss and guaranteeing continuous and uninterruptable access to the data. Furthermore, if a single cell or cluster of the battery system fails, the entire project may be shut down for investigation. Once discharged, the batteries would require power to recharge; further design considerations would be needed to make this happen. Batteries have a lifetime of about 10 years. If the project's lifespan is 20 years, the batteries would have to be replaced at least once, adding to the project cost. If the project were expected to continue beyond 20 years, which is conceivable, additional replacements may be necessary.

### Tandem Battery Storage Alternative

Staff considered a battery energy storage system in tandem (tandem BESS) with the proposed project's diesel-fired gensets. A tandem solution proposal would not be the first of its kind for a data center application, as previously mentioned. Such an option would allow the batteries to act as primary backup power for short outage durations, while the project's 44 diesel-fired gensets would provide backup power when outages are longer in duration and the batteries have been discharged.

For this project, the hypothetical tandem solution would include an approximately 100-MW-capacity BESS with a discharge capacity of 1370 MWh (approximately 100 MW with a discharge duration of approximately 13 hours) along with the 44 gensets. The battery system would supply backup power for a duration of approximately 13 hours and the 44 gensets would serve to back up the battery system once the batteries have been discharged until the electrical grid is restored. However, having a tandem solution would not reduce the number of gensets required for the project; again, the gensets would need to be sufficient to support data center load demands for longer outages if necessary. The battery system would require approximately 6,300 square feet of storage space.

### *Potential Feasibility Issues*

The project site does not provide sufficient room for the proposed project and 6,300 square feet of battery storage for a tandem BESS. There is insufficient room around the building for an access road and battery storage.

Also, project cost would increase significantly with a 1370 MWh BESS configuration. Between 2015 and 2018, the average cost of utility-scale battery storage in the United States rapidly decreased from $2,152 to $625 per kWh. However, in 2019, the average cost of battery storage in California was $1,522 per kWh (EIA 2021). In addition, the required reliability would still need to be ensured. The electrical and electronic interface between the batteries and gensets would need to be tested to ensure operational reliability of at least 99.999 percent (DayZenLLC 2021a, Section 1.1).

As previously mentioned, once the batteries are discharged to the designed threshold, they would have to be recharged when grid service is restored. Since the proposed gensets would not be connected to the grid, to be able to recharge the batteries from the grid would require a redesign of the project's electrical connections. Alternatively, the batteries could be recharged using separate gensets designated for battery charging. This method is not preferable since it would require additional gensets on-site and fuel use, which would defeat the purpose of deploying batteries to reduce gensets and fuel consumption.

While there is currently a proposal for a tandem battery and diesel-fired gensets for a large-scale data center, each project is subject to different reliability requirements. What can work for one project may not work for another.

Additionally, although the 2022 update to the California energy code California Code of Regulations, (title 24, part 6, Building Energy Efficiency Standards, Nonresidential Photovoltaic and Battery Storage) requires battery storage systems when PV systems are required, this does not apply to data centers. The use of battery systems set forth in the California energy code update through its goals and primary functions is much different than that of large-scale data centers. Appendix JA12 of the updated code states that the primary function of the battery storage system is daily cycling for the purpose of load shifting, maximized solar self-utilization, and grid harmonization. The measure predicts that 100 MW of batteries will be installed in new nonresidential buildings in 2023 (Energy Code Update 2021, Section 3.2.2). Given this prediction, it is assumed that many small capacity batteries would be installed across many buildings with PV generation to reduce peak demand for a few hours.

The goal and primary function of battery systems for large-scale data centers with large capacity demand (99 MW) is not daily cycling, but to provide backup power during a grid electrical outage that may last many hours. The daily cycling of battery systems reduces the overall lifespan of the battery system, increases wear and tear, and may reduce battery system reliability. Also, the reliability requirements of small capacity batteries used for peak demand relief for limited duration is different than large capacity batteries used

as a backup power solution in large-scale data centers. Should a battery system of a building used for peak demand relief fail for any reason, the grid would still provide power to support the building's load. In contrast, if a single cell in a backup battery system fails, the whole system would be rendered inoperable and the battery system would need to be taken offline and inspected. Again, for a data center, such as the proposed project, the only backup energy in the event of a grid outage would be from its backup power source. The reliability of the project's backup power source is of utmost importance to ensure customers' data is not lost.

#### 5.6.1.5 Decision to Eliminate These Alternatives from Further Consideration

The applicant's overall goal is to develop a state-of-the-art data center providing greater than 99.999 percent reliability for its customers, with mission-critical space to support their servers. One of the project objectives is to incorporate the most reliable and flexible form of backup electric generating technology considering commercial availability and feasibility, technical feasibility, and reliability. Biodiesel fuel, fuel cells, and battery storage alternatives were eliminated from further consideration as alternative technologies to the proposed project based on their infeasibility and/or lack of a sufficient level of proven reliability. Data center customers need the most reliable data storage service available, and data center insurers are willing to provide coverage only for proven technologies with an extremely low probability of operational failure.

## 5.7 Alternatives Selected for Analysis

The following alternatives are evaluated in this EIR:

- Alternative 1: No Project/No Build Alternative
- Alternative 2: Renewable Diesel Fuel
- Alternative 3: Natural Gas Internal Combustion Engines

Other than the No Project/No Build Alternative, which is required for analysis for every project, project alternatives were developed that could feasibly avoid or reduce the proposed project's potentially significant impacts. A comparative analysis of the impacts of these alternatives is below, followed by an assessment of the extent to which each alternative could meet the basic project objectives and an assessment of each alternative's feasibility.

The comparative analysis that follows is centered on impacts to air quality, public health, and GHG emissions. **Table 5-1**, below, compares the proposed project's impacts in each of these topic areas to those of each alternative. Impacts in other topic areas are not discussed, as staff found essentially no differences in other topic areas between the impacts identified under the proposed project and the impacts associated with the alternatives evaluated below.

As discussed in more detail below, the first alternative (No Project/No Build) would not meet the project objectives. The second and third alternatives (Renewable Diesel Fuel and Natural Gas Internal Combustion Engines, respectively) would not achieve the level of reliability required to ensure an uninterrupted power supply. (See the subsection above, "5.4 Reliability and Risk Factors," for further discussion of reliability.) It is assumed that the project site location would remain the same under the following alternatives.

## 5.7.1 Alternative 1: No Project/No Build Alternative

The project site is currently developed with a 115,000-square-foot office and warehouse building. Under the No Project/No Build Alternative, the development of the project site would not occur, and current conditions would continue at the site for an unknown period. As discussed in **Section 4.11 Land Use and Planning** in this EIR, the project site has a general plan land use designation of Light Industrial (ML), which "allows combinations of single and multiple users, warehouses, mini-storage, wholesale, bulk retail, gas stations, data centers, indoor auto-related uses and other uses that require large, warehouse-style buildings" (Santa Clara 2010). The project site is also zoned Light Industrial (ML), which "is intended to provide an optimum general industrial environment, and…is intended to accommodate industries operating substantially within an enclosed building" (Santa Clara 2021b). The proposed project is an allowable use in the ML land use designation and ML zoning district.

The site could eventually be approved for a use or uses consistent with these land use designations should the project not move forward. Although a different project would likely be proposed at the site in the future, no development plan exists to allow a comparison with CA3, and it would be speculative to assume the characteristics of such an alternative.

The No Project/No Build Alternative would avoid the proposed project's potentially significant impacts identified in this EIR (*no impact* compared to the proposed project). However, if the project is not constructed, the applicant's primary goal to develop a state-of-the-art data center, along with the basic project objectives, would not be attained.

## 5.7.2 Alternative 2: Renewable Diesel Fuel

Renewable diesel fuel is an alternative to conventional diesel fuel. It is not a fossil fuel and is made of nonpetroleum renewable resources (vegetable oil or other biomass feedstock such as wood, agricultural waste, garbage, etc.). Renewable diesel is produced through various thermochemical processes, such as hydrotreating, gasification, and pyrolysis (U.S. EIA 2021). It has the same chemical structure as conventional diesel and meets ASTM D975 specifications for conventional diesel in the United States (U.S. DOE 2020c). This makes renewable diesel a drop-in replacement for conventional diesel. Also, renewable diesel is a cleaner burning fuel alternative to conventional diesel that would be expected to meet the project objectives as a source of fuel for the gensets.

Under this alternative, the project would be developed the same as proposed, except it would use renewable diesel as the fuel source for the gensets. There would be no changes to the number, size, or placement of the gensets. The number of fuel deliveries would remain the same.

### Air Quality and Public Health

Previous testing on engines used in motor vehicles without selective catalytic reduction (SCR) or diesel particulate filter (DPF) exhaust after treatment systems show that renewable diesel would have lower criteria air pollutant emissions than conventional, ultra-low sulfur diesel (ULSD) proposed to be used for the project. However, as shown in **Appendix D**, more recent testing on new technology diesel engines (NTDE) with SCR and DPF shows no statistically significant differences in NOx, particulate matter (PM), and total hydrocarbon emissions, but lower CO and $CO_2$ emissions using renewable diesel compared to CARB reference fuel.

However, the above conclusions are based on the limited testing done for much smaller engines than those proposed for the project. The above conclusions would need to be confirmed with testing under controlled conditions of the size of engines proposed for this facility, preferably using the same source test protocol used for engine certification.

Air quality and public health impacts using renewable diesel during project operations would likely be similar to those that would occur with the project. However, this conclusion would need to be confirmed by testing emissions under controlled conditions for the size of engines (equipped with DPFs and SCR) proposed for the project.

### *Greenhouse Gas Emissions*

Compared to ULSD, renewable diesel would reduce $CO_2$ tailpipe emissions approximately 3 to 4 percent (**Appendix D**). However, renewable diesel is produced with a fuel cycle that has a far lower carbon intensity (CI) than ULSD. To have a more complete understanding of the impact of replacing ULSD with renewable diesel, it is necessary to examine the full fuel cycle of each fuel from origin to use. This is because GHGs have a global impact rather than a local impact.

Based on data from CARB's Low Carbon Fuel Standard (LCFS) program, staff computed the average amount of GHG reduction per million gallons of renewable diesel and used it as a factor to compute the fuel cycle emissions that would be avoided by switching from ULSD to renewable diesel. The results show that replacing the proposed ULSD with renewable diesel would reduce the project's readiness testing and maintenance GHG emissions from 3,387 metric tons of $CO_2e$ ($MTCO_2e$) per year with ULSD by 2,280 $MTCO_2e$ per year, to annual emissions of 1,107 $MTCO_2e$ per year with renewable diesel.

Based on the limited information contained in **Appendix C**, using renewable diesel in place of ULSD would reduce the project's full fuel cycle GHG emissions associated with on-site fuel consumption during the operations period. However, renewable diesel still has some carbon associated with the fuel cycle because the CI values are not zero or

negative. Therefore, additional measures would be needed before an alternative fueled by renewable diesel could be considered a carbon-free facility. The comparative impact is *likely less* under this alternative.

While the project would meet BAAQMD GHG thresholds for the readiness testing and maintenance of the diesel backup generators with the implementation of **GHG-1**, the GHG emissions could be reduced further by using renewable diesel in place of petroleum-based diesel. Because of California's ambitious GHG reduction goals, staff concludes it is imperative that all feasible methods of carbon reduction be employed to ensure the project's GHG emissions are less than significant. Staff proposes **GHG-2** to require the project owner to use an increasing mix of renewable diesel to the maximum extent feasible, and only use ULSD as a secondary fuel in the event of supply challenges or disruption in obtaining renewable diesel. With **GHG-2**, the project's gensets would use renewable diesel to ensure that operation of the gensets would not hinder California's efforts to achieve the statewide 2030 or 2045 goals.

### *Potential Feasibility Issues and Attaining the Project Objectives*

Renewable diesel fuel is not new but would be considered new for large-scale stationary equipment, such as the proposed project's gensets. The fuel is currently used in heavy-duty mobile engines and trucks. The city of Oakland and other cities surrounding the San Francisco Bay Area are using renewable diesel in their transportation fleet (Green Fleet 2021). While renewable diesel has been used in such applications, at this time there is no significant data regarding its use in large stationary engines, such as those for the proposed project.

The majority of renewable diesel consumed in California is primarily sourced and produced from overseas. Single-sourced production challenges fuel supply reliability and cost. If the source could no longer produce the fuel or other production and distribution issues arise, not the least of which are supply-chain issues, the project could face a supply shortage. Single-sourced products are quite often expensive, and for renewable diesel, the current cost is approximately two times that of conventional diesel. Distributors could mitigate these challenges by having a large supply on hand. In addition, new fuel supplies could increase in the future as more suppliers are added, such as Exxon Mobil, Bakersfield Renewable Fuels, Marathon Petroleum, and others (Biodiesel 2021). These future suppliers have announced plans for operation as early as 2022. At this point, the availability of a second source does not seem timely for the project to identify it as a feasible 100 percent replacement of conventional diesel fuel from the start of operation. However, in the foreseeable future, if and when more suppliers come online and the supply is plentiful, the project should revisit the feasibility of renewable diesel as the primary source of fuel. Staff has proposed mitigation measure **GHG-2** to reflect the increasing availability of renewable diesel over time.

Currently, there are LCFS credits available for mobile sources to use renewable diesel, making this fuel more financially viable; however, those credits are not currently available

for stationary sources. The extension of credits for non-mobile sources could result in an effective decrease to fuel cost for the project.

Data center customers demand the most reliable data storage service available, and data center insurers are willing to provide insurance coverage only for proven technologies with an extremely low probability of operational failure. Until a renewable diesel supply is more available and readily accessible and in the absence of a second source of renewable diesel, conventional diesel fuel is the most feasible backup fuel. This alternative could potentially attain the project objectives if a reliable fuel source could be obtained.

### 5.7.3 Alternative 3: Natural Gas Internal Combustion Engines

Natural gas internal combustion engines (ICEs) are fueled by natural gas, while the proposed engines for the project would use conventional diesel. Natural gas ICEs are available up to 18 MW each. Their physical dimensions range based on their MW capacity. For example, one of the natural gas ICEs from manufacturer Power Solution International (PSI) has a capacity of 445 kW and a nominal height of 12 feet. One of the natural gas ICEs manufactured by Innio has a capacity of 3 MW with a height for the genset assembly of 23 feet. As a point of reference, the height of the proposed genset assembly for the project is 27 feet. Under this alternative, the footprint of the natural gas ICEs may not be the same as for the proposed diesel gensets. The number of engines and associated equipment, height, fuel delivery, and on-site fuel storage would be different. It is assumed that the massing and locations of the data center buildings would be essentially the same as for the proposed project.

Data centers require a power generating solution with quick start times. The time it takes a natural gas ICE to begin carrying data center load from its power-off position (the moment the engine synchronizes to the bus bar) varies depending on the natural gas ICE's size and capacity. In the meantime, the UPS system can provide power to the data center. The startup time for the PSI natural gas ICEs and the Innio natural gas ICEs are fast enough that the proposed project's UPS system would not need to be redesigned.

The preferred, most feasible method to supply fuel for the natural gas ICEs would be by pipeline through Pacific Gas and Electric's underground natural gas transmission system. The two closest locations for independent natural gas pipeline connections are one adjacent to the project site on Walsh Avenue and one approximately 1.36 miles west of the project site on the Lawrence Expressway.[4] The project's primary pipeline would connect to the nearby gas line on Walsh Avenue. Another pipeline connecting to the gas line at Lawrence Avenue could also be installed to provide added reliability. It is assumed that new pipelines would be constructed along existing roadway rights-of-way and utility corridors. The natural gas pipeline trenches would be approximately 6 feet deep and 4 to 6 feet wide, with a minimum cover depth of 36 inches.

4 Along Walsh Avenue to Lawrence Expressway.

The installation of natural gas pipelines could cause temporary impacts during construction. Staff assumes that the implementation of the same mitigation and project design measures for the project would apply to pipeline construction impacts under this alternative (e.g., measures to reduce impacts on air quality, biological resources, water quality, noise, soil resources, transportation, and cultural and tribal cultural resources). This would reduce any potential impacts from gas pipeline construction to less than significant levels.

**Air Quality and Public Health**

Staff compared criteria air pollutant emissions and $CO_2$ emissions of natural gas ICEs against the proposed diesel-fired engines for CA3. The proposed 44 2.75-MW engines for the project would be equipped with SCR and DPFs to achieve compliance with Tier 4 emission standards. However, it takes time for the SCR to reach the activation temperature and become fully effective in controlling NOx emissions. Depending on load, the SCR would be expected to kick on within 15 minutes.

For the natural gas ICEs alternative, information is primarily based on the data provided for the San Jose Data Center (Jacobs 2021s) application. The natural gas ICEs for the San Jose Data Center would be equipped with a 3-way catalyst system to reduce emissions of NOx, CO, volatile organic compounds (VOC), and air toxics. The applicant for the San Jose Data Center also assumed 15 minutes of operation with uncontrolled emissions and 45 minutes of operation with controlled emissions to estimate hourly emissions (Jacobs 2021o).

Staff compared the emission factors in pounds per megawatt-hour (lbs/MWe-hr) for the proposed diesel-fired engines at CA3 and those for the natural gas ICEs proposed at the San Jose Data Center. Staff assumed the same 15-minute warm up period for the SCRs of the diesel engines and the 3-way catalyst system for the natural gas ICEs. As shown in **Table D-3** of **Appendix C**, the emission factors in lbs/MWe-hr for the NOx emissions would reduce by more than 98 percent using natural gas ICEs compared to the proposed diesel-fired engines for CA3. The PM emissions would reduce by more than 83 percent using natural gas ICEs compared to the proposed diesel-fired engines. The VOC emissions would reduce by about 46 percent using natural gas ICEs compared to the proposed diesel-fired engines. There would be less reduction in CO and sulfur dioxide ($SO_2$) emissions (about 11 percent reduction for CO and about 25 percent reduction for $SO_2$). Staff is unable to find data comparing air toxics emissions of natural gas ICEs with those for diesel-fired engines; however, these are expected to be reduced due to the reductions reported for VOCs and PM.

In addition, staff does not assume additional operation of the natural gas ICEs to offset the cost difference between the technologies and acknowledges that the capital cost of natural gas ICEs may be more expensive. Staff acknowledges that the operational profile may be different for the natural gas ICEs, and annual emissions may be higher since they may operate more based on other project applications. However, staff is not able to predict the exact number of operation hours and the associated emissions for the natural

gas ICEs in such a scenario since it is unknown how much grid support service would be provided. Therefore, staff only compares the emission factors in lbs/MWe-hour for the natural gas ICEs and those for the conventional diesel-fired engines for the proposed project, assuming a similar operating profile.

Air quality impacts using natural gas ICEs are expected to be *much less* than those that would occur with the proposed conventional diesel-fired engines for the project. Public health impacts from toxic air contaminants using natural gas ICEs are *likely less* than those that would occur with the proposed conventional diesel-fired engines for the project.

### *Greenhouse Gas Emissions*

As shown in **Appendix C**, natural gas fueled ICEs would reduce GHG emissions by approximately 7 percent from conventional diesel-fired engines. When extending to the full fuel cycle, GHG emissions from natural gas ICEs fueled with pipeline natural gas produced from fossil feedstocks would be 20 percent lower than those from conventional diesel as indicated by the CI values. Moreover, natural gas feedstocks from some renewable feedstocks may have a much lower CI. The CI values of most renewable feedstocks are even negative, reflecting a net reduction in fuel cycle carbon emissions. The comparative impact is *likely less* under this alternative.

Fossil natural gas and some forms of renewable natural gas still have some carbon associated with the fuel cycle. These show up in the table for those fuels with a CI that is greater than zero. In these cases, additional measures could be needed before an alternative fueled by natural gas would be considered a carbon-free facility.

### *Potential Feasibility Issues and Attaining the Project Objectives*

Natural gas ICEs are cleaner burning due to the type of fuel; however, the technology is not without feasibility issues. The project would employ 44 total backup gensets (including the four house gensets that serve administrative and emergency response functions). Depending upon the MW size of the natural gas ICE engine, more engines may or may not be needed.

There are two potential fuel supply methods: on-site storage and pipeline connection. On-site storage would require redesigning the project and would suffer from some feasibility issues. The project would need approximately 201 million gallons of natural gas storage to provide 24 hours of backup natural gas ICE operation, the same backup duration as the current proposal. Liquefied natural gas (LNG)[5] would minimize the storage

5 Natural Gas can be liquefied to 600 cubic meters times smaller than its volume in its gas state.

space, but the needed storage volume would still be substantially larger than that of diesel fuel.[6,7]

LNG would need to be stored and distributed with specialized equipment and stored in insulated tanks to keep the fuel in a liquid state at minus 260 degrees Fahrenheit. For LNG to remain at a constant temperature and pressure, it must allow for natural evaporation known as BOG. BOG is essentially a loss of stored fuel that occurs when the ambient temperature heats the insulated tanks. LNG must release this gas to maintain its liquid state. To mitigate the loss of fuel and gas release into the atmosphere, BOG can be reliquefied and put back into the LNG tank or used as fuel in certain marine applications, steam turbines, or in a gasification unit for creating alternative fuels. LNG would need to undergo a regasification process for the fuel to be used in natural gas ICEs. Both reliquefication and regasification would result in additional processes, equipment, and footprint.

Fuel storage, reliquefication, and regasification equipment must comply with standards specified by the National Fire Protection Association and the City Code to protect against hazardous material release, fire, and explosions during natural disasters and as the result of accidents. Additionally, permits for the storage of hazardous materials would be needed pursuant to the City Code.

The utility's underground pipeline transmission system would be the primary and preferred method of fuel supply, as discussed earlier. However, pipelines are susceptible to natural disasters (e.g., earthquakes) as well as accidents. This can potentially cut off fuel supply to the project during a grid outage. Access to the secondary pipeline 1.36 miles west of the project site on Lawrence Expressway would increase fuel supply reliability. The natural gas ICE alternative could potentially be feasible and attain the project objectives using the underground natural gas pipeline system.

## 5.8 Environmentally Superior Alternative

CEQA requires that if the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(2)). Alternative 1, the No Project/No Build Alternative, is the environmentally superior alternative because it would avoid the potentially significant impacts of the proposed project. However, Alternative 1 would not meet any of the project objectives.

6 LNG calculated as: Approximate ICE Fuel Consumption 9,500 cubic feet per megawatt-hour x 118 MW (includes redundant engines) x 24 hours of backup duration = 26,904,000 cubic feet of natural gas = 201 million gallons

Conversion Cubic feet gas to liquid gallons: 26,904,000 cubic feet x 0.0283168 cubic meter gas x (1 cubic meter LNG / 600 cubic meter gas) x 264.172 liquid gallons = 335,426 gallons

7 Diesel volume for current proposal: Genset Fuel Consumption 191.8 gallons per hour x 44 gensets x 24 hours = 202,541 gallons

Staff compared the other alternatives to the proposed project and determined that each has some advantages in terms of reducing impacts. Staff examined the potential for the alternatives to meet most of the project's basic objectives. Staff's conclusions for the alternatives are summarized below, including discussions of whether the alternatives could attain the project objectives.

## 5.8.1 Alternative 2: Renewable Diesel Fuel

Air quality and public health impacts using renewable diesel during project operations would likely be similar to those that would occur under the proposed project. However, the conclusion would need to be confirmed with testing under controlled conditions for the size of engines proposed for this facility with DPFs and SCR being operative.

The GHG impacts from this alternative would likely be less than those of the project due to the reduced GHG emissions during the entire fuel cycle.

Staff considers Alternative 2 to be *somewhat environmentally superior* to the proposed project, although further study and analysis would be needed to fully compare this alternative to the proposed project. Changing the fuel source from conventional to renewable diesel would not require a project redesign or necessarily cause a schedule delay. Currently, however, the lack of LCFS fuel credits for non-mobile sources results in an effective increase to the cost of fuel for projects like CA3.

There are two options for the operation of a renewable diesel alternative. One option is to use renewable diesel as the primary source for the project, with conventional diesel as its backup fuel. The second option is to solely use renewable diesel. To only use renewable diesel, a second renewable fuel source should be available for reliability purposes. Future renewable diesel fuel suppliers have announced plans to provide additional fuel for California as early as 2022. If these plans are implemented and the supply becomes plentiful, the project owner should revisit the feasibility of fully replacing conventional diesel with renewable diesel.

If one of these options were fulfilled, this alternative could potentially attain the project objectives. Staff's proposed mitigation measure **GHG-2** implements a variation of this alternative by requiring the phase-in of renewable diesel fuel use over time as supply increases.

## 5.8.2 Alternative 3: Natural Gas Internal Combustion Engines

The GHG impacts of this alternative would likely be less than those of the CA3BGF due to the reduced GHG emissions during the entire fuel cycle. Also, criteria air pollutant emissions and air quality impacts using natural gas ICEs are expected to be much less than those that would occur with the project's gensets. Staff is not able to find data comparing the air toxics emissions of natural gas ICEs with those for diesel engines, but these are expected to be reduced due to the reductions reported for VOCs and PM. Therefore, public health impacts using natural gas ICEs would likely be less than those that would occur with the project's diesel engines.

Staff considers Alternative 3 to be *environmentally superior* to the proposed project due to its deep reductions in criteria air pollutants. Redesigning the project with natural gas ICE technology could increase the number of engines on-site depending upon the MW sizing and physical dimensions. As discussed earlier, two gas pipeline connections are available and likely needed to match the fuel supply reliability of the proposed project. Permitting and construction of the new pipelines would take time to complete.

**Table 5-1** (below) summarizes the environmental effects for each alternative compared to the proposed project for the topics of air quality, public health, and GHG emissions. As discussed above, staff's comparative analyses for the other topics covered in this EIR show essentially no differences between the impacts identified under the proposed project and the alternatives selected for analysis.

**TABLE 5-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED PROJECT TO THE ALTERNATIVES**

| Environmental Topics and Impacts | Proposed Project | No Project/No Build | Renewable Diesel Fuel | Natural Gas ICEs |
|---|---|---|---|---|
| Criteria air pollutants | LTS with Mitigation | No Impact | LTS with Mitigation (Likely Similar) | LTS with/without Mitigation (Much Less) |
| Toxic Air Contaminants (TACs) | LTS | No Impact | LTS (Likely Similar) | LTS (Likely Less) |
| GHG emissions | LTS with Mitigation | No Impact | LTS (Likely Less) | LTS with/without Mitigation (Likely Less) |

Notes: Impact conclusions for the proposed project and the alternatives in **Table 5-1** are shown using these abbreviations:

No Impact = the proposed project or an alternative has no potential to affect the resource

LTS = less than significant impact, no mitigation required

LTS with Mitigation = mitigation measure(s) required to reduce a potentially significant impact to less than significant

The comparisons of impacts to the proposed project in **Table 5-1** are conveyed using these abbreviations (staff identified no impacts that would be greater than the proposed project):

- Much Less
- Less
- Likely Less (conclusion that is estimated and cannot be fully verified with available data)
- Likely Similar (conclusion that is estimated and cannot be fully verified with available data)

## 5.9 References

Air Liquide 2021 – Air Liquide. Fuel Cell. Accessed October 20, 2021. Available online at: https://energies.airliquide.com/resources-planet-hydrogen/fuel-cell

Biodiesel 2021 – Biodiesel Magazine (Biodiesel). Renewable Diesel's Rising Tide, January 2021. Accessed April 2021. Available online at: http://www.biodieselmagazine.com/articles/2517318/renewable-diesels-rising-tide

Data Center 2021 – Data Center Knowledge (Data Center). eBay Goes Live With its Bloom Powered Data Center, September 2013. Accessed April 19, 2021. Available online at: https://www.datacenterknowledge.com/archives/2013/09/26/ebay-goes-live-with-its-bloom-powered-data-center

DayZenLLC 2021a – DayZenLLC (DayZenLLC). (TN 237380). VDC CA3BGF SPPE Application Part I, dated April 5, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

EIA 2021 – U.S. Energy Information Administration (EIA). Today in Energy: Utility-scale battery storage costs decreased nearly 70% between 2015 and 2018, October 2020. Accessed on November 22, 2021. Available online at: https://www.eia.gov/todayinenergy/detail.php?id=45596

Energy Code Update 2021 – California Energy Commission (CEC). Nonresidential PV and Battery Storage Measure Proposal (TN 23776), May 2021. Accessed November 2, 2021. Available online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=237776&DocumentContentId=71014

Farm Energy 2021 – Farm Energy (Farm Energy). Biodiesel Fuel Quality, April 2019. Accessed March 31, 2021. Available online at: https://farm-energy.extension.org/biodiesel-fuel-quality/

Fuel Cell 2021 – Fuel Cell Store (Fuel Cell). Processing Alternative Fuels for Fuel Cells, March 2019. Accessed April 19, 2021. Available online at: https://www.fuelcellstore.com/blog-section/processing-alternative-fuels-for-fuel-cells

GBGF 2021 – Gilroy Backup Generating Facility (GBGF). GBGF Revised Project Description – Addition of BESS Facilities (TN 239193). California Energy Commission Docket Number 20-SPPE-03. Docketed on August 5, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=20-SPPE-03

GenCell 2021 – GenCell (GenCell). Comparing Fuel Cell Technologies. Accessed April 19, 2021. Available online at: https://www.gencellenergy.com/news/compairing-fuel-cell-technologies/

GenFuel 2021 – GENFUEL (Plug Power). The 1MW Electrolyzer. Accessed October 20, 2021. Available online at: https://www.plugpower.com/wp-content/uploads/2020/10/2020_1MWELX_Spec051821_sm.pdf

GenSureHP 2021 – GENSURE (Plug Power). GENSURE HP Fuel Cells. Accessed October 20, 2021. Available online at: https://www.plugpower.com/wp-content/uploads/2020/08/GenSureHP_082021_R2.pdf

Green Fleet 2021 – Government Fleet (Green Fleet). What You Need to Know About Renewable Diesel, March 2016. Accessed March 29, 2021. Available online at: https://www.government-fleet.com/156621/what-you-need-to-know-about-renewable-diesel

Hydrogen 2021a – Internet Archive. Hydrogen as an Alternative Fuel. Accessed October 19, 2021. Available online at: https://web.archive.org/web/20080808053811/http://www.almc.army.mil/alog/issues/MayJun00/MS492.htm

Hydrogen 2021b – Office of Energy Efficiency & Renewable Energy (EERE). Hydrogen Production: Electrolysis. Accessed October 19, 2021. Available online at: https://www.energy.gov/eere/fuelcells/hydrogen-production-electrolysis

Hydrogen Properties 2021 – Office of Energy Efficiency & Renewable Energy (EERE). Module 1: Hydrogen Properties. Accessed October 20, 2021. Available online at: https://www1.eere.energy.gov/hydrogenandfuelcells/tech_validation/pdfs/fcm01r0.pdf

Jacobs 2021o – Jacobs (Jacobs). (TN 239409). SJC Data Center SPPE Application Supplemental Filing Volume 1, dated August 20, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-SPPE-04

Jacobs 2021s – Jacobs (Jacobs). (TN 239413). SJC Data Center SPPE Application Supplemental Filing Appendix Air - Traffic, Part 1, dated August 20, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-SPPE-04

Microsoft 2021 – Microsoft. Fuel Cells for Data Centers. By Li Zhao. February 2016. Accessed in March 2021. Available online at: https://www.microsoft.com/en-us/research/wp-content/uploads/2016/02/FCDC-TechReport.pdf

Mitsubishi 2021 – Mitsubishi. What is Thermal Runaway. 2021. Accessed in December 2021. Available online at: https://www.microsoft.com/en-us/research/wp-content/uploads/2016/02/FCDC-TechReport.pdf

NREL 2021 – National Renewable Energy Laboratory (NREL). A Comparison of Fuel Choice for Backup Generators, March 2019. Accessed January 2021. Available online at: https://www.nrel.gov/docs/fy19osti/72509.pdf

Power Magazine 2021 – Power Magazine (Power Magazine). Vistra Energizes Massive 1.2-GWh Battery System at California Gas Plant. By Sonal Patel. January 14, 2021. Accessed in March 2021. Available online at: https://www.powermag.com/vistra-energizes-massive-1-2-gwh-battery-system-at-california-gas-plant/

Santa Clara 2010 – City of Santa Clara (Santa Clara). *City of Santa Clara General Plan 2010-2035*. Adopted on November 16, 2010. Chapter 3, pg. 3-17; Chapter 5, pgs. 5-14, 5-39, 5-67; Table 8.3-1. Accessed on July 7, 2021. https://www.santaclaraca.gov/our-city/departments-a-f/community-development/planning-division/general-plan

Santa Clara 2021b – City of Santa Clara (Santa Clara). Santa Clara City Code. Current through Ordinance 2029, passed February 23, 2021. Accessed on July 7, 2021. Available online at: https://www.codepublishing.com/CA/SantaClara/

UNESCO 2021 – United Nations Educational, Scientific, and Cultural Organization (UNESCO). World Water Assessment Programme, 2017. Accessed March 2021. Available online at: http://www.unesco.org/new/en/natural-sciences/environment/water/wwap/facts-and-figures/all-facts-wwdr3/fact-7-water-biofuel/

U.S. DOE 2020a – U.S. Department of Energy (U.S. DOE). U.S. DOE Office of Energy Efficiency and Renewable Energy. Types of Fuel Cells. Accessed October 2020. Available online at: https://www.energy.gov/eere/fuelcells/types-fuel-cells

U.S. DOE 2020b – U.S. Department of Energy (U.S. DOE). U.S. DOE Office of Energy Efficiency and Renewable Energy. Hydrogen Pipelines. Accessed February 2021. Available online at: https://www.energy.gov/eere/fuelcells/hydrogen-pipelines

U.S. DOE 2020c – U.S. Department of Energy (U.S. DOE). U.S. DOE Office of Energy Efficiency and Renewable Energy. Alternative Fuels Data Center. Accessed February 2021. Available online at: https://afdc.energy.gov/fuels/emerging_hydrocarbon.html

U.S. EIA 2021 – U.S. Energy Information Administration (U.S. EIA). Biofuels Explained. Accessed April 2021. Available online at: https://www.eia.gov/energyexplained/biofuels/

ZDNet 2021 – ZDNet (ZDNet). Data centers want to be a lot greener. One big problem is holding them back. Accessed April 2021. Available online at: https://www.zdnet.com/article/data-centers-want-to-be-a-lot-greener-one-big-problem-is-holding-them-back/

# Section 6

## Authors and Reviewers

# 6 Authors and Reviewers

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Mark Hesters and Laiping Ng (Appendix B, Project Description)
Mark Hamblin (Aesthetics)
Wenjun Qian, with Brewster Birdsall (Air Quality, Greenhouse Gas Emissions, Appendix D)
Andrea Koch (Alternatives)
Ann Crisp (Biological Resources)
Gabriel Roark, Melissa Mourkas (Cultural and Tribal Cultural Resources)
Shahab Koshmashrab and Kenneth Salyphone (Energy/Energy Resources, Minerals, Alternatives, Noise, MFOS, Appendix A, Appendix B)
Garry Maurath (Geology/Soils (including Paleo))
Karim Abulaban (Wildfire, Utilities/Service Systems, Hazards and Hazardous Materials)
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# Section 7

Response to Comments

# 7 Response to Comments

## 7.1 Introduction

This section presents responses to the comments received during the 45-day public review period for the Draft Environmental Impact Report (EIR) (January 24, 2022, through March 9, 2022). A Notice of Availability of the Draft EIR (DEIR) was sent out to the project's mailing list. The California Energy Commission (CEC) received comment letters from *Andrew Ratermann, the Bay Area Air Quality Management District, and the project applicant, Vantage Data Centers.*

**Table 7-1** presents the list of commenters that submitted comments on the EIR. The individual comments are numbered, and responses immediately follow the comments. If revisions have been made to the EIR based on the comments, the revisions are included in the text of this Final EIR with ~~strikeout~~ for deletions of text, and in <u>underline</u> for new text. The response references the general location of the revisions.

**TABLE 7-1 COMMENTS RECEIVED ON THE DRAFT ENVIRONMENTAL IMPACT REPORT**

| Commenter | Date of Comment | Comment Set |
|---|---|---|
| Andrew Ratermann | February 3, 2022 | A |
| Vantage Data Centers | March 7, 2022 | B |
| Bay Area Air Quality Management Agency | March 9, 2022 | C |

## 7.2 Comment Letters and Responses

Staff's responses follow each comment letter.

# Comments Set A: Andrew Ratermann

Comment Received From: Andrew Ratermann
Submitted On: 2/3/2022
Docket Number: 21-SPPE-01

Noise

The environmental impact report addresses construction noise, but not noise generated by operations. There have already been anecdotal complaints about the noise generated by Vantage on social media. I would like to know if the project is expected to generate noise during operation, the level of anticipated noise, and any mitigations planned.

## Responses to Comments Set A: Andrew Ratermann

**A-1** Staff addresses the project's noise levels during operations on page 4.13-5 through 4.13-7 in **Section 4.13 Noise** of the DEIR (TN# 241264).

Noise modeling was performed for two scenarios: "normal" and "worst-case." Normal operation would primarily consist of the continuous operation of the heating, ventilation, and air conditioning equipment and other air-handling units. The worst-case modeled scenario, under CadnaA, consists of the simultaneous operation of the project in normal mode along with 12 of the emergency backup generators closest to the nearest noise receptors. This scenario is only intended for modeling the worst-case noise impact on the adjacent properties and not the typical noise levels during testing and maintenance since the emergency backup generators would be tested one at a time. The noise generated during the worst-case scenario would be higher than that during testing and maintenance.

As described on page 4.13-5 of the DEIR, the noise model included adequate mitigation measures that would be incorporated in the project during equipment installation. These measures include exhaust silencing and acoustically enhanced enclosures for the emergency backup generators; sound silencing and solid barriers for the heating, ventilation, and air conditioning, and chiller equipment; 15-foot-tall walls to surround the substation; and locating the emergency backup generators on the opposite side of the data center building away from the nearby residences.

The CadnaA modeling results show that for the normal mode of operation, the noise level at the residential receptor would be anticipated to reach a maximum of 50 dBA $L_{eq}$ (DayZenLLC 2021e, Table 4.13-9). This is below the daytime and nighttime ambient noise levels of 59 dBA and 53 dBA, respectively, at the nearby residential area. At the same location, the project's 50 dBA sound level is below the city of Santa Clara's City Code daytime noise level limit of 55 dBA and does not exceed the City Code nighttime level of 50 dBA $L_{eq}$. The project's noise level at the nearby industrial receptor would not exceed 56 dBA $L_{eq}$. This is below the ambient level of 59 dBA $L_{eq}$ at this location and below the City Code noise level limit of 70 dBA $L_{eq}$ for ML uses (DayZenLLC 2021e, Table 4.13-9).

The results of the CadnaA computer modeling also show that during the worst-case scenario, the modeled equivalent continuous sound level ($L_{eq}$) at the residential receptors would reach a maximum of 50 dBA. This is the same as normal operation because the emergency backup generators are located on the opposite side of the data center building, away from these residences; this distance ensures that the increased noise resulting from the increased number of engines operating would not result in an increase in noise at the residences. A 50 dBA noise level is below the daytime and nighttime ambient noise levels of 59 and 53 dBA, respectively.

Additionally, it is below the City Code daytime residential noise level limit of 55 dBA $L_{eq}$ and does not exceed the City Code nighttime limit of 50 dBA $L_{eq}$. Note that this would be due to emergency operation and is, therefore, exempt from the City Code noise limits. As discussed further in Section **4.3 Air Quality**, emergency operation is expected to be unlikely, infrequent, and of short duration if it does occur (TN# 241264, Section 4.3). The project's noise level at the nearby industrial receptor would not exceed 70 dBA, the City Code limit for Light Industrial zoned uses (DayZenLLC 2021e, Table 4.13-10).

The additive value of the lowest existing ambient noise level of 53 dBA and the project's maximum normal and worst-case operational noise level of 50 dBA would only increase the existing ambient noise level at the nearest residences by two dBA. An increase of less than three dBA is not noticeable (TN# 241264, Section 4.13, page 4.13-2). The operational noise control measures described above and planned to be installed for the project would be sufficient to avoid project neighbors' exposure to significant noise. The project's noise levels during operation would result in a less than significant impact.

# Comments Set B: Vantage Data Centers

Scott A. Galati
**DAYZEN LLC**
1720 Park Place Drive
Carmichael, CA 95608
(916) 900-8026

STATE OF CALIFORNIA

Energy Resources
Conservation and Development Commission

| In the Matter of: | **DOCKET NO: 21-SPPE-1** |
|---|---|
| Application For Small Power Plant Exemption for the **CA3 BACKUP GENERATING FACILITY** | **VDC's COMMENTS ON DRAFT ENVIRONMENTAL IMPACT REPORT** |

Vantage Data Centers (VDC) hereby files its Comments on the Draft Environmental Impact Report (DEIR) published by Staff on January 21, 2022 (TN 241264) for the CA3 Backup Generating Facility (CA3BGF) and CA3 Data Center (CA3DC).

VDC agrees with the analysis, conclusions and proposed Mitigation Measures of the DEIR with the following proposed modifications. Additions are shown in **bold and underline** and deletions are shown in ~~strikethrough~~.

**Pages 1-20 and 4.8-32, Mitigation Measure GHG-3**

VDC requests the following modifications to Mitigation Measure **GHG-3** to allow the same flexibility for achieving carbon-free electricity as other projects that have been granted an SPPE from the Commission.

> **GHG-3:** The project owner shall ensure that 100 percent of the electricity purchased to power the project is covered by carbon-free resources using one of the following options: (1) participate in SVP's LCRE program for 100 percent carbon-free electricity **or other renewable energy program that accomplishes the same objective as SVP's LCRE program**, or (2) purchase **renewable energy credits** ~~carbon offsets~~ or similar instruments

1

that accomplish the same goals of 100 percent carbon-free electricity. The project owner shall provide documentation to the director, or director's designee, of the city of Santa Clara Planning Division of enrollment and annual reporting of continued participation in SVP's LCRE program with 100 percent carbon-free electricity coverage. If not enrolled in SVP's LCRE Program, the project owner shall provide documentation and annual reporting to the director, or director's designee, of the city of Santa Clara Planning Division that confirms that alternative measures achieve the same 100 percent carbon free electricity as SVP's LCRE program, with verification by a qualified third-party auditor specializing in greenhouse gas emissions.

**Page 4.7-6, Geology and Soils**

The reference to 210,000 cubic yards of imported fill should be deleted and replaced with the following:

It is possible that up to 10,000 cubic yards of soil and undocumented fill would be removed from the site. Grading of the site is not expected to require the import of fill material.

Dated: March 7, 2022

Respectfully Submitted,

Scott A. Galati
Counsel to Vantage Data Centers

## Responses to Comments Set B: Vantage Data Centers

**B-1** *Vantage Data Centers requests the following modifications to Mitigation Measure GHG-3 to allow the same flexibility for achieving carbon-free electricity as other projects that have been granted an SPPE from the Commission.*

**GHG-3**: The project owner shall ensure that 100 percent of the electricity purchased to power the project is covered by carbon-free resources using one of the following options: (1) participate in SVP's LCRE program for 100 percent carbon-free electricity **or other renewable energy program that accomplishes the same objective as SVP's LCRE program**, or (2) purchase **renewable energy credits** ~~carbon offsets~~ or similar instruments that accomplish the same goals of 100 percent carbon-free electricity…

***Staff response:***

Staff agrees with the applicant's proposed changes to mitigation measure **GHG-3** to allow the applicant flexibility for achieving carbon-free electricity through another renewable energy program that accomplishes the same objective as Silicon Valley Power's Low-Carbon Renewable Energy program. Staff also agrees with the proposal to change *carbon offsets* to *renewable energy credits.* Staff had intended the reference to "carbon offsets or similar instruments" to also encompass renewable energy credits and does not object to the applicant narrowing the provision to just renewable energy credits. The Final EIR includes revisions to mitigation measure **GHG-3** on page 4.8-32 and text on pages 4.8-7, 4.8-26, 4.8-27, and 4.8-31 in **Section 4.8 Greenhouse Gas Emissions** and on pages 1-13 and 1-14 in **Section 1.0 Summary** to reflect the applicant proposed changes. These are minor clarifications to the mitigation measure and do not trigger any need under CEQA Guidelines section 15088.5 or any other provision to recirculate the document.

**B-2** *Vantage Data Centers notes the reference to 210,000 cubic yards of imported fill should be deleted and replaced with the following:*

*It is possible that up to 10,000 cubic yards of soil and undocumented fill would be removed from the site. Grading of the site is not expected to require the import of fill material.*

***Staff response:***

Staff acknowledges and agrees with the substitution of language on page 4.7-6 in **Section 4.7 Geology and Soils** to correct for specific site circumstances. This is a minor clarification and does not trigger any need under CEQA Guidelines section 15088.5 or any other provision to recirculate the document. The corrected paragraph reads as follows:

Construction of the Project would occur in phases. ~~Roughly 210,000 cubic yards of fill would be imported to the site to raise the base elevation by approximately four~~

~~feet (1.5 feet above the base flood elevation).~~ **It is possible that up to 10,000 cubic yards of soil and undocumented fill would be removed from the site. Grading of the site is not expected to require the import of fill material.** Excavation for utilities would extend to depths of up to 15 feet below the new base elevation (about 11 feet below existing grade) (DayZenLLC 2021a). However, this trenching would most likely occur within the Quaternary age upper clay layer (DayZenLLC 2021a).

# Comments Set C: Bay Area Air Quality Management District (BAAQMD)



March 8, 2022

Lisa Worrall
Senior Environmental Planner
California Energy Commission
715 P Street, MS 40
Sacramento, CA 95814

RE: CA3 Backup Generating Facility - Vantage Draft Environmental Impact Report

Dear Ms. Worrall,

Bay Area Air Quality Management District (Air District) staff has reviewed the Draft Environmental Impact Report (DEIR) for CA3 Backup Generating Facility - Vantage (Project). The Project proposes to construct an approximately 468,000-square-foot four-story data center building at 2590 Walsh Avenue, Santa Clara, California. The Project includes a total of forty-four (44) 2.75-megawatt (MW) diesel fired generators that will be used exclusively to provide up to 96 MW of backup emergency generation to support the data center. Forty (40) of the generators would be dedicated to replacing the electricity needs of the data center in case of a loss of utility power, and four (4) of the generators would be used to support redundant critical cooling equipment and other general building and life safety services. Vantage Data Services is seeking a Small Power Plant Exemption (SPPE) from the California Energy Commission's (CEC) jurisdiction to proceed with local approval rather than requiring certification by the CEC.

The Project is situated in the South 101 neighborhood, an area which CalEPA's CalEnviroScreen tool indicates experiences high levels of diesel particulate matter (DPM), a toxic air contaminant. This area also already has three large data centers and chip manufacturers located in the neighborhood. As such, the Air District is concerned about air pollution emissions or exposures impacting the nearby community.

**Emission Calculation and Methodology**

The DEIR discussion of the Air District's analysis of data center diesel engine operations concludes that emergency operations "...would be speculative due to the infrequent, irregular, and unplanned nature of emergency events. Emissions and impacts during emergency operation are not easily predictable or quantifiable... project's emergency operation would be unlikely to expose sensitive receptors to substantial concentrations of criteria air pollutants." The Air District remains concerned about the environmental impacts associated with using backup diesel generators in non-testing/non-maintenance operations. The Air District has previously submitted historical evidence in our California Energy Commission - CA3

Data Center NOP letter that backup generators operate for non-testing/non-maintenance reasons, and we continue to recommend that this information should be incorporated into the emissions calculations for backup generator operations. Although the DEIR rightfully notes that emergency operations are less predictable than maintenance and testing, the evidence from historical operations should not be discounted and dismissed, but rather should be incorporated into the analysis to show various potential scenarios of backup power generation operations beyond routine testing and maintenance. Backup generators are operating more frequently than previously understood because of climate change induced crises and grid operational challenges, and as such, it is critical to consider the impacts of operating the emergency backup diesel generators. Air District staff recommend that the DEIR evaluate greenhouse gas (GHG), criteria pollutant, and toxic air contaminant (TAC) impacts due to the non-testing/non-maintenance operations of backup power generators. Various scenarios should be considered for non-testing/non-maintenance operations, including non-zero hours of operation and concurrent generator operations.

Additionally, the DEIR assumes a maximum operating limit for testing/maintenance of 35 hours per year averaged over all engines to determine the Project's operational potential to emit. To be the most health protective and transparent, the Project needs to clarify how this 35 hour per year limit will be enforced, for example through a lease agreement or voluntarily permit limits, otherwise the Project should model emissions for all of the generators assuming the 50 hour per year testing/maintenance operations limit regulated under the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (CCR, Title 17, Section 93115).

The Air District does not support the use of Emission Reduction Credits to offset NOx emissions to mitigate CEQA related impacts. Such banked emissions credits may have resulted from past and/or non-local sources, and do not reduce current local impacts. The use of Emission Reduction Credits is allowed in the Air District's New Source Review program, which is intended for no net emission increase in the whole Bay Area air basin. As CEQA mitigation for a specific project, the order of priority for mitigations to reduce impacts should be: 1) onsite to the maximum extent possible; 2) off-site within the community; 3) off-site within San Jose; 4) off-site within Santa Clara County. Only if no other mitigations are available should Emissions Reduction Credits be considered.

**Cumulative Impact Analysis**

The DEIR concludes that the Project exceeds the District's cumulative health risk thresholds but would not cause cumulatively considerable impacts, as the Project is estimated to only make up ~8% of the cumulative risk. The Air District notes that, based on the DEIR's conclusion that the Project cumulative analysis exceeds the District's cumulative health risk thresholds, the Project would contribute to cumulative impacts. In addition to the Project's contribution, Vantage owns and operates another data center within the area, at 2625 Walsh Avenue, and the Project would be the fourth data center within a quarter mile radius. Given the accumulation of health risk from the Project, other data centers, and other nearby sources, Vantage Data Services should implement mitigations including, but not limited to:

- Incorporate additional alternative technologies such as solar, battery storage and/or fuel cells, or utilize natural gas engines in place of diesel generators. As the DEIR concludes that Project Alternative 3, which includes natural gas engines, is feasible as well as environmentally superior to the proposed Project, the Air District recommend that these alternatives be incorporated into the Project.

**Construction Emissions and Mitigations**

The DEIR states that construction-related emissions were found to be less than significant with mitigations and that the Project will apply Air District best management practices (BMP) to control fugitive dust emissions. The Air District recommends that additional measures beyond the standard BMPs be added to help reduce particulate matter emissions. The following additional mitigation measures should be included into mitigation measure "AQ-1" to further address construction-related impacts:

- All off-road equipment greater than 25 horsepower (hp) shall have engines that meet or exceed Tier 4 final off-road emission standards. Use of zero-emission and hybrid-powered equipment is encouraged.
- All on-road trucks used for material delivery or hauling shall have engines that meet or exceed 2014 CARB emissions standards.
- Where grid power is available, portable diesel engines should be prohibited.
- Install wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed construction areas. Wind breaks should have at maximum 50 percent air porosity.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 miles per hour (mph).
- Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.

Certain aspects of the Project may require a permit from the Air District (for example, back-up diesel generators). Please contact Barry Young, Senior Advanced Projects Advisor, at (415) 749-4721 or byoung@baaqmd.gov to discuss permit requirements. Any applicable permit requirements should be discussed in the EIR.

We encourage the CEC to contact Air District staff with any questions and/or to request assistance during the environmental review process. If you have any questions regarding these comments, please contact Matthew Hanson, Environmental Planner II, at mhanson@baaqmg.gov (415) 749-8733 or Amy Dao, Senior Environmental Planner, at adao@baaqmd.gov (415) 749-4933.

Sincerely,

Greg Nudd
Deputy Air Pollution Control Officer

cc: BAAQMD Director Margaret Abe-Koga
BAAQMD Director Cindy Chavez
BAAQMD Director Rich Constantine
BAAQMD Director Rob Rennie

## Responses to Comments Set C: Vantage Data Centers

**C-1** *The Project is situated in the South 101 neighborhood, an area which CalEPA's CalEnviroScreen tool indicates experiences high levels of diesel particulate matter (DPM), a toxic air contaminant. This area also already has three large data centers and chip manufacturers located in the neighborhood. As such, the Air District is concerned about air pollution emissions or exposures impacting the nearby community.*

***Staff response:***

Staff understands BAAQMD's concern about air pollution emissions and exposures impacting the nearby community. The DEIR addressed the air quality and public health impacts of the project based on 2017 BAAQMD CEQA Guidelines. The DEIR included the cumulative health risk assessment (HRA) to assess associated community health risks and hazards impacts of the proposed project with nearby cumulative sources. Staff's cumulative HRA included existing stationary sources, surrounding highways, main streets, railways, and the proposed project. As stated in the response to comment **C-5** below, staff's cumulative HRA did include nearby data centers: Vantage Data Centers at 2625 Walsh Avenue, CoreSite at 2901 Coronado Drive, and Cyxtera Communications LLC at 2401 Walsh Avenue for the Maximally Exposed Individual Sensitive Receptor (MEISR) since they fall into the 2,000-foot radius and for the other receptors if they fall into the 1,000-foot radius.

**C-2** *The DEIR discussion of the Air District's analysis of data center diesel engine operations concludes that emergency operations "…would be speculative due to the infrequent, irregular, and unplanned nature of emergency events. Emissions and impacts during emergency operation are not easily predictable or quantifiable… project's emergency operation would be unlikely to expose sensitive receptors to substantial concentrations of criteria air pollutants." The Air District remains concerned about the environmental impacts associated with using backup diesel generators in non-testing/non-maintenance operations. The Air District has previously submitted historical evidence in our California Energy Commission - CA3 Data Center NOP letter that backup generators operate for non-testing/non-maintenance reasons, and we continue to recommend that this information should be incorporated into the emissions calculations for backup generator operations. Although the DEIR rightfully notes that emergency operations are less predictable than maintenance and testing, the evidence from historical operations should not be discounted and dismissed, but rather should be incorporated into the analysis to show various potential scenarios of backup power generation operations beyond routine testing and maintenance. Backup generators are operating more frequently than previously understood because of climate change induced crises and grid operational challenges, and as such, it is critical to consider the impacts of operating the emergency backup diesel generators. Air District staff recommend*

*that the DEIR evaluate greenhouse gas (GHG), criteria pollutant, and toxic air contaminant (TAC) impacts due to the non-testing/non-maintenance operations of backup power generators. Various scenarios should be considered for non-testing/non-maintenance operations, including non-zero hours of operation and concurrent generator operations.*

***Staff response:***

Starting from page 5 in **Appendix B**, the DEIR provides a detailed analysis of the "non-testing/non-maintenance" engine operations data provided by the BAAQMD. On page 11 of **Appendix B** in the DEIR staff reviewed the information gathered by BAAQMD and concluded that this information confirms that these types of events remain infrequent, irregular, and unlikely, and the resulting emissions are not easily predictable or quantifiable. The information does not show that these facilities operate significantly more than staff previously analyzed in the grid reliability context in prior cases.

The issue of the emergency operation of this facility in general is thoroughly analyzed in the DEIR, with detailed discussions of the potential for emergency situations that could trigger the emergency use of the emergency backup generator engines. Staff's conservative evaluation of the project's emissions and impacts of toxic air contaminants also reflected the potential emissions and impacts during emergency operation, as explained in **Section 4.3 Air Quality**, on page 4.3-8 in the DEIR.

However, as stated on page 4.3-8 in the DEIR and discussed in more detail starting from page 4.3-41 in the DEIR, the air quality impacts, especially the short-term (1-hour, 8-hour, and 24-hour) impacts, of emergency backup generator operation during emergencies are not quantified because the impacts of emergency operations are typically not evaluated during facility permitting and local air districts do not normally conduct an air quality impact assessment of such impacts. CEC staff assessed the likelihood of emergency events but finds that assessing the air quality impacts of emergency operations would require a host of unvalidated, unverifiable, and speculative assumptions about when and under what circumstances such a hypothetical emergency would occur. Such a speculative analysis is not required under CEQA (CEQA Guidelines, CCR, tit.14, §§ 15064(d)(3) and 15145), and, most importantly, would not provide meaningful information by which to determine project impacts. If emergency operation becomes a more frequent occurrence and more data is gathered regarding when and how these facilities operate during emergency situations, this conclusion might change.

There is no clear significance threshold to apply to emergency operations, and no state or local agency has adopted thresholds for use in evaluating emergency situations. Staff continues to believe that the best indicator that this project will not result in a significant adverse impact to air quality from emergency operations

is the continued infrequency of such events and the fact that in the rare instances when they do occur, they are of limited duration.

In addition, the California Air Resources Board (CARB) and BAAQMD have previously indicated that a project's use of Tier 4 engines is a significant step towards reducing these emissions. On December 14, 2020, the CARB and BAAQMD issued a joint recommendation letter for the Sequoia Backup Generating Facility[1] stating that: "…Tier 4 engines would further reduce this project's potential emissions, most critically during those rare occasions the project may have to run more than one engine at a time. CARB and BAAQMD agree the use of Tier 4 engines is adequate in this case and, given the circumstances, further modeling of emissions may not be necessary if the project applicant agreed to this project change." Staff expects that the same recommendation applies to the CA3 Backup Generating Facility, which would also meet Tier 4 emissions standards.

**C-3** *Additionally, the DEIR assumes a maximum operating limit for testing/maintenance of 35 hours per year averaged over all engines to determine the Project's operational potential to emit. To be the most health protective and transparent, the Project needs to clarify how this 35 hour per year limit will be enforced, for example through a lease agreement or voluntarily permit limits, otherwise the Project should model emissions for all the generators assuming the 50 hour per year testing/maintenance operations limit regulated under the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (CCR, Title 17, Section 93115).*

***Staff response:***

The applicant's response to staff's data request[2] states their intent to seek an air district permit limitation on total oxides of nitrogen (NOx) emissions equivalent to 35 hours per year per engine of readiness testing and maintenance. Staff considers this to be part of the project description and expects the BAAQMD would include that condition in the applicant's air district permit as well as enforce that readiness testing and maintenance limit in the applicant's BAAQMD permit. A previous example of a BAAQMD permit condition on reliability-related testing for the China Mobile data center can be seen in the Report of Conversation between CEC staff and BAAQMD staff in the Great Oaks South Backup Generating Facility

[1] California Air Resources Board Comments - CARB-BAAQMD Joint Recommendation (TN 235939), Sequoia Data Center, dated December 14, 2020. Available Online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=235939&DocumentContentId=68933.

[2] Response to Data Request 9 in VDC Initial Responses to CEC Data Request Set 2 - CA3BGF (TN 238970), dated July 22, 2021. Available Online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=238970&DocumentContentId=72391.

proceeding.[3] The inspectors at BAAQMD would review the compliance records showing reliability-related testing hours when conducting onsite inspections.

In addition, other data center project applicants previously have stated that routine testing and maintenance would rarely exceed 12 hours per year. Staff has concluded the project would be able to comply with the limit of 35 hours of readiness testing and maintenance per year per engine.

**C-4** *The Air District does not support the use of Emission Reduction Credits to offset NOx emissions to mitigate CEQA related impacts. Such banked emissions credits may have resulted from past and/or non-local sources, and do not reduce current local impacts. The use of Emission Reduction Credits is allowed in the Air District's New Source Review program, which is intended for no net emission increase in the whole Bay Area air basin. As CEQA mitigation for a specific project, the order of priority for mitigations to reduce impacts should be: 1) onsite to the maximum extent possible; 2) off-site within the community; 3) off-site within San Jose [sic]; 4) off-site within Santa Clara County. Only if no other mitigations are available should Emissions Reduction Credits be considered.*

***Staff response:***

The Emission Reduction Credits (ERCs) are required by BAAQMD Regulation 2 Rule 2 and should not be considered mitigation in this context. In preparing **Section 4.3 Air Quality** of the DEIR, staff followed the BAAQMD's May 2017 CEQA guidance document,[4] which has a five-step process for analyzing impacts. Specifically, Table 4-1 of the guidance lists a process wherein the analysis considers emissions quantification (Step 2) followed by a comparison of the project's impact with the thresholds (Step 3), then mitigation is added (Step 4), and finally mitigated project emissions are compared to the thresholds (Step 5). This is the process used by staff to prepare **Table 4.3-6** of the DEIR.

In emissions quantification (Step 2), the BAAQMD recommends that the methodology used to estimate stationary-source emissions be consistent with calculations that would need to be performed to fulfill the requirements of the permitting process. This means that the quantification reflects the effects of implementing Best Available Control Technology (BACT) and surrendering offsets through BAAQMD permitting. The BAAQMD CEQA guidance document specifically allows for the use of ERCs to offset facility emissions as follows:

[3] ROC with Xuna Cai, BAAQMD re China Mobile Data Center (TN 237298), Great Oaks South Backup Generating Facility Small Power Plant Exemption, dated March 25, 2021. Available Online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=237298&DocumentContentId=70480

4 Bay Area Air Quality Management District, California Environmental Quality Act Air Quality Guidelines, dated May 2017. Available Online at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

> "*Stationary sources may also be required to offset their emissions of criteria air pollutants and precursors to be permitted. This may entail shutting down or augmenting another stationary source at the same facility. Facilities also may purchase an emissions reduction credit to offset their emissions. Any stationary source emissions remaining after the application of BACT and offsets should be added to the indirect and area source emissions estimated above to arrive at total project emissions.*"

This process was used to determine whether the project would result in a cumulatively considerable net increase of any criteria pollutant for which the project's region is in nonattainment for an applicable federal or state ambient air quality standard. In the comparison of project emissions with the thresholds (Step 3), staff finds no mitigation requirements for NOx beyond the need to surrender ERCs.

The criteria pollutants that are classified nonattainment for the project location are ozone and particulate matter (PM). The project is in an area that attains nitrogen dioxide ($NO_2$) standards, and an applicant would not need to otherwise mitigate project-related direct impacts unless readiness testing and maintenance results in significant impacts. Page D-47 in Appendix D of the BAAQMD CEQA guidance document states that BAAQMD based its criteria pollutant significance thresholds for NOx emissions on ozone precursors.[5] Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and NOx. ERCs obtained to reduce the project's NOx emissions to below BAAQMD thresholds would ensure that the project does not significantly contribute to regional ozone exceedances.

The comment letter also states that, as CEQA mitigation for a specific project, the order of priority for mitigation to reduce impacts should be: "1) onsite to the maximum extent possible; 2) off-site within the community; 3) off-site within San Jose [sic]; 4) off-site within Santa Clara County." The onsite emissions would be controlled through selective catalytic reduction (SCR) and diesel particulate filters (DPF) to achieve compliance with Tier 4 emissions standards, which would meet the current BAAQMD BACT requirements and is consistent with the BAAQMD's May 2017 CEQA guidance document. In addition, as described in **Section 4.8 Greenhouse Gas Emissions**, the project would comply with all applicable city and state green building standards measures, including California Code of Regulations, title 24, part 6, baseline standard requirements for energy efficiency, based on the 2019 Energy Efficiency Standards requirements, and the 2019 California Green Building Standards Code, commonly referred to as CALGreen (CCR, title 24, part 11). The project would also use recycled water for mechanical cooling and for landscaping and use water efficient landscaping with low-water

[5] Id.

usage plant material to minimize irrigation requirements. These onsite measures would reduce emissions in a manner consistent with those recommended in the BAAQMD's May 2017 CEQA guidance document. The project would also implement additional design measures related to transportation and waste, which are described in more detail in **Section 4.8 Greenhouse Gas Emissions**.

Regarding the question where the offsite ERCs should be located, it is CEC staff's understanding that the BAAQMD would conduct a final evaluation of the ERCs in terms of their location, quantity or quality, and/or age when it reviews the project for compliance with the BAAQMD's Regulation 2, Rule 2.

To avoid confusion between the ERCs and mitigation, staff changed the operational impacts from "Less Than Significant with Mitigation Incorporated" to "Less Than Significant Impact" on page 4.3-29 of the Final EIR. Staff added clarification that the NOx offsets would be required through the BAAQMD permitting process on page 4.3-32 of the Final EIR. Staff changed "mitigated" emissions to "net" emissions in **Table 4.3-6** on page 4.3-33 of the Final EIR.

Staff also corrected an inconsistency between the environmental checklist conclusion for question "c" on page 4.3-1 and the analysis starting from page 4.3-34. The analysis starting from page 4.3-34 concluded the project's direct and cumulative criteria pollutant concentration impacts to sensitive receptors would be less than significant with mitigation incorporated during the construction of the project. However, staff incorrectly marked "Less Than Significant Impact" in the checkbox for environmental checklist question "c" on page 4.3-1 of the DEIR. To be consistent with the analysis, staff deleted the checkmark under "Less Than Significant Impact" and added the checkmark under "Less Than Significant with Mitigation Incorporated" for environmental checklist question "c" on page 4.3-1. This is not a change in the analysis or conclusion of the project impacts, but just a correction to the checkmark for consistency with the analysis. These changes are minor clarifications and do not trigger recirculation of the document under CEQA Guidelines section 15088.5 or any other provision.

**C-5** *The DEIR concludes that the Project exceeds the District's cumulative health risk thresholds but would not cause cumulatively considerable impacts, as the Project is estimated to only make up ~8% of the cumulative risk. The Air District notes that, based on the DEIR's conclusion that the Project cumulative analysis exceeds the District's cumulative health risk thresholds, the Project would contribute to cumulative impacts. In addition to the Project's contribution, Vantage owns and operates another data center within the area, at 2625 Walsh Avenue, and the Project would be the fourth data center within a quarter mile radius. Given the accumulation of health risk from the Project, other data centers, and other nearby sources, Vantage Data Services should implement mitigations including, but not limited to:*

- *Incorporate additional alternative technologies such as solar, battery storage and/or fuel cells, or utilize natural gas engines in place of diesel generators. As the DEIR concludes that Project Alternative 3, which includes natural gas engines, is feasible as well as environmentally superior to the proposed Project, the Air District recommend that these alternatives be incorporated into the Project.*

***Staff response:***

The DEIR identifies the health risks from cumulative sources and the potential for a significant cumulative impact in the project area, primarily due to nearby highways, major streets, and railways, and other stationary sources. When the effects of the project are considered in this context, staff determined that the project's contribution to the cumulative impact is less than cumulatively considerable and, thus, is not significant.

Staff's approach to the cumulative HRA follows the BAAQMD's May 2017 CEQA Guidelines by aggregating the effects all nearby sources of TAC emissions. The May 2017 Guidelines recommend finding the total effects of cumulative sources within a 1,000-foot radius from the project fence line plus the contribution from the project. Staff conservatively presents the results for all sources within 2,000 feet at MEISR. Staff included all sources within the recommended 1,000 feet radius for other receptors. It should also be noted that staff's cumulative HRA did include Vantage Data Centers at 2625 Walsh Avenue, CoreSite at 2901 Coronado Drive, and Cyxtera Communications LLC at 2401 Walsh Avenue for the MEISR since they fall into the 2,000-foot radius and for the other receptors if they fall into the 1,000-foot radius.

As staff stated in page 4.3-52 and in **Table 4.3-12** of the DEIR, the cumulative cancer risks at MEISR and at Maximally Exposed Individual Resident (MEIR) are above the threshold for cumulative sources, and the cumulative PM2.5 concentrations at MEISR and at Maximally Exposed Individual Worker (MEIW) are above the threshold for cumulative sources (**Table 4.3-14**). As a result, there is a potential for a significant cumulative impact. To minimize the project's contribution to the cumulative impact, the project would implement the necessary BACT to reduce diesel particulate matter and PM2.5, and the exceedance of the cumulative threshold would not be due to the project itself.

Staff concluded the project's contribution is not cumulatively considerable because the project's incremental effects would not exceed the project-level thresholds of significance for an individual project and for the following reasons:

1. The project's incremental modeled cancer risk at the receptor of MEISR is 9.9 in one million, meaning the project contributes less than the threshold of 10 in one million. It also means the project contributes 9.9 in one million to this total number of 133 in one million. Comparing 9.9 in one million to

133 in one million, the project contributes about seven percent to this exceedance. The cumulative cancer risks are over the BAAQMD threshold primarily because of the proximity of receptors to the nearby railroad, which contributes a cancer risk of 72 in a million at the MEISR (DayZenLLC 2021t, Table 26-1). Potentially beneficial effects of the ongoing and probable future Caltrain Electrification Program were not considered. Staff notes that the text on page 4.3-52 and **Table 4.3-12** of the DEIR incorrectly reported that the total cumulative risk at MEISR is 113. The correct number should be 133. Staff made corrections on page 4.3-52 and in **Table 4.3-12** of the Final EIR. This is not a change in the analysis or conclusion of the project impacts, but just a correction to the text and table.

2. The cumulative cancer risk total (133 in one million) for MEISR was overestimated because it includes the summation of all stationary sources within 2,000 feet, larger than 1,000 feet recommended by the BAAQMD CEQA Guidelines, contributing a cancer risk of 32 in one million at the MEISR. And the contribution of these sources is overestimated because the distance multipliers do not account for the incrementally decreasing risk and hazard impacts from sources that are farther than 1,000 feet (DayZenLLC 2021t, page 20 and Table 26-1).

3. The cumulative cancer risk total (111.73 in one million) for MEIR are over the BAAQMD threshold primarily because of the proximity of receptors to the surrounding highways, major streets, and railways, which contributes a cancer risk of 102.31 in one million at the MEIR. The cancer risk from the surrounding highways, major streets, and railways at MEIR is already above the threshold. The project's incremental modeled cancer risk at the receptor of MEIR is 8.73 in one million, meaning the project contributes 8.73 in one million to this total number of 111.73 in one million. Comparing 8.73 in one million to 111.73 in one million, the project contributes 7.8 percent to the existing exceedances. Staff notes that the text on page 4.3-52 of the DEIR incorrectly stated that the modeled cancer risk at the MEIR would be 0.69 in one million, which is about 0.6 percent of the existing exceedances. To be consistent with the results shown in **Table 4.3-12**, staff corrected the text on page 4.3-52 to show that the modeled cancer risk at the MEIR would be 8.73 in one million, which would contribute 7.8 percent to the existing exceedances. This is not a change in the analysis or conclusion of the project impacts, but just a correction to the text for consistency with **Table 4.3-12**.

The comment letter recommends certain alternative generation and energy storage technologies for mitigating health risk impacts. Because staff concluded that the project's contribution to the effects of TAC emissions would not be cumulatively considerable, no additional mitigation would be necessary.

**C-6** *The DEIR states that construction-related emissions were found to be less than significant with mitigations and that the Project will apply Air District best management practices (BMP) to control fugitive dust emissions. The Air District recommends that additional measures beyond the standard BMPs be added to help reduce particulate matter emissions. The following additional mitigation measures should be included into mitigation measure "AQ-1" to further address construction-related impacts:*

- *All off-road equipment greater than 25 horsepower (hp) shall have engines that meet or exceed Tier 4 final off-road emission standards. Use of zero-emission and hybrid-powered equipment is encouraged.*
- *All on-road trucks used for material delivery or hauling shall have engines that meet or exceed 2014 CARB emissions standards.*
- *Where grid power is available, portable diesel engines should be prohibited.*
- *Install wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed construction areas. Wind breaks should have at maximum 50 percent air porosity.*
- *All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 miles per hour (mph).*
- *Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.*

***Staff response:***

The last three mitigation measures recommended by BAAQMD were already included in Mitigation Measure **AQ-1**. Therefore, no changes in the EIR are needed regarding these three mitigation measures.

The BAAQMD recommends off-road equipment greater than 25 horsepower (hp) to meet Tier 4 final off-road emissions standards and encourages the use of zero-emissions and hybrid-powered equipment. The BAAQMD-recommended mitigation measure would be more stringent than the original requirement of Tier 4 off-road equipment if they are more than 50 hp in **AQ-1** of the DEIR. Staff agrees with the BAAQMD-recommended mitigation measure.

Staff also agrees with the BAAQMD-recommended requirement of on-road trucks for material delivery or hauling to meet or exceed 2014 CARB emissions standards and the prohibition of portable diesel engines when grid power is available.

The Final EIR includes revisions to mitigation measure **AQ-1** on page 4.3-59 in **Section 4.3 Air Quality** to reflect the above mentioned BAAQMD recommendations in the comment. These changes to the mitigation measure are minor and do not trigger recirculation of the document under CEQA Guidelines section 15088.5 or any other provision.

## 7.3 References

DayZenLLC 2021a – DayZenLLC (DayZenLLC). (TN 237380). VDC CA3BGF SPPE Application Part I, dated April 5, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2021e – DayZenLLC (DayZenLLC). (TN 237423). VDC CA3BGF SPPE Application Part II, dated April 12, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2021t – DayZenLLC (DayZenLLC). (TN 239390). VDC Supplemental Responses to CEC Data Request Set 2 Air Quality – CA3BGF, dated August 19, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

# Section 8

## Mitigation Monitoring and Reporting Program

# MITIGATION MONITORING AND REPORTING PROGRAM

# CA3 Backup Generating Facility
# 21-SPPE-01
# March 2022

# PREFACE

Public Resources Code section 21081.6 of the California Environmental Quality Act (CEQA) requires a Lead Agency to adopt a Mitigation Monitoring and Reporting Program (MMRP) whenever it approves a project for which measures have been required to mitigate or avoid significant effects on the environment. The purpose of the monitoring and reporting program is to ensure compliance with the mitigation measures during project implementation.

The Final Environmental Impact Report prepared for the CA3 Backup Generating Facility project concluded that the implementation of the project would not result in significant effects on the environment with the incorporation of mitigation measures. This MMRP addresses those measures in terms of how and when they will be implemented.

This document does *not* discuss those subjects for which the Final Environmental Impact Report concluded that the impacts from the implementation of the project would be less than significant.

*I, _____, the applicant, on the behalf of _____, hereby agree to fully implement the Mitigation Measures described below, which have been developed in conjunction with the preparation of an EIR for my proposed project. I understand that these mitigation measures or substantially similar measures will be adopted as conditions of approval with my development permit request to avoid or significantly reduce potential environmental impacts to a less than significant level*.

Project Applicant's Signature _____

Date_____

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
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| | Documentation of Compliance [Project Applicant/Proponent Responsibility] | | Documentation of Compliance [Lead Agency Responsibility] | | |
| | **Method of Compliance Or Mitigation Action** | **Timing of Compliance** | **Oversight Responsibility** | **Actions/Reports** | **Monitoring Timing or Schedule** |
| **AIR QUALITY** | | | | | |
| Impact 4.3-b 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? | | | | | |
| AQ-1: To ensure that fugitive dust impacts are less than significant, the project will implement the Bay Area Air Quality Management District (BAAQMD) recommended Best Management Practices (BMPs) during the construction phase, the project owner shall implement a construction emissions control plan that has been reviewed and approved by the Director or Director's designee of the City of Santa Clara Community Development prior to the issuance of any grading or building permits, whichever occurs earliest. These BMPs are incorporated into the design of the project and will include:<br>• Water all exposed areas (e.g. parking areas, graded areas, unpaved access roads) twice a day.<br>• Maintain a minimum soil moisture of 12% in exposed areas by maintaining proper watering frequency.<br>• Cover all haul trucks carrying sand, soil, or other loose material.<br>• Suspend excavation, grading, and/or demolition activities when average wind speed exceeds 20 miles per hour. | Implement the BAAQMD's recommended BMPs to control fugitive dust and additional measures to control exhaust emissions | During construction phase | Director of Community Development or director's designee of the City of Santa Clara | Receive and approve the fugitive dust control measures and exhaust control measures during construction | Prior to the issuance of any demolition, grading, and/or building permits (whichever occurs earliest) |

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| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| • Pave all roadways, driveways, and sidewalks as soon as possible. Lay building pads as soon as grading is completed, unless seeding or soil binders are used.<br>• Install wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed areas of construction with a maximum 50 percent air porosity.<br>• Use a power vacuum to sweep and remove any mud or dirt-track next to public streets if visible soil material is carried onto the streets.<br>• Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).<br>• Minimize idling time for all engines by shutting engines when not in use or limiting idling time to a maximum of five minutes. Provide clear signage for construction workers at all access points.<br>• Properly tune and maintain construction equipment in accordance with manufacturer's specifications. Check all equipment against a certified visible emissions calculator.<br>• Post a publicly visible sign with the telephone number and person to contact at the Lead Agency and the on-site job superintendent regarding dust complaints. | | | | | |

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| • Install vegetative ground cover in disturbed areas as soon as possible and water appropriately until vegetation is established.<br>• Limit simultaneous occurrence of excavation, grading, and ground-disturbing construction activities.<br>• Install water washers to wash all trucks and equipment prior to leaving site.<br>• Treat site access to 100-feet from the paved road with a 6- to 12-inch compacted layer of wood chip, mulch, or gravel.<br>• Install sandbag or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.<br>• Minimize idling time of diesel-powered construction vehicles to two minutes.<br>• ~~Develop a plan demonstrating that off-road equipment (more than 50 horsepower) used for construction would comply with Tier 4 emission limits.~~<br>• All off-road equipment greater than 25 horsepower (hp) shall have engines that meet or exceed Tier 4 final off-road emission standards. Use of zero-emission and hybrid-powered equipment is encouraged. | | | | | |

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| • All on-road trucks used for material delivery or hauling shall have engines that meet or exceed 2014 CARB emissions standards.<br>• Where grid power is available, portable diesel engines should be prohibited.<br>• Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).<br>• All construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM.<br>• All contractors use equipment that meets CARB's most recent certification standard for off-road, heavy-duty diesel engines. | | | | | |
| | | | | | |
| **BIOLOGICAL RESOURCES** | | | | | |
| Impact 4.4-a Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | | | | | |
| BIO-1, Avoid and Minimize Impacts to Protected Bird Species<br>• If possible, demolition and construction activities, including removal of trees and vegetation clearing, shall take place between September and January. If demolition or | Avoidance of construction activities during nesting season. If construction activities occur between January and September, a pre-construction nesting | Prior to issuance of any permits for tree removal, demolition, or grading activities | Director of Community Development or director's designee of the City of Santa | Confirm that construction activities are scheduled outside of the nesting season | Prior to issuance of any permits for tree removal, demolition, or grading activity |

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| | **Method of Compliance Or Mitigation Action** | **Timing of Compliance** | **Oversight Responsibility** | **Actions/Reports** | **Monitoring Timing or Schedule** |
| construction activities, including removal of the trees on –site, would take place between January and September, a pre-construction survey for nesting raptors and other protected native or migratory birds shall be conducted by a qualified ornithologist, approved by the City of Santa Clara, to identify active nests that may be disturbed during project implementation. Pre-construction surveys shall be conducted no more than 14 days prior to the initiation of demolition or construction activities or tree relocation or removal. Surveys shall be repeated if project activities are suspended or delayed for more than 14 days during the nesting season. The surveying ornithologist shall inspect all trees in and immediately adjacent to the construction area to be disturbed by these activities, and the ornithologist shall, in consultation with the California Department of Fish and Wildlife (CDFW), designate a construction-free buffer zone (typically 250 feet for non-raptors to 500 feet for raptors) around the nest until the end of the nesting activity. Any changes to a buffer zone must be approved by the City of Santa Clara, in consultation with CDFW. The nests and buffers will be field checked weekly by the approved ornithologist. The approved buffer zone will be marked in the field with exclusion fencing, within which no construction, tree removal, or vegetation clearing shall commence until the ornithologist verifies that the nest(s) are no longer active. If an active | bird survey shall be conducted by a qualified ornithologist in consultation with the California Department of Fish and Wildlife, and a construction-free buffer zone shall be designed around any discovered nest<br><br>The ornithologist shall submit a report indicating the results of the survey and any designated buffer zones to the Director of Community Development or director's designee of the City of Santa Clara | Prior to issuance of any tree removal permit by the city arborist | Clara (Director of Community Development)<br><br>Director of Community Development | The ornithologist shall inspect all potentially affected trees and designate a buffer-free zone around nest until the end of the nesting activity | Prior to issuance of any permits for tree removal, demolition, or grading |

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| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| bird nest is discovered during demolition or construction, then a buffer zone shall be established under the guidelines specified.<br><br>• The applicant shall submit a report indicating the results of the survey and any designated buffer zones to the satisfaction of the City of Santa Clara's Director of Community Development prior to the issuance of permits for~~a~~ tree removal, demolition, or grading. ~~permit by the city arborist.~~ The report(s) shall contain maps showing the location of all nests, species nesting, status of the nest (e.g. incubation of eggs, feeding of young, near fledging), and the buffer size around each nest (including reasoning behind any alterations to the initial buffer size). The report shall be provided within 10 days of completing a pre-construction nest survey. | | | | | |
| BIO-2: Avoid and Minimize Impacts to Bat Species<br><br>If suitable roosting habitat for special-status bats will be affected by project construction (e.g., removal of buildings, removal of trees), a qualified wildlife biologist shall conduct surveys for special-status bats during the appropriate time of day to maximize detectability to determine if bat species are roosting near the work area no less than 7 days and no more than 14 days prior to beginning tree removal and/or | A qualified wildlife biologist shall conduct surveys during the appropriate time of day to determine if bats are roosting | No less than 7 days and no more than 14 days prior to beginning tree removal and/or demolition ground disturbance | Director of Community Development to California Department of Fish and Wildlife standards | A tally of the number and species of bats using the roost shall be documented. Depending on the presence of bats, exclusion methods and bat houses may be specified for use depending | Prior to issuance of any tree removal, grading, demolition, and/or building permit or activities |

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
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| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| demolition ground disturbance. Survey methodology may include visual surveys of bats (e.g., observation of bats during foraging period), inspection for suitable habitat, bat sign (e.g., guano), or use of ultrasonic detectors (e.g., Anabat, etc.). Visual surveys shall include trees within 0.25 mile of construction activities. The type of survey will depend on the condition of the potential roosting habitat. If no bat roosts are found, then no further study is required.<br><br>• If evidence of bat use is observed, the number and species of bats using the roost shall be determined. Bat detectors may be used to supplement survey efforts.<br><br>• If roosts are determined to be present and must be removed, the bats shall be excluded from the roosting site before the tree or structure is removed. Exclusion methods may include use of one-way doors at roost entrances (bats may leave, but not reenter) or sealing roost entrances when the site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young).<br><br>• If roosts cannot be avoided or it is determined that construction activities may cause roost | | | | on the circumstances<br><br>A Bat Mitigation and Monitoring Plan shall be prepared and implemented for habitat loss, if necessary | |

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
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| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| abandonment, such activities shall not commence until permanent, elevated bat houses have been installed outside of, but near, the construction area. Placement and height will be determined by a qualified wildlife biologist, but the height of bat house shall be at least 15 feet. Bat houses shall be multi-chambered and be purchased or constructed in accordance with CDFW standards. The number of bat houses required shall be dependent upon the size and number of colonies found, but at least one bat house shall be installed for each pair of bats (if occurring individually) or of a sufficient number to accommodate each colony of bats to be relocated.<br><br>• If bat roosts are detected, then a Bat Mitigation and Monitoring Plan (Plan) shall be prepared and implemented to mitigate for the loss of roosting habitat. The Plan shall include information pertaining to the species of bat and location of the roost, exclusion methods and roost removal procedures, compensatory mitigation for permanent impacts (including specific mitigation ratios and location of proposed mitigation as described in above bullet) and monitoring to assess bat use of mitigation areas. This Plan shall be submitted to CDFW for review. | | | | | |
| Impact 4.4-e Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | | | | | |

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| BIO-3, Tree Removal ~~Permit~~<br><br>The project applicant shall obtain approval by the City's Department of Community Development ~~the appropriate tree removal permits from the City of Santa Clara~~ for all~~removal of all healthy mature~~ trees to be removed. Acquisition of this permit shall include details of the final mitigation numbers. The City of Santa Clara's Tree Ordinance (SCCC 12.35.090(C)(7)~~landscape ordinance~~ mandates a ~~2:1~~ replacement ~~with 24-inch box size trees, or 1.5:1 replacement~~ ratio and size of tree species for planting. ~~with 36-in box size trees.~~ Depending on the species and size of the tree, additional mitigation may be required by the City of Santa Clara. The project proposes to mitigate for the loss of 66 trees through a combination of 24-inch box size and 36-inch box size. | Obtain tree removal permits from the City's department of Community Development | Prior to the removal of any trees | Director of Community Development | Approved permits, including tabulation of final tree mitigation numbers | Prior to tree removal work |

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| BIO-4, Trees to Remain: Avoidance and Minimization of Impacts<br><br>The project applicant shall follow the tree protection measures for trees that are to remain in place, as included as specific conditions by the City of Santa Clara as part of Architectural Review approval and included on the approved landscape plans for the project | Follow the tree protection measures outlined by the City Arborist or other arborist retained by the city for trees that are to remain in place | To coincide with demolition activities | Director of Community Development | Retain final tally of trees retained and indicate said trees on final landscape plans | At the conclusion of construction |
| **CULTURAL RESOURCES** | | | | | |
| Impact 4.5-a Cause a substantial adverse change in the significance of a historical resource pursuant to California Code of Regulations, title 14, §15064.5? Impact 4.5-b Cause a substantial adverse change in the significance of a unique archaeological resources pursuant to California Code of Regulations, title 14, §15064.5? | | | | | |
| CUL-1: The following project-specific measures would be implemented during construction to avoid significant impacts to unknown subsurface cultural resources: | Submit the name and qualifications of the selected archaeologist and Native American monitor with a signed | Before a grading permit is issued | Director of Community Development or director's designee of the City of Santa | Review and approve the archaeologist and Native American monitor's qualifications | Before issuance of permits for any ground disturbing activities (trenching, |

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| • A Secretary of the Interior-qualified archaeologist and a Native American cultural resources monitor shall be on site to monitor all ground-disturbing activity, including the removal of foundations and landscaping, on the project site. The project applicant shall submit the name and qualifications of the selected archaeologist and Native American monitor, along with a signed letter of commitment or agreement to monitor, to the City of Santa Clara's Director of Community Development prior to the issuance of a grading permit. Preference in selecting Native American monitors shall be given to Native Americans with:<br>o Aboriginal, culturally affiliated ties to the area being monitored.<br>o Knowledge of local historic and prehistoric Native American village sites.<br>o Knowledge and understanding of Health and Safety Code section 7050.5 and Public Resources Code section 5097.9 et seq.<br>o Ability to effectively communicate the requirements of Health and Safety Code section 7050.5 and Public Resources Code section 5097.9 et seq.<br>o Ability to work with law enforcement officials and the Native American Heritage Commission to ensure the return of all | letter of commitment or agreement to monitor | | Clara (Director of Community Development) | | grading, excavation) |

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| associated grave goods taken from a Native American grave during excavation.<br>o Ability to travel to project sites within traditional tribal territory.<br>o Knowledge and understanding of California Code of Regulations, title 14, section 15064.5.<br>o Ability to advocate for the preservation in place of Native American cultural features through knowledge and understanding of CEQA mitigation provisions.<br>o Ability to read a topographical map and to locate site and reburial locations for future inclusions in the Native American Heritage Commission's Sacred Lands Inventory.<br>o Knowledge and understanding of archaeological practices, including the phases of archaeological investigation.<br>After the removal of pavement and prior to grading, the archaeologist shall conduct a pedestrian survey over the exposed soils to determine if any surface archaeological manifestations are present.<br>• After the demolition of the existing building and paved parking lot on the site, a qualified archaeologist with a Nnative American monitor present shall complete mechanical presence/absence testing for archaeological deposits and cultural materials. In the event | The archaeologist is to perform survey and presence/absence testing with a Native American monitor present | After the demolition of the existing building and pavement and prior to grading | Director of Community Development | Review the results and approve next steps | Prior to issuance of permits for any ground disturbing activities (trenching, grading, excavation) |

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| any prehistoric site indicators are discovered, additional backhoe testing will be conducted to map the aerial extent and depth below the surface of the deposits. In the event prehistoric or historic archaeological deposits are found during presence/absence testing, the significance of the find will be determined. If deemed significant, a treatment plan will be prepared and provided to the City of Santa Clara's Director of Community Development. Where Native American cultural materials are identified, the archaeological monitor will prepare a treatment plan in collaboration with the monitoring California Native American tribe. The key elements of a treatment plan shall include the following:<br>o Identify the scope of work and range of subsurface effects (include location map and development plan),<br>o Describe the environmental setting (past and present) and the historic/prehistoric background of the parcel (potential range of what might be found),<br>o Develop research questions and goals to be addressed by the investigation (what is significant vs. what is redundant information),<br>o Detail the field strategy used to record, recover, or avoid the finds (photos, drawings, written records, provenience data maps, soil profiles, excavation | If testing determines that cultural resources are present and significant, a treatment plan shall be prepared. If Native American cultural materials are present, the treatment plan shall be prepared in collaboration with the Native American monitor | Prior to issuance of permits for any ground disturbing activities (trenching, grading, excavation) | Director of Community Development | Review and approve the treatment plan | Prior to issuance of permits for any ground disturbing activities (trenching, grading, excavation) |

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| techniques, standard archaeological methods), and address research goals.<br>o Analytical methods (radiocarbon dating, obsidian studies, bone studies, historic artifacts studies [list categories and methods], packaging methods for artifacts, etc.); the monitoring California Native American tribe shall determine the appropriateness of analytical methods proposed for Native American cultural materials,<br>o Report structure, including a technical and layperson's report and an outline of document contents in one year of completion of development (provide a draft for review before a final report),<br>o Disposition of the artifacts (the monitoring California Native American tribe will determine the disposition of California Native American cultural materials),<br>o Appendices: site records, update site records, correspondence, consultation with Native Americans, etc. | | | | | |
| The archaeologist and California Native American monitor will monitor full-time all grading and ground disturbing activities associated with the construction of the proposed project. If the archaeologist and Native American monitor believe that a reduction in monitoring activities is prudent, then a letter report detailing the | The archaeologist and California Native American monitor will monitor full-time all grading and ground disturbing activities and maintain a daily monitoring log | During grading and ground disturbing activities<br>During ground disturbing activities | Director of Community Development | Review monitoring logs as needed | |

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| rationale for making such a reduction and summarizing the monitoring results shall be provided to the City of Santa Clara's Director of Community Development. Department of Parks and Recreation 523 forms shall be submitted along with the report for any cultural resources encountered over 50 years old.<br>• If prehistoric or historic resources are encountered during on-site construction activities, all activity within a 50-foot radius of the find shall be stopped, the City's Director of Community Development shall be notified, and a Secretary of the Interior-qualified archaeologist shall examine the find and record the site, including field notes, measurements, and photography for a Department of Parks and Recreation 523 Primary Record form. The archaeologist shall make a recommendation in collaboration with the monitoring California Native American tribe regarding eligibility for the California Register of Historical Resources, data recovery, curation, or other appropriate mitigation. Ground-disturbance within the 50-foot radius can resume once these steps are taken and the City of Santa Clara's Director of Community Development has concurred with the recommendations. Within 30 days of the completion of the construction or cultural resources monitoring, whichever comes first, a report of findings documenting any cultural resource finds, recommendations, data recovery efforts, and other pertinent | Request for reduction in monitoring based on results<br><br>Work shall be stopped if cultural resources are encountered within a 50' radius<br><br>Examination of the find and recordation on DPR 523 forms along with a determination of eligibility and recommendation for data recovery or curation<br><br>A final report shall summarize the findings documenting any cultural resources found during construction | During ground disturbing activities<br><br>While ground disturbing activities are halted and prior to returning to work<br><br>Within 30 days of completion of construction or cultural resources monitoring<br><br>Upon finalization of the report | Director of Community Development<br><br>Director of Community Development; Secretary of the Interior-qualified archaeologist<br><br>Secretary of the Interior-qualified archaeologist<br><br>Director of Community Development; | Review and approve request to reduce monitoring<br><br>Review and approve work stoppage<br><br>Record on DPR forms with eligibility and curation recommendations<br><br>Review and approve final report | During grading and ground disturbing activities<br><br>During grading and ground disturbing activities<br><br>During grading and ground disturbing activities<br><br>During grading and ground disturbing activities<br><br>Within 30 days of completion of |

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| information gleaned during cultural resources monitoring shall then be submitted to the City of Santa Clara's Director of Community Development under confidential cover, along with a report that redacts the location(s) of all cultural resources. Once finalized, this report shall be submitted to the Northwest Information Center at Sonoma State University. | Submittal of the final report to the NWIC | Prior to and during ground disturbing activities | Secretary of the Interior-qualified archaeologist | Obtain proof of submittal to NWIC | construction or cultural resources monitoring<br><br>Upon finalization of the report |
| • Prior to and for the duration of ground-disturbance, the project owner shall provide Worker Environmental Awareness Program training to all existing and any new employees. This training should include: a discussion of the applicable laws and penalties under the laws; samples or visual aids of the artifacts that could be encountered in the project vicinity, including what those artifacts may look like partially buried, or wholly buried and freshly exposed; and instructions to halt work in the vicinity of any potential cultural resource discovery, and notify the city-approved archaeologist and Native American cultural resources monitor. The Native American monitor shall provide a Tribal Cultural Resources Sensitivity Training in conjunction with the Worker Environmental Awareness Program. | WEAP training shall be provided for all existing and new employees | | Director of Community Development<br><br>Director of Community Development | Review and approve WEAP submitted by archaeologist and Native American monitor | Prior to and during ground disturbing activities |
| Impact 4.5-c, Disturb any human remains, including those interred outside of dedicated cemeteries. | | | | | |

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| Impact 4.5-b, (Tribal), A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | | | | | |
| CUL-2: The project proposes to implement the following measure to ensure the project's impacts to human remains are less than significant:<br>• If human remains are discovered during the presence/absence testing or excavation and/or grading of the site, all activity within a 50-foot radius of the find will be stopped. The Santa Clara County Coroner will be notified and shall determine whether the remains are of Native American origin or whether an investigation into the cause of death is required. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) immediately. Once NAHC identifies the most likely descendants, the descendants will make recommendations regarding proper burial, which will be implemented in accordance with the California Code of Regulations, title 14, section 15064.5(e) of the CEQA Guidelines. All actions taken under this mitigation measure shall comply with the Health and Safety Code section 7050.5(b) | The contractor shall stop work within a 50-foot radius of the find and notify the Santa Clara County Coroner and the Director of Planning or director's designee of the City of Santa Clara Community Development Department (Director of Community Development) | Immediately upon discovery of human remains | Director of Community Development | The coroner shall contact the NAHC if human remains are found and are believed to be Native American | Upon discovery of human remains |
| **GEOLOGY AND SOILS (PALEONTOLOGY)** | | | | | |

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| Impact 4.7-a.ii., Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?<br>Impact 4.7-a.iii., Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?<br>Impact 4.7-c.-Be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or-off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? | | | | | |
| GEO-1: The project proposes to implement the following measures to ensure impacts to paleontological resources are reduced to less than significant.<br>• Prior to the start of any subsurface excavations that would extend beyond previously disturbed soils, all construction forepersons and field supervisors shall receive training by a qualified professional paleontologist, as defined by the Society of Vertebrate Paleontology, who is experienced in teaching non-specialists, to ensure they can recognize fossil materials and shall follow proper notification procedures in the event any are uncovered during construction. Procedures to be conveyed to workers include halting construction within 50 feet of any potential fossil find and notifying a qualified paleontologist, who shall evaluate its significance.<br>• If a fossil is found and determined by the qualified paleontologist to be significant and avoidance is not feasible, the paleontologist shall develop and | The contractor shall require training in recognition of fossils/artifacts. The contractor shall stop work within a 50-foot radius of the find and notify the Santa Clara County Coroner and the Director of Community Development or director's designee of the City of Santa Clara | Prior to any subsurface excavations | Director of Community Development or director's designee of the City of Santa Clara | Receive copy of excavation and salvage plan AND final paleontological mitigation plan/report<br><br>Review and approve final plans/reports and ensure the findings of the report are integrated into the final recommendations | First, if and when fossils are discovered AND second, following completion of construction |

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| implement an excavation and salvage plan in accordance with Society of Vertebrate Paleontology standards. Construction work in these areas shall be halted or diverted to allow preparation of the plan and recovery of fossil remains in a timely manner. Fossil remains collected during the monitoring and salvage portion of the mitigation program shall be cleaned, repaired, sorted, and cataloged. Prepared fossils, along with copies of all pertinent field notes, photos, and maps, shall then be deposited in a scientific institution with paleontological collections. A final Paleontological Mitigation Plan Report that outlines the results of the mitigation program shall be prepared and submitted to the Director or Director's designee with the City of Santa Clara Community Development Department at the conclusion of construction. The Director or Director's Designee with the Santa Clara Community Development shall be responsible for ensuring that the paleontologist's recommendations regarding treatment and reporting are implemented. | | | | | |
| **GREENHOUSE GAS EMISSIONS** | | | | | |
| Impact 4.8-a Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?<br>Impact 4.8-b Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | | | | | |

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| GHG-1: If the Bay Area Air Quality Management District (BAAQMD) has adopted a new threshold of significance for stationary sources on or before CA3 receives its Authority to Construct permit, the project shall reduce the time the engines operate for readiness testing and maintenance on an annual basis to ensure the project complies with the new limit. Prior to the start of operation, the project owner shall provide a report to the Director, or director's designee, of the City of Santa Clara Community Development describing how the project intends to comply with the limit, including a proposed schedule of readiness testing and maintenance operations for the year. The project owner shall provide an annual report thereafter to the Director, or director's designee, of the City of Santa Clara Community Development describing all operations of the facility that occurred for readiness testing and maintenance and calculating the attendant GHG emissions that resulted for the year. | Time engines are run during operation for readiness testing and maintenance shall ensure emissions in accordance with the BAAQMD's thresholds for stationary sources | Prior to receiving an Authority to Construct permit from the BAAQMD | Director of Community Development or director's designee of the City of Santa Clara (Director of Community Development) | Provide a report describing how the owner will plan to comply with the limit. Thereafter, the owner shall submit a report annually describing all readiness, testing, and maintenance operations and the GHG emissions | Prior to the start of operation and annually thereafter |

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| GHG-2: The project owner shall use renewable diesel as the primary fuel for the emergency backup generators to the maximum extent feasible, and only use ultra-low sulfur diesel (ULSD) as a secondary fuel in the event of supply challenges or disruption in obtaining renewable diesel. If testing confirms that use of this fuel will not result in emissions that would cause the project to exceed applicable thresholds after any available mitigation for such emissions has been applied, the project owner shall ensure that renewable fuels are used for a minimum of at least 44 percent of total energy use by the emergency backup generators by December 31, 2024; 52 percent by December 31, 2027; and 60 percent by December 31, 2030. Renewable fuels shall be used for 100 percent of total energy use by the emergency backup generators by December 31, 2045. The project owner shall provide an annual report of the status of procuring and using renewable diesel to the Director, or director's designee, of the City of Santa Clara Electric Utility ~~Community Development~~ Department demonstrating compliance with the mitigation measure. | Use renewable diesel as the primary fuel and ULSD as a secondary fuel in accordance with the implementation schedule outlined in the mitigation measure | During project operation | Director of Electric Utility Department | The project owner shall provide an annual report of the status of procuring and using renewable diesel | Annually |
| GHG-3: The project owner shall ensure that 100 percent of the electricity purchased to power the project is covered by carbon-free resources using one of the following options: (1) participate in Silicon Valley Power (SVP) Large Customer Renewable Energy (LCRE) | Ensure that 100 percent of the renewable electricity purchased is covered by carbon-free resources | Prior to local approval of project entitlements and during the operational phase | Director of Electric Utility Department | The project owner shall provide proof of enrollment in SVP's LCRE or other acceptable instrument and | Annual or other proof of recurring enrollment |

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| Program or other renewable energy program that accomplishes the same objective as SVP's LCRE Program for 100 percent carbon-free electricity, or (2) purchase ~~carbon offsets~~ renewable energy credits or similar instruments that accomplish the same goals of 100 percent carbon-free electricity. The project owner shall provide documentation to the director, or director's designee, of the City of Santa Clara Electric Utility Department~~Community Development~~ of enrollment and annual reporting of continued participation in SVP's LCRE Program with 100 percent carbon-free electricity coverage. If not enrolled in SVP's LCRE Program, the project owner shall provide documentation and annual reporting to the Director, or director's designee, of the City of Santa Clara Electric Utility Department~~Community Development Dept.~~ that confirms that alternative measures achieve the same 100 percent carbon free electricity as SVP's LCRE Program, with verification by a qualified third-party auditor specializing in greenhouse gas emissions. | | | | annual report, with verification by a qualified third-party auditor specializing in greenhouse gas emissions | |
| **Hazards and Hazardous Materials** | | | | | |
| Impact 4.9-c, Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?<br>Impact 4.9-d, Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | | | | | |
| HAZ-1: The project will implement the following measures to reduce potentially significant soil and | The project owner shall 1) take soil samples in accordance with an | Prior to the issuance of grading permits | Santa Clara Fire Department Fire Prevention and | Report findings of soil studies to Santa Clara Fire | Prior to the issuance of grading permits |

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| or groundwater impacts to construction workers to a less than significant level.<br>• Prior to the issuance of grading permits, shallow soil samples shall be taken in areas where soil disturbance is anticipated to determine if contaminated soils with concentrations above established construction/trench worker thresholds may be present due to historical agricultural use and from historical leaks and spills. The soil sampling plan must be reviewed and approved by the Santa Clara Fire Department Fire Prevention and Hazardous Materials Division prior to initiation of work. Once the soil sampling analysis is complete, a report of the findings will be provided to the Santa Clara Fire Department Fire Prevention and Hazardous Materials Division and other applicable city staff for review.<br>• Documentation of the results of the soil sampling shall be submitted to and reviewed by the City of Santa Clara prior to the issuance of a grading permit. Any soil with concentrations above applicable environmental screening levels or hazardous waste limits would be characterized, removed, and disposed of off-site at an appropriate landfill according to all state and federal requirements. | approved soil sampling plan, 2) document the results of the sampling, and 3) develop a Site Management Plan to establish handling and management practices | | Hazardous Materials Division | Department Fire Prevention and Hazardous Materials Division | |

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| • A Site Management Plan (SMP) will be prepared to establish management practices for handling impacted groundwater and/or soil material that may be encountered during site development and soil-disturbing activities. Components of the SMP will include:<br>  • A detailed discussion of the site background.<br>  • A summary of the analytical results.<br>  • Preparation of a Health and Safety Plan by an industrial hygienist.<br>  • Protocols for conducting earthwork activities in areas where impacted soil and/or groundwater are present or suspected.<br>  • Worker training requirements, health and safety measures and soil handing procedures shall be described.<br>  • Protocols shall be prepared to characterize/profile soil suspected of being contaminated so that appropriate mitigation, disposal, or reuse alternatives, if necessary, can be implemented. | | | | | |

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| • Notification procedures if previously undiscovered significantly impacted soil or groundwater is encountered during construction.<br>• Notification procedures if previously unidentified hazardous materials, hazardous waste, and/or underground storage tanks are encountered during construction.<br>• On-site soil reuse guidelines.<br>• Sampling and laboratory analyses of excess soil requiring disposal at an appropriate off-site waste disposal facility.<br>• Soil stockpiling protocols; and<br>• Protocols to manage groundwater that may be encountered during trenching and/or subsurface excavation activities. Prior to issuance of grading permits, a copy of the SMP must be approved by the Santa Clara County Environmental Health Department and the Santa Clara Fire Department Fire Prevention and Hazardous Materials Division. Prior to issuance of grading permits, a copy of the SMP must be approved | | | | | |

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| by the Santa Clara County Environmental Health Department, and the Santa Clara Planning Division.<br><br>If contaminated soils are found in concentrations above risk-based thresholds pursuant to the terms of the SMP, remedial actions and/or mitigation measures will be taken to reduce concentrations of contaminants to levels deemed appropriate by the selected regulatory oversight agency for ongoing site uses. Any contaminated soils found in concentrations above thresholds to be determined in coordination with regulatory agencies shall be either 1) managed or treated in place, if deemed appropriate by the oversight agency or 2) removed and disposed of at an appropriate disposal facility according to California Hazardous Waste Regulations (CCR, tit. 22, div. 4.5) and applicable local, state, and federal laws. | | | | | |
| **NOISE** | | | | | |
| Impact 4.13-a Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | | | | | |
| NOI-1: The project shall implement the following measures to reduce temporary construction noise to less than significant levels.<br><br>• Construction is not permitted during the hours of 6 p.m. to 7 a.m. Monday through Friday~~, and~~ | Implement the City's municipal code and measures to reduce noise levels. Use best available noise control technologies. | During the construction phase | Director of Community Development or director's designee of the City of Santa | Confirm the code and measures have been implemented | During the construction phase |

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| | Documentation of Compliance [Project Applicant/Proponent Responsibility] | | Documentation of Compliance [Lead Agency Responsibility] | | |
| | **Method of Compliance Or Mitigation Action** | **Timing of Compliance** | **Oversight Responsibility** | **Actions/Reports** | **Monitoring Timing or Schedule** |
| between 6 p.m. to 9 a.m. on Saturday, and prohibited on Sundays and holidays.~~.~~<br>• Prior to the start of construction, identify a noise control disturbance coordinator. The disturbance coordinator shall be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of any noise complaint received (e.g. starting too early, bad muffler, etc.) and shall ensure that reasonable measures warranted to correct the problem are implemented as soon as possible.<br>• Prior to the start of construction, establish a telephone number for the disturbance coordinator, and post it in a conspicuous location on the construction site.<br>• Prior to the start of construction, notify, in writing, the residents within 800 feet from the center of the project to the south across the rail line and industrial buildings to the north, east, and west of the project site of the construction schedule and provide a written schedule of "noisy" construction activities to the adjacent land uses.<br>• Include the telephone number for the disturbance coordinator construction site in the above notice regarding the construction schedule sent to residences south across the rail line and industrial buildings to the north, east, and west of the project site. | Notify all adjacent business and other noise-sensitive land uses of the construction schedule, in writing, and provide a written schedule of "noisy" construction activities to the adjacent land uses and to the City's Community Development Department | Prior to the start of demolition and construction activities | Clara (Director of Community Development) | Review and approve the schedule of "noisy" construction activities | Prior to the start of demolition and construction activities |

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
|---|---|---|---|---|---|
| | Documentation of Compliance [Project Applicant/Proponent Responsibility] | | Documentation of Compliance [Lead Agency Responsibility] | | |
| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| • The project owner shall orient construction equipment and locate construction staging areas within the project site away from the nearest residences to the south, to the extent feasible.<br>• Equip all construction-related internal combustion engine-driven equipment with the best available noise control equipment (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) and use best noise control practices to minimize noise levels from construction activities. | | | | | |
| **TRANSPORTATION** | | | | | |
| Impact 4.17-b Conflict or be inconsistent with CEQA Guidelines [California Code of Regulations, title 14,] section 15064.3, subdivision (b)? | | | | | |
| TRANS-1: The project shall implement a Transportation Demand Management (TDM) program sufficient to demonstrate that vehicle miles travelled (VMT) associated with the project would be reduced to 14.14 or less per employee. The TDM program shall include, but is not limited to, the following measure, which has been determined to be a feasible method for achieving the required VMT reduction:<br>• The operations workforce at the project shall work a 4-40 work schedule (40 hours in 4 days).<br><br>Prior to the issuance of an occupancy permit, the | Adopt a transportation demand management program to reduce project-related vehicle miles traveled to 14.14 or less per employee | Prior to the issuance an occupancy permit | Director of Community Development or director's designee of the City of Santa Clara | Receive approval of the TDM program based on traffic counts; the program shall be updated as necessary based on new traffic counts | Annually by the Director of Planning |

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
|---|---|---|---|---|---|
| | Documentation of Compliance [Project Applicant/Proponent Responsibility] | | Documentation of Compliance [Lead Agency Responsibility] | | |
| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| TDM program shall be submitted and approved by the Director of Community Development and shall be monitored annually to gauge its effectiveness in meeting the required VMT reduction. The TDM program shall establish an appropriate estimate of initial vehicle trips generated by the occupant of the proposed project and shall include the conducting of driveway traffic counts annually to measure peak-hour entering and exiting vehicle volumes. The volumes shall be compared to trip thresholds established in the TDM program to determine whether the required reduction in vehicle trips is being met. The results of annual vehicle counts shall be reported in writing to the Director of Community Development.<br><br>If TDM program monitoring results show that the trip reduction targets are not being met, the TDM program shall be updated to identify replacement and/or additional feasible TDM measures to be implemented. The updated TDM program shall be subject to the same approvals and monitoring requirements listed above. | | | | | |
| | | | | | |
| | | | | | |
| **MANDATORY FINDINGS OF SIGNIFICANCE** | | | | | |
| Impact 4.20-a Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce | | | | | |

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
|---|---|---|---|---|---|
| | Documentation of Compliance [Project Applicant/Proponent Responsibility] | | Documentation of Compliance [Lead Agency Responsibility] | | |
| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? | | | | | |
| **BIO-1**, **BIO-2, CUL-1**, **CUL-2**, **GEO-1** See impact 4.4-a, 4.5-a, 4.5-b, 4.5-c, 4.7-a.ii, 4.7-a.iii, and 4.7-c | | | | | |
| Impact 4.20-b Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.) | | | | | |
| **AQ-1**, **BIO-1, BIO-2, BIO-3, BIO-4, CUL-1**, **CUL-2, GEO-1, GHG-1, GHG-2, GHG-3**, **HAZ-1**, **NOI-1, TRANS-1**. See impact 4.3-b, 4.3-c, 4.4-a, 4.4-e, 4.5-a, 4.5-b, 4.5-c, 4.7-a.ii, 4.7-a.iii, 4.7-c, 4.8-a, 4.8-b, 4.9-c, 4.9-d, 4.13-a., and 4.17-b | | | | | |
| 4.20-c Does the project have environmental effects which will cause substantial adverse effects on human beings either directly or indirectly? | | | | | |
| **AQ-1**, **GEO-1, HAZ-1, NOI-1** See impact 4.3-b, 4.3-c, 4.7-a.ii, 4.7-a.iii, 4.7-c, 4.9-c, 4.9-d, and 4.13-a | | | | | |

**Source:** California Energy Commission. Final Environmental Impact Report for CA3 Backup Generating Facility. March 2022.

# Appendix A:

Project's Jurisdictional and Generating Capacity Analysis

# Appendix A: Project's Jurisdictional and Generating Capacity Analysis

The CA3 Backup Generating Facility and Data Center (CA3 or project) proposed by Vantage Data Services would include 44 diesel-fueled standby emergency backup generators (gensets) that would provide emergency backup power supply for the project only during interruptions of electric service delivered by Silicon Valley Power, via Pacific Gas and Electric transmission lines. The gensets would be electrically isolated from the PG&E electrical transmission system with no means to deliver electricity offsite of VDC (the distribution line would only allow power to flow in one direction—from PG&E electrical transmission line to CA3.

There are other Vantage-owned data centers in the city of Santa Clara, the closest one of which, is located across the street from CA3 project site. There would be no common facilities between any of these data centers and CA3. Therefore, CA3 is considered an independent data center for the purpose of jurisdictional determination. While staff recognizes that employees of CA3 may use parking facilities located at another Vantage-owned data center, this alone is insufficient to consider the data centers part of the same project.

Each genset would have a nameplate output capacity of 2.75 megawatts (MW) and continuous steady-state output capacity of 2.2 MW. The maximum total facility load requirements would not exceed 96 MW. This includes the critical information technology (IT) load of the servers and server bays, the cooling load of the IT servers and bays, and the facility's ancillary electrical and telecommunications equipment operating loads to support the data customers and campus.

The California Energy Commission (CEC) is responsible for reviewing, and ultimately approving or denying, all applications for thermal electric power plants that are 50 MW and greater being proposed for construction in California. (Pub. Resources Code, § 25500.) The CEC has a regulatory process, referred to as the Small Power Plant Exemption (SPPE) process, that allows applicants with projects between 50 and 100 MW to obtain an exemption from the CEC's jurisdiction and from obtaining a CEC certificate and instead proceed with local approval if the CEC finds that the proposed project would not create a substantial adverse impact on the environment or energy resources. (Pub. Resources Code, § 25541.)

CEC staff (staff) calculated a net deliverable or useable electricity capacity of more than 50 MW and less than 100 MW from CA3 gensets, qualifying it for a SPPE under the capacity criterion. The following provides a summary of the factors supporting this conclusion, with a more detailed discussion of these factors following after:

1. The diesel-fueled reciprocating engine gensets use a thermal energy source.

2. The gensets and the associated project equipment that they would support would all be located on a common property under common ownership sharing common utilities, and the 44 gensets should be aggregated and considered as one thermal power generating facility with a generation capacity of greater than 50 MW.

3. While CA3 has an apparent installed generation capacity greater than 100 MW (44 gensets, each with 2.75 MW peak capacity), the "extra" MW installed are redundant. In no case would the maximum facility-wide load demand exceed 96 MW due to physical constraints built into the project.

4. Jurisdictional analyses are based on the net MWs that can be delivered for "use" (i.e., to a data center facility or the electricity grid), not the gross or nameplate rating. Unlike a traditional power plant supplying electricity to the grid, for a data center, the maximum load being served is determinative and not the combined net capacity of the installed gensets. Here, the maximum facility wide CA3 load requirement would be 96 MW.

5. The gensets would be exclusively connected to the CA3 buildings and would not be capable of delivering electricity to any off-site user or to the electrical transmission grid. The proposed redundancies built into the design of the facility are to ensure performance reliability, not to generate and supply the CA3 facility with more than 96 MW of electricity.

6. The restriction on the facility's load demand is hardwired through various control systems. It would be physically impossible for the gensets to generate more electricity than the buildings require. Excess electricity would damage components or at a minimum, isolate the project loads from the gensets.

To make a jurisdictional recommendation, staff assessed the generating capacity of the project, using the following:

*1. CA3 is a thermal power plant under the statutory definition.*

The Warren-Alquist State Energy Resources Conservation and Development Act (Public Resources Code, section 25000 et. seq) defines a thermal power plant "as any stationary or floating electrical generating facility using any source of thermal energy, with a generating capacity of 50 megawatts or more, and any facilities appurtenant thereto." (Pub. Resources Code, § 25120.) CA3's generation yard would be made up of gensets that use petroleum-based diesel engines to convert the thermal energy in the diesel fuel[1] into electricity via a rotating generator, and, thus, each genset is an electrical generating device that uses a source of thermal energy. The facility proposes to use 44 such gensets to service CA3.

1 Diesel fuel is composed of a mixture of hydrocarbons, containing chemical energy. When ignited, this chemical energy is converted to thermal energy.

CA3's 44 gensets, and the associated data center that they would support, would all be located on a common property under common ownership sharing common utilities. The gensets would operate to provide backup electricity to the project when its connection to the grid is lost. The gensets system includes a 5-to-make-4 design configuration, meaning that for every four gensets that would support load in the event of a utility failure, there is one redundant genset. The 44 gensets would never operate simultaneously at 100 percent capacity. However, any genset can function either as a back-up to the grid or a back-up to the grid back-up gensets, so there is not a functional difference in the type of engine or generator between each genset. All the gensets at the project would share a common trigger for operation during an emergency: the transfer switch isolating CA3 from the grid. Thus, because the project is stationary, under common ownership sharing common utilities, uses a fuel source to generate thermal energy, and has a generating capacity of 96 MW, the project meets the statutory definition of a thermal power plant.

2. *California Code of Regulations, Title 20, section 2003 requires the generating capacity to be the net generating capacity.*

For CA3, the data center would be installed during the initial construction of the project by the project owner, but there is no specific timeline proposed for when data center would need the full capacity of gensets; the exact timing of individual leases that fill server bay space is subject to the market decisions of disparate customers. Therefore, it may be years before the data center is at full load. Nevertheless, for purposes of this analysis, staff assumes full load will eventually be reached.

California Code of Regulations, Title 20, section 2003 specifies how the CEC calculates "generating capacity" for jurisdictional determinations, including the 50 MW threshold for the definition of a thermal power plant under Public Resources Code, section 25120. However, section 2003, which uses nameplate capacity in addition to consideration of other factors, only addresses steam and combustion turbines, not diesel-fueled gensets as used in the VDC, and is, therefore, not controlling here. There are also other reasons to conclude that simply focusing on nameplate capacity here is not appropriate.

For a typical power plant, outside the factors identified in California Code of Regulations, Title 20, section 2003, there is almost no limit on what might be generated and provided to the grid, so the approach outlined in that provision identifies the potential maximum generating capacity and is reasonable for those facilities. This is not the case with data centers, where producing electricity more than what the data center requires would be economically wasteful and likely result in damage to the facility.

In traditional turbine-based power plants, parasitic loads (fans, pumps, and heaters) are external to the turbine. Thus, the generating capacity is the total net MWs at the switchyard bus; that is, gross MWs less parasitic loads. If the grid "demands" more, the power plant cannot deliver more electricity unless it burns fuel at a higher rate or reduces parasitic loads. Even then, equipment would have to have the physical capacity to burn more fuel and convert thermal energy into rotational energy, and then operate the generator at a higher output. The calculations assume normal conditions, where

generation would be under average operating conditions, and assumes the onsite loads (often called parasitic loads) are also average (e.g., a filter backwash pumping load would not be included if that operation only occurs monthly or annually). Typically, at a traditional power plant, no redundant generating equipment is installed.[2] Generating capacity at a traditional power plant is determined based on the net capacity of all generators proposed to be installed and connected to the grid because there is almost no limitation on the amount of MWs the grid can "take" from the facility.

Typically, emergency backup generating facilities serving data centers are not physically able to send excess electricity to the grid, and all electricity generated must be absorbed by the data center itself. Data centers are designed with precise loads, assuming full build-out, and providing electricity more than these loads is not only economically wasteful (burning fuel for no benefit or reason) but can result in damage to the sensitive components located inside these data centers as well as to the heating, ventilation, air conditioning (HVAC) unit and other systems serving the buildings. Therefore, for purposes of evaluating the capacity of emergency backup generating facilities serving data centers, it is reasonable for staff to consider building loads to be the controlling factor in determining generating capacity.

*3. Data centers are analyzed differently than conventional power plant facilities for several reasons.*

To determine the net generating capacity of a collection of gensets[3] for data centers, the approach is slightly different but consistent with that used on a traditional power plant. The differences are: 1) the end user is the building and data servers, not the grid, and 2) extra gensets or generating capacity are installed to provide electricity not only for building and data server loads but to provide redundancy that achieves a statistical reliability that can be marketed to data customers.

Staff's approach is consistent with widely practiced standards. For example, ASHRAE's (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Energy Standards for Data Centers do not use the nameplate or gross capacity but the net generating capacity of data centers, or the actual cooling and IT server loads.[4] These ASHRAE standards are performance-based as opposed to prescriptive standards,

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2 At modern power plants, some equipment design includes 50 to 100 percent redundancy. The redundant equipment is generally limited to certain critical components like transformers, which are often custom items with long lead times for fabrication, or boiler water feed pumps, which are intended to protect the steam boiler components from damage from too much heat if circulating water flow is interrupted.

3 Backup generators, by definition, generally have the following characteristics: reliable starts, fast starting to full load, cheap to maintain as they sit idle most of the time, use cheap and stable fuel as the fuel sits unused most of the time, and use high-density fuels to limit storage volumes onsite so the project can operate if "islanded."

4 American National Standards Institute (ANSI)/ASHRAE Standard 90.4-2016, www.ashrae.org.

advocating the determination of load requirements be based on project-specific operational characteristics.

Staff's approach to calculating generating capacity has also been devised based on the International Organization for Standardization (ISO), which sets standards for different industries including the energy industry. The ISO standards are widely accepted by, and used throughout, the energy industry. Consistent with staff's method, the ISO specifies that generating capacity should be the net capacity at average annual ambient conditions.[5]

In the case of CA3, the load served acts as a limit to the generation levels from the gensets. This factor is not present in a capacity generation determination for a typical power plant feeding to the grid because the grid does not act in the same way the "CA3 grid" does. If the breakers between the CA3 data center building and the gensets were to trip due to excess generation, the data center would be isolated from the gensets, with the servers and building cooling forced to shut down. This subverts the intention of using the gensets to maintain reliable and high-quality electricity. Excess electricity would damage components or, at a minimum, isolate the load from the gensets. If the building cooling load were to increase (e.g., the day gets warmer), the gensets would open the engine fuel throttle to increase generation output and match demand but would still not exceed the combined 96 MW IT and building demand.

*4. CA3's capacity will not exceed 96 MW.*

The exact number of gensets that could operate in an emergency depends on actual cooling and IT server loads and the reliability and performance of the gensets. In no case would the combined output of gensets exceed the prescribed maximum load of 96 MW. As explained above, it would be physically impossible for the gensets to generate more electricity than the buildings require. For purposes of testing and maintenance, only one genset would operate at any given time.

The maximum demand of 96 MW would be fixed by the specification and installation of electrical buses and panels, switchyard, and breakers that would have an upper electrical capacity limit. The cooling equipment's maximum demand would also be fixed by the specification and installation of equipment that have an upper physical limit of cooling capacity and would include some redundant cooling equipment. Such redundant equipment could only be operated if a primary component fails and could not be operated in addition to the primary components because that would damage the CA3 data center. The CA3 data center would be served from the grid or from the gensets with electricity that matches and does not exceed demand for the operations of the data server bays and buildings.

5 ISO 3046-1 Reciprocating Internal Combustion Engines – Performance, www.iso.org/standards.

The heat rejected by the IT servers must be removed from each server bay or else the server equipment and data would be damaged. Any attempt to add more servers to a bay would result in direct, immediate, and dire consequences because the building and equipment would have been designed for an upper critical IT load. It is important to note that the maximum combined facility load of 96 MW is based on 100 percent critical IT load with maximum cooling on the hottest day. In actuality, the critical IT load and related cooling load would typically be less than this worst-case scenario.

In recent years, the power and energy industries have advanced in terms of software development and hardwired digital control to permanently limit generation capacity. The generation by CA3 would be regulated by each building and each bay in that building. Software would be used to operate the gensets in a manner that meets the bay and building demand. If the demand decreases (i.e., less mechanical load for cooling, etc.), the gensets sets would automatically adjust the loading and corresponding electrical output. If a genset or the software were to malfunction and attempt to generate more electricity than the building demand, individual electrical gensets controllers would shut down. CA3 would employ physical electronic devices and software technology that limit and monitor the facility's electrical load.

For the maximum generating capacity to increase, the project would have to be redesigned to physically fit more servers in a server bay or add more bays. The project owner would have to address the unplanned increase in electricity demand for normal operations because the existing electrical equipment would not be sized for the higher electricity throughput. Additionally, the project owner would have to install additional cooling equipment units to address the increased heat rejected by the server bays and buildings, and install additional redundant cooling equipment, additional uninterruptable power supply (UPS) battery units, and additional gensets to maintain the level of backup and reliability to match the new higher levels of load. This is an unlikely outcome because such changes are not trivial and would result in a cascade of design and physical changes to the facility.

When CA3 is at full load, its worst-case day combined IT and building load[6] would not exceed 96 MW. The project proposes gensets that total more than 96 MW for purposes of redundancy. The combined generating capacity of the installed operational gensets is autonomously determined by the electrical equipment in the CA3 server bays and building equipment in use at the time of an emergency. CA3 has been designed with one generation yard, configured as 16 data center suites or lineups. The lineups would be paired together in such a configuration that each pair would consist of five gensets, one of which would be redundant. The emergency operation of each of the data center lineups is fully automated. Once CA3 loses connection to the local grid, the transfer switch isolates CA3 from the local electrical transmission grid, and all the gensets assigned to a server

6 Based on the hottest, most humid day of the year and with all IT servers in use at their full usage rate

bay set initiate startup. As the gensets start, synchronize, and take up load associated with their server bays and building equipment, the UPS system would provide full-load power for up to five minutes[7] to smoothly transition the CA3 customers' data servers from the grid to the gensets (DayZenLLC 2021e, Section 2.2.4.3). If a genset or two fail to start or synchronize, the remaining genset in the 5-to-make-4 server bay or the other gensets in other server bay sets ramp up to higher output levels. The output of the genset assigned to a server bay set match (meet but cannot exceed) the CA3 data customers' IT demand in the respective server bay and the server bay's HVAC demand. The combined output of the server bay set is autonomously determined by the electrical equipment in the CA3 server bays and building equipment.

Combined output would be limited by sizing the electricity handling equipment to throttle transfer capacity to no more than 96 MW, which would prevent damage to IT servers and building equipment. Therefore, it would be physically impossible for the gensets to generate more electricity than what the data center would use, or more than 96 MW.

7 The gensets are expected to be on and synchronized within a minute or so, but the UPS can supply up to 5 minutes of power at 100 percent full-load UPS to ensure a complete transition from the grid to the gensets.

# Appendix B:

Silicon Valley Power's Transmission System and Related Pacific Gas and Electric Company's Transmission System

# Appendix B: Silicon Valley Power's Transmission System and Related Pacific Gas and Electric Company's Transmission System

This appendix includes a discussion of the Silicon Valley Power's (SVP) and Pacific Gas and Electric Company's (PG&E) electrical system reliability (including supporting information) and emergency operations.

## *Electrical System Reliability*

Apart from readiness testing and maintenance, the emergency backup generators (gensets) are designed to operate only when the electric system is unable to provide power to the Vantage Data Services CA3 Data Center (CA3DC). To understand the potential for the gensets to operate during emergencies, one needs to know the conditions under which the electric system is unable to provide power to CA3DC. There are essentially four conditions that might result in the operation of the gensets:

- A fault occurs (power supply interruption) or planned maintenance is required on the equipment interconnecting CA3DC to the SVP 60 kV loop system, and CA3DC's electricity needs cannot be met.
- An outage or fault occurs on the utility transmission system, and PG&E is unable to deliver power to SVP system which provides electricity to CA3DC.
- A Public Safety Power Shutoff (PSPS) impacts the utility transmission system, and CA3DC is not able to receive power from SVP.
- An energy shortage crisis similar to the one in late Summer 2020 where the utility for transmission (e.g. PG&E) is unable to supply electricity to SVP or CA3DC's operators voluntarily disconnect from the utility and rely on gensets to provide the needed electricity.

The SVP 60 kilovolt (kV) loop systems are designed to provide reliable electric service to customers. The looped interconnection allows SVP to provide continuous electricity to customers even under contingency conditions, when one part of the electric network is not functioning. The interconnections for data centers, like CA3DC, on the SVP 60 kV system are designed with redundant equipment throughout such that there is no single point of failure. It takes at least two contingencies before customers on the 60 kV system lose power and, in the case of data centers, would instead rely on gensets. According to SVP, double outages on the 60 kV loop systems are extremely rare, and the data supports this.

SVP provided a list of the outages on its 60 kV system over the last 12 years. There were 41 outages, only six of which resulted in customers being without power. This means that in 35 of these outages the redundant design of the system prevented customers from being without power; data centers would not be isolated from the grid and would not

have relied on their gensets.

Only four outages from January 1, 2009, to June 16, 2021, affected data centers in the SVP service territory. One approximately 7.5-hour outage on May 28, 2016, which was the result of two contingencies (a balloon and a breaker failure), affected two data centers. Another 12-minute outage on December 2, 2016, affected four data centers. Two different outages on August 16, 2020 (both outages due to multiple lightning strikes), with one approximately 2.5 hours and the other one approximately 10.5 hours, affected data centers at various locations on the associated loops.

SVP's root-cause analysis of every outage resulted in changes in maintenance procedures to ensure that breakers are reset before power is restored to a portion of the system that was down for maintenance. Outages would be extremely rare, and the consequences or effects on the fleet of data centers almost negligible.

Wildfire policies could impact SVP's ability to supply power to customers if curtailments on the PG&E system interrupt SVP's access to its remote electricity supplies. A PSPS essentially de-energizes power lines to prevent the lines from causing or being damaged by wildfires. The PSPSs to date have been generally limited to high-fire risk zones and only implemented under special conditions. While the SVP service territory and the SVP's primary PG&E bulk transmission line interconnection points are not in high-risk zones, a line de-energization in one of PG&E's high risk fire zones to reduce the risk of lines causing a wildfire could reduce the SVP electricity transmission access and supply through PG&E lines.

The future impact of PSPSs on the PG&E system are not currently known. To date, two broadly implemented PSPSs in PG&E service territory last fall had no impact on SVP and its customers. As the utilities and regulators try to balance the costs and benefits of PSPSs by finetuning and targeting the implementation, the mostly likely outcome is that future PSPSs will have even fewer potential effects on SVP service territory. SVP has the ability to produce about 200 megawatts (MW) through generators located locally and can adapt to planned outages on the PG&E system just as it has reacted or recovered from unplanned outages in the past to maintain reliable and high-quality electricity supplies to its service territory customers.

Energy shortages, like those that occurred on two occasions in 2020, could prevent a utility from supplying CA3DC's electricity needs and CA3DC would then rely on gensets. Recently, the California Public Utilities Commission (CPUC) adopted a new five-year pilot program (D.21-03-056), in effect through 2025, that orders PG&E, Southern California Edison, and San Diego Gas & Electric to administer the Emergency Load Reduction Program (ELRP). Data centers could voluntarily participate in ELRP and, in the event of an energy shortage emergency, these utilities would disconnect from the grid and use their on-site gensets to supply electricity. The ELRP provides a mechanism for utilities to measure the load reduction and provide financial compensation to the participants. The ELRP does not affect the likelihood of emergency events. The last time an emergency

event occurred, like those in 2020, was 2001. Energy emergencies continue to be rare events. In addition, in the text below, California Energy Commission (CEC) staff (staff) discussed that CA3DC would not be online in time to be part of the first phase of the ELRP, and it is less likely that these types of measures will be necessary beyond the immediate future. Lastly, it is unclear whether the U.S. EPA would consider participation in such a program to be an emergency use and, thus, allowed under federal permit restrictions. For these reasons staff does not consider the existence of the ELRP to have any effect on the likelihood of the CA3 Backup Generators operating outside of testing and maintenance.

Still, staff expects the CA3DC gensets to be required to supply data center loads only rarely. The gensets would not be used when maintenance is performed on the transmission line or substation connecting CA3DC to the SVP grid. The SVP looped systems, designed with redundant equipment, ensure that line outages and other system faults only rarely result in a customer losing connection to grid power and over 10 years of data supports this. PSPSs have not directly impacted SVP customers, and, as staff expects the effects of PSPSs to decrease over time, staff does not think this would be an issue for CA3DC going forward. Finally, emergency events affecting electric supply are rare.

### *Emergency Operations*

### *Historical Power Outage Frequency*

This section provides information on the likelihood of an interruption of SVP's electrical supply that would trigger the emergency operation of the gensets at the Vantage Data Services CA3 Backup Generating Facility (CA3BGF). More than 12 years of historical data of past outages of data centers in the SVP service territory is available. Staff has used it to estimate the frequency and duration of reasonably foreseeable, future electrical outages that could trigger emergency operations. Emergency operations would be unplanned and infrequent.

Reliability statistics for all electric customers served by SVP appears within the 2018 Integrated Resource Plan (IRP), and to expand on this information, staff explored specifically how data centers in SVP's territory have been historically affected by outages.

From the 2018 IRP: "SVP's electric system experiences approximately 0.5 to 1.5 hours of outage time per customer per year. This compares favorably with other utilities in California with reliability factors ranging from 1.0 to 2.5 hours outage per customer per year" (SVP 2018a). The 2018 IRP for SVP reports the Average Service Availability Index (ASAI), defined as the customer-minutes-available divided by the total customer-minutes, expressed as a percentage, and the ASAI has been 99.979% or higher in each recent year, with an average of 99.989 over the past seven years. The SAIFI (interruptions per customer) shows that one or fewer outages have occurred, on average, for all customer types annually (SVP 2018a). This data for all customers is summarized in **Table B-1**.

**TABLE B-1 SVP RELIABILITY STATISTICS FOR ALL CUSTOMER TYPES**

| Year | ASAI (%) | SAIDI (minutes) | SAIFI (interruptions per customer) | Total Outages (number) |
|---|---|---|---|---|
| 2012 | 99.994 | 29.34 | 0.48 | 67 |
| 2013 | 99.991 | 47.33 | 0.49 | 69 |
| 2014 | 99.989 | 56.6 | 0.48 | 80 |
| 2015 | 99.986 | 73.96 | 0.59 | 123 |
| 2016 | 99.993 | 36.29 | 0.5 | 123 |
| 2017 | 99.979 | 109.08 | 1.03 | 195 |
| 2018 | 99.992 | 42.61 | 0.41 | 132 |

**Notes:**
ASAI (%): Average Service Availability Index - (customer minutes available / total customer minutes, as a %).
SAIDI (minutes): System Average Interruption Duration Index - (average minutes interrupted per customer for all customer).
SAIFI (number): System Average Interruption Frequency Index - (number of interruptions per customer for all customers).
**Source:** SVP 2018a.

The proposed CA3DC would be a large customer of SVP that would receive better-than-average reliability compared to all SVP customers by including a dedicated onsite substation that would be directly served by SVP's looped 60 kV system. Staff reviewed the frequency and duration of known data center customers' outages, as provided by SVP (DayZenLLC 2021l), to discern how redundant features allow SVP's system to provide greater reliability to data centers when compared with average SVP customers.

That data indicates that the likelihood of an outage on SVP's looped 60 kV system that forces the emergency operation of a data center's gensets would be "extremely rare" (DayZenLLC 2021l). Project-specific design factors include the site-specific substation that would connect CA3DC to the SVP looped 60 kV system, a limited number of commercial customers on the looped 60 kV system, redundant transformers to supply CA3DC, and CA3DC's proposed uninterruptible power supply (UPS) battery system to carry critical loads during short-term electric service disruptions or transients.

As mentioned above, there were 41 outages on the SVP 60 kV system over the last 12 years (January 1, 2009, to June 16, 2021), only six of which resulted in customers being without power. Of these outages, only four of them affected data centers in the SVP service territory. These customers are all served by a distribution system that includes "looped" lines that can provide alternate flow paths for power flow to data centers. Thus, in general, it takes more than one 60-kV system path failure to cause a power outage at data center.

One approximately 7.5-hour outage on May 28, 2016, which was the result of two contingencies (a balloon and a breaker failure), affected two data centers. Another 12-minute outage on December 2, 2016, affected four data centers. Two different outages

on August 16, 2020 (both outages due to multiple lightning strikes), with one approximately 2.5 hours and the other one approximately 10.5 hours, affected data centers at various locations on the associated loops.

### *BAAQMD's Review of Data Center Diesel Genset Engine Operations*

Scoping comments from the Bay Area Air Quality Management District (BAAQMD) provided a review of data centers that initiated the operation of diesel genset engines for "non-testing/non-maintenance" purposes to inform staff's consideration of scenarios of emergency backup power generation operations beyond routine testing and maintenance (BAAQMD 2021b). BAAQMD's review covers a recent 13-month period (September 1, 2019, to September 30, 2020) that spans different types of emergency situations across California.

There are 66 data centers under the jurisdiction of BAAQMD with staff at BAAQMD gathering information from 45 of those data center facilities. The attachment to BAAQMD's scoping comments listed 20 facilities that reported some level of "non-testing/non-maintenance" diesel genset engine use in the 13-month period (CEC 2021).

The scope of BAAQMD's review can be summarized as follows:

a. Period covered: 13 months (9,504 hours)

b. Facilities (data centers) under BAAQMD jurisdiction: 66 data centers

c. Facilities from which information was collected: 45 data centers

d. Facilities responding with some "non-testing/non-maintenance" use: 20 data centers

e. Permitted genset engines at the 20 facilities responding: 288 engines

f. Installed generating capacity of genset engines at the 20 facilities responding: 686.5 MW

g. Information was not provided for the 25 facilities that did not report any non-testing/non-maintenance use or the other 21 facilities under BAAQMD's jurisdiction that were not surveyed in this data gathering effort.

BAAQMD normally issues permits for diesel genset engines, and the permit requires each owner or operator to maintain records of the number of operating hours for each "emergency" and the nature of the emergency. The types of events within BAAQMD's review period include a Governor-proclaimed state of emergency, other outages, power quality events, and human errors. The data shows that 75 percent of all genset engine-hours occurred either during the August 2020 Governor-proclaimed state of emergency or the subsequent heat event in September 2020. Staff does not consider this a typical year, and the data is probably not representative or indicative of future years.

For the 20 data centers listed in BAAQMD's review, the total permitted and installed generating capacity of these facilities equals 686.5 MW, across 288 individual genset engines. The total amount of "non-testing/non-maintenance" runtime of all these 288 genset engines amounted to approximately 1,877 engine-hours of operation.

**Table B-2** summarizes the runtimes found by BAAQMD's review for each of the 20 data centers. BAAQMD's review identified one data center facility that ran diesel gensets for approximately 400 hours for non-testing/non-maintenance purposes during this time. **Table B-2** shows that this facility has over 40 individual genset engines permitted at the site for an average runtime of about 10 hours per engine. The different data centers within BAAQMD's review showed that nine of the 20 facilities responding had fewer than 50 hours of operating one or more diesel genset engines for non-testing/non-maintenance purposes.

**TABLE B-2 BAAQMD'S REVIEW OF NON-TESTING/ NON-MAINTENANCE OPERATION (ENGINE-HOURS)**

| Data Center | # of Permitted Genset Engines | # of Genset Engines with Non-Testing/ Non-Maintenance Operations | Sum of Non-Testing/ Non-Maintenance Operations (Engine-Hours) | Average Hours of Operations per Genset Engine Used |
|---|---|---|---|---|
| 1 | 10 | 10 | 83 | 8.3 |
| 2 | 5 | 5 | 77 | 15.3 |
| 3 | 6 | 6 | 108 | 18.0 |
| 4 | 44 | 44 | 22 | 0.5 |
| 5 | 3 | 2 | 11 | 5.5 |
| 6 | 6 | 6 | 219 | 36.5 |
| 7 | 24 | 24 | 202 | 8.4 |
| 8 | 26 | 24 | 10 | 0.4 |
| 9 | 5 | 5 | 26 | 5.2 |
| 10 | 41 | 40 | 401 | 10.0 |
| 11 | 14 | 11 | 75 | 6.8 |
| 12 | 11 | 11 | 275 | 25.0 |
| 13 | 5 | 5 | 85 | 17.0 |
| 14 | 22 | 8 | 28 | 3.4 |
| 15 | 8 | 7 | 98 | 14.0 |
| 16 | 17 | 4 | 10 | 2.4 |
| 17 | 2 | 2 | 4 | 2.0 |
| 18 | 8 | 6 | 18 | 3.0 |
| 19 | 6 | 6 | 24 | 4.0 |
| 20 | 25 | 17 | 103 | 6.0 |
| **Total** | **288** | **243** | **1,877** | **Max. 36.5** |

Sources: BAAQMD 2021b, Energy Commission staff analysis of data from BAAQMD

From the runtimes of all the genset engines at all facilities in BAAQMD's review, **Table B-2** estimates that the average genset engine ran no more than 36.5 hours over the 13-month period. Staff also found that no single engine within BAAQMD's review ran for more than 50 hours overall for "non-testing/non-maintenance" purposes.

Staff used the data in BAAQMD's review (BAAQMD 2021b) and a clarifying email of BAAQMD results (CEC 2021) to estimate the power production during "non-testing/non-maintenance" diesel genset engine use and found that approximately 1,575 MWh was generated during this 13-month (9,504 hour) period. The power generated by these genset engines presumably displaced grid service for the on-site data center facility electrical demand. Based on the installed generating capacity of 686.5 MW partially operating within the 13-month record, the genset engines in BAAQMD's review that did operate would have an extremely low capacity-factor of 0.024 percent [0.024 percent = 1,575 MWh / (686.5 MW * 9,504 hours)]. This capacity factor is only considering the facilities that had genset engines that ran during this 13-month period. Twenty-five of the 45 facilities reporting had zero hours of engine runtime.

**Consideration of Extreme Events.** California experienced different types of emergency situations within the 13-month period (September 1, 2019, to September 30, 2020) of BAAQMD's review. This period included the expansion of PG&E's PSPS program, severe wildfires, several California Independent System Operator (CAISO) declared emergencies, and winter storms. From August 14, to 19, 2020, California experienced excessive heat. On August 16, 2020, Governor Newsom proclaimed a state of emergency[1] because of the extreme heat wave in California and surrounding western states. This was a one in 30-year weather event that resulted in the first system-wide power outages California had seen in 20 years. In addition to the extreme heat wave in mid-August, high temperatures and high electricity demand occurred over the 2020 Labor Day weekend, especially on Sunday, September 6, and Monday, September 7, 2020 (CAISO 2021). Thus, the data set provided is not necessarily representative of an average 13-month period from which one could extrapolate average genset facility use into the future.

**Table B-3** summarizes how these extreme events influenced the runtimes found by BAAQMD's review for each of the 20 data centers.

**Table B-3** shows that most "non-testing/non-maintenance" diesel genset engine use identified by BAAQMD's review (over 1,400 engine-hours out of 1,877 engine-hours) occurred either during the August 2020 Governor-proclaimed state of emergency or the subsequent heat event in September. Excluding these extreme events results in 473.7 engine-hours of "non-testing/non-maintenance" diesel genset engine use during other dates, or fewer than two hours per engine for all 288 engines in the review. Out of the 20 data centers that ran genset engines for "non-testing/non-maintenance" purposes, the 473.7 engine-hours of runtime outside of extreme events was spread across 10 data centers out of the 45 data centers covered by BAAQMD's review.

Similarly, staff estimates that over 50 percent of the overall power produced by the genset engines in BAAQMD's review (at least 843 MWh of 1,575 MWh) occurred during the Governor-proclaimed state of emergency, and another 25 percent of the power

[1] https://www.gov.ca.gov/wp-content/uploads/2020/08/8.16.20-Extreme-Heat-Event-proclamation-text.pdf.

produced was attributable to unknown days in the period. Staff's analysis of actual power produced during each day of the 13-month record appears in **Table B-4**.

**TABLE B-3 EXTREME EVENTS: NON-TESTING/NON-MAINTENANCE OPERATION (ENGINE-HOURS)**

| Data Center | Operations During August 2020 State of Emergency (Engine-Hours) | Operations During September 2020 Heat Event (Engine-Hours) | Other Dates of Operations (Engine-Hours) | Sum of Non- Testing/ Non-Maintenance Operations (Engine-Hours) |
|---|---|---|---|---|
| 1 | 82.7 | | | 83 |
| 2 | | | 76.6 | 77 |
| 3 | 107.8 | | | 108 |
| 4 | 21.6 | | | 22 |
| 5 | 11.0 | | | 11 |
| 6 | 218.8 | | | 219 |
| 7 | 88.2 | 81.2 | 32.5 | 202 |
| 8 | | | 10.3 | 10 |
| 9 | 26.0 | | | 26 |
| 10 | 259.7 | | 141.1 | 401 |
| 11 | 75.0 | | | 75 |
| 12 | 275.3 | | | 275 |
| 13 | | | 85.0 | 85 |
| 14 | 19.9 | | 7.6 | 28 |
| 15 | | | 98.0 | 98 |
| 16 | | | 9.6 | 10 |
| 17 | | | 4.0 | 4 |
| 18 | 9.0 | | 9.0 | 18 |
| 19 | 24.0 | | | 24 |
| 20 | 88.4 | 14.3 | | 103 |
| **Total** | **1,307.4** | **95.5** | **473.7** | **1,877** |

Sources: BAAQMD 2021b, Energy Commission staff analysis of data from BAAQMD

Across all events, including the extreme event days within the period, **Table B-4** shows that the average genset engine loading in BAAQMD's review was below 40 percent. However, the data does not establish a typical type of operation that could be reasonably expected to occur during any emergency or any typical operational characteristics that could be used in representative air quality modeling. For example, some genset engines in the data set ran at no load or with very low loads; one genset engine ran at no load for 41.7 hours while the highest genset engine load in the data set was 70 percent load. The range of genset engine loads and the fact that most genset engines operated at low loads demonstrates the difficulty in predicting the level of facility electrical demands that would need to be served by the genset engines during an emergency. This also demonstrates the difficulty in making an informed prediction

of the genset engines' emission rates, which vary depending on load, in the event of an emergency.

**TABLE B-4 EXTREME EVENTS: NON-TESTING/NON-MAINTENANCE OPERATION (ENGINE LOADS)**

| Date of Event Start | Extreme Heat Wave Event? | Non-Testing/Non-Maintenance Operations - @ actual load (MWh - per day) | Average Genset Engine Loading on Event Day |
|---|---|---|---|
| Unknown | | 418.0 | 45.3% |
| 11/26/2019 | | 1.1 | 13.8% |
| 11/27/2019 | | 5.5 | 17.7% |
| 2/15/2020 | | 0.7 | 7.0% |
| 7/31/2020 | | 2.9 | 17.3% |
| 8/14/2020 | | 39.0 | 48.0% |
| 8/16/2020 | | 25.6 | 38.4% |
| 8/17/2020 | Aug 2020 Emergency | 843.1 | 34.5% |
| 8/18/2020 | Aug 2020 Emergency | 112.0 | 31.2% |
| 8/19/2020 | Aug 2020 Emergency | 14.4 | 40.0% |
| 8/25/2020 | | 5.4 | 30.0% |
| 9/6/2020 | Sept 2020 Event | 90.0 | 48.6% |
| 9/7/2020 | Sept 2020 Event | 16.8 | 39.2% |
| **Total** | | **1,574.7** | **Average 31.6%** |

Sources: BAAQMD 2021b, Energy Commission staff analysis of data from BAAQMD

**Frequency of Diesel Genset Engine Emergency Use, Discussion:** The BAAQMD scoping comment illustrates that genset engines were used at data centers for "non-testing/non-maintenance" purposes that could occur more frequently than utility service power outages. In staff's review of prior data center cases that were proposed within the SVP territory, staff found that the likelihood of an outage on SVP's looped 60 kV system that forces the emergency operation of a data center's gensets would be "extremely rare" and a low-probability event. For the prior cases in SVP territory, staff estimated a 1.6 percent probability of any given data center facility experiencing a power outage in a period of a year based on 10 years of data between 2009 and 2019 (e.g. CEC 2020a, CEC 2020b).

In BAAQMD's review, including the extreme events, 1,877 engine-hours of diesel genset engine use occurred at 20 data centers for "non-testing/non-maintenance" purposes (less than half of the 45 facilities included in the review, and less than a third of such facilities under BAAQMD's jurisdiction). These runtimes occurred due to power outages, in response to the heat storm, and also for other unspecified situations categorized by the genset engine operators as "emergencies." BAAQMD's review covered 288 individual diesel genset engines that operated over a 13-month record. Data was not provided concerning the number of genset engines at the 25 facilities that did not operate under these circumstances. Because the genset engines were collectively available for over

2.74 million engine-hours during the 13-month period (288 engines * 9,504 hours), and they were used for emergency operations for 1,877 engine-hours, at those facilities where operation occurred, the genset engines entered emergency operations during 0.07 percent of their available time (1,877 / 2.74 million). This confirms that emergency use of the genset engines would be very infrequent. It is important to note that this calculation only takes into consideration those genset engines that BAAQMD found to run during this time period; a more comprehensive review would also include the availability of the 25 facilities that had zero hours of genset engine run time and also conceivably the 21 facilities that were not surveyed at all. If these facilities without genset engine runs were included, the estimated probability that any given genset engine would be likely to run would be lower.

**Duration of Diesel Genset Engine Emergency Use, Discussion:** The BAAQMD scoping comment shows genset engines were used for "non-testing/non-maintenance" purposes, mostly due to extreme events within the 13-month record. The average runtime for each event in BAAQMD's review was approximately 5.0 hours. This shows that the duration of diesel genset engine use for "non-testing/non-maintenance" purposes, without excluding the extreme events, could involve longer runtimes than for typical utility service power outages. However, again this calculation does not factor in the larger proportion of facilities that did not run at all. In staff's review of prior data center cases, staff found an average of 2.6 hours per outage, based on only two transmission line outages occurred in 10 years (between 2009 and 2019) affecting data centers served by SVP's 60-KV lines (e.g. CEC 2020a, CEC 2020b).

BAAQMD's review of diesel genset engine use considers a wider variety of reasons for running the genset engines than solely an electric power service outage. The listed reasons include: state of emergency load shedding, human error event, utility-inflicted disturbance, lightning strikes to transmission line, utility outage, power outage, system-wide power quality event, equipment failure, power bump, power supplier request, power blips, UPS/board repair, utility sag event, mandatory load transfer, and substation transformer power equipment failure. Many of these explanations are simply subcategories under the general category of grid reliability analyzed for prior cases. Others like a human error event, equipment failure, and UPS/board repair appear to be exceedingly rare occurrences unlikely to significantly add to the calculation of when emergency operations might occur. Lastly, the category of emergency load shedding/power supplier request/mandatory load transfer all appear related to the heat storm and Governor-proclaimed state of emergency described above and, given the state's efforts to address reliability in response to such events, are unlikely to re-occur with any frequency. The provision of these categories and sub-categories helps to explain why BAAQMD shows more instances of genset engines running than staff found in prior cases and longer durations of runtimes during emergency situations. Although emergency operations could be triggered for a range of situations, including extreme events like those of August and September 2020, this information confirms that regardless of the triggering event, emergency operations of genset engines would be expected to be infrequent and of short duration.

**Summary of Staff's Analysis of "Non-testing/Non-maintenance" Genset Engine Use:** BAAQMD's review of "non-testing/non-maintenance" genset engine operations expands our understanding of "when, why, and for how long" diesel genset engine use might occur. BAAQMD's 13-month period of review included a Governor-proclaimed state of emergency, other outages, power quality events, and human errors. Accordingly, BAAQMD's review confirms that genset engine use may occur for reasons other than grid outages, though the period is not representative of a typical year due to the rare heat storm events. Many genset engines were used for "non-testing/non-maintenance" purposes in the period reviewed by BAAQMD, but the overall number of hours of operation for the less than half of the facilities in the review that did run was 0.07 percent of the available time. Genset engine loading levels recorded during these times of use were low (average below 40 percent), and the capacity factor of these genset engines was extremely low (0.024 percent). The BAAQMD review confirms that these types of events remain infrequent, irregular, and unlikely, and the resulting emissions are not easily predictable or quantifiable. The BAAQMD review does not show that these facilities operate significantly more than staff previously analyzed in the grid reliability context in prior cases.

### *CPUC Decision, D.21-03-056, Directing PG&E, Southern California Edison, and San Diego Gas & Electric To Take Actions To Prepare For Potential Extreme Weather In The Summers Of 2021 And 2022*

On March 25, 2021, CPUC adopted decision D.21-03-056, which directed the utilities to take specific actions to decrease peak and net peak demand and increase peak and net peak supply to avert the potential need for rotating outages that are similar to the events that occurred in summer 2020 in the summers of 2021 and 2022. On December 2, 2021, CPUC adopted decision D.21-12-015, which is Phase 2 of the proceeding, and focuses on increasing electric supply and reducing demand for 2022 and 2023 (CPUC 2021b).

Addressed in the decisions are the following scoped issues:

1. Flex Alert program authorization and design
2. Modifications to and expansion of Critical Peak Pricing (CPP) Program
3. The development of an Emergency Load Reduction Program (ELRP)
4. Modifications to existing demand response (DR) programs
5. Expedited Integrated Resource Plan (IRP) procurement
6. Modifications to the planning reserve margin (PRM)
7. Parameters for supply side capacity procurement
8. Expanded electric vehicle participation

This menu of options attempts to ensure grid reliability. One of the options, ELRP, allows PG&E, Southern California Edison, San Diego Gas & Electric, and CAISO to access additional load reduction during times of high grid stress and emergencies involving inadequate market resources, with the goal of avoiding rotating outages while minimizing costs to ratepayers.

The CPUC decisions would allow data centers to choose to participate in a program whereby they could be asked to shed load if an extreme heat event similar to the August 2020 event occurs in the summer of 2022 or 2023. The initial duration of the ELRP pilot program will be five years, 2021-2025, with years 2023-2025 subject to review and revision in the Demand Response Applications proceeding that is expected to be initiated May 2022.[2] However, the CPUC decision lays out many options for emergency load reduction to ensure grid reliability that could be utilized before resorting to gensets. The decision explains that the ELRP design aspects that are subject to review and revision as part of the pilot program include minimizing the use of diesel gensets where there are safe, cost-effective, and feasible alternatives (CPUC 2021a, Section 5.2, page 19).

However, it is not expected that CA3DC would be operational until after the summer of 2023, based on these factors: 1) estimated construction schedule of 15 months for the first phase of the project; 2) estimated completion of CEC exemption proceeding in May or June of 2022; 3) additional time needed for the city and BAAQMD to permit the project. Thus, CA3 would not be online in time to be part of the first phase of ELRP. The next two summers are likely to be the most critical in terms of extra measures needed to ensure grid reliability. It is less likely that these types of measures will be necessary beyond the immediate future, as longer-term strategies for grid resilience, such as battery facilities to supplement intermittent renewable generation, come online.

Additionally, it is unclear whether the U.S. EPA would consider participation in such a program to be an emergency use and, thus, allowed under federal permit restrictions. For these reasons staff does not consider the existence of the ELRP to have any effect on the likelihood of the CA3 Backup Generators operating outside of testing and maintenance.

Furthermore, based on the capacity factors and run times for data centers that operated during the 2020 heat events, even if it were necessary to call on data centers to shed load again, it is expected that these facilities would be called on very infrequently and would have very low capacity-factors and run times in any potential future events.

### *Electrical Reliability Supporting Information*

Staff provided a series of questions to SVP to understand when, why, and for how long gensets would need to operate for any purpose, including PSPSs, other than readiness

[2] CPUC Decision 21-12-015 Attachments 1-3. Available Online at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M428/K821/428821668.PDF

testing or maintenance at CA3DC in the SVP service area.

This supporting information includes the following:

A. VDC Supplemental Responses to Data Requests 15-20 – CA3BGF on June 22, 2021 to staff's questions (including a table listing SVP system outages between January 1, 2009 to June 16, 2021)

B. VDC Responses to CEC Data Request Set 3 – CA3BGF on August 26, 2021

C. Report of Conversation: CA3 Backup Generating Facility docketed on September 21, 2021

D. A schematic diagram of the SVP 230 kV, 115 kV and 60 kV transmission system, SVP System Map, and

E. A list of the customers connected to each of the five 60 kV loops in the SVP system.

## A. VDC Supplemental Responses to Data Requests 15-20 on June 22, 2021

15. Please explain whether the Uranium Substation or the Walsh Substation could provide 100 percent power to the CD3DC in the event one of the substations is unable to.

**RESPONSE TO DATA REQUEST 15**

SVP provided the following response.

Walsh and Uranium Substations are General Distribution Stations for customers connected at 12kV and with loads less than 13.5 MW's. In the event a customer load will exceed 13.5 megavolt ampere (MVA) for a single parcel, as we expect for CAD3DC, then they will be required to build a dedicated substation.

VDC adds that it has proposed the necessary substation improvements and expansion for a dedicated Switchyard in its Application for SPPE to accommodate electricity delivery above 13.5 MVA. The improvements are designed to accommodate full electricity demand of the CA3DC after full buildout.

16. SVP has divided its 60 kV system into "loops" each with its own name; please clarify which loop the CA3DC on-site substation would be interconnected to.

**RESPONSE TO DATA REQUEST 16**

17. CA3DC will be on the Central Loop. Please explain whether the additional load associated with CA3DC would cause overloads on the SVP transmission system that would require upgrades to the existing system.

**RESPONSE TO DATA REQUEST 17**

SVP provided the following response.

From SVP's initial investigations, the additional load associated with CA3DC will be loadramp restricted until projects to reconfigure the Center Loop and Northwest loop and certain PG&E projects being developed to increase the transmission capacity to theSVP system are completed. To fully understand the impacts of this facility, SVP is conducting a System Impact Study funded by CA3DC and that information will be presented to CA3DC. The System Impact Study is underway. Once the System Impact Study and the SVP and PG&E projects are completed, CA3DC will be allowed to ramp based upon the approved load ramp schedule. Please see attached letter to Vantage from SVP dated 9/24/2020 for additional details related to when load will be able to be served to this facility.

VDC adds that it is proceeding in constructing and operating the CA3DC in phases as described in its SPPE Application pursuant to the 9/24/2020 letter (attached). The SPPEApplication has been prepared to accommodate the future load growth and electricity availability but presents the "whole of the action" as required by CEQA for full planned buildout of the CA3DC facility.

18. Please provide for the 60 kV loop on the SVP system that would serve the CA3DC:
    a. A physical description
    b. The interconnection points to SVP service
    c. The breakers and isolation devices and use protocols
    d. A list of other connected loads and type of customers
    e. A written description of the redundant features that allow the system to provide continuous service during maintenance and fault conditions

**RESPONSE TO DATA REQUEST 18**

The following response was provided by SVP.

a. The loop serving CA3DC is an overhead transmission line comprised of mainly wooden transmission poles, bundled 954 AAC Conductor, serving the Central Clara Area.

b. Interconnection with the SVP system would be in the 60KV Junction Feeder that serves the customer's transformer.

c. SVP utilizes a breaker and half bus design primarily to isolate any faults within each breakers zone of protection, isolating a fault tothe specific location and preventing an extended outage to adjacenttransformers within the substation or to an adjacent substation.

d. Center Loop serves a mix of General Distribution substations and customer dedicated 60kV Junctions for a total of six substations.

e. Loop services are designed to have two sources of power so that inthe event of an unplanned outage, the faulted zone is isolated from the remainder of the loop system, isolating the unplanned outage to the affected zone. In the same manner, a planned outage used to perform maintenance on a section of the transmission line can be performed without having to drop load, by planning the isolation locations around the piece of equipment to be maintained.

19. Please describe any outages or service interruptions on the 60 kV systems that would serve the CA3DC:

a. How many 60 kV lines serve data centers in SVP, and how many data centers are on each?

b. What is the frequency of these outages and how would they require the use of backup generators?

c. How long were outages and what were their causes?

d. Are there breakers on the 60 kV line or disconnect switch(es) and did they isolate the faults?

e. What was the response to the outage(s) by the existing data centers (i.e., initiated operation of some or all back up generation equipment, data offshoring, data center planned shutdown, etc.)?

**RESPONSE TO DATA REQUEST 19**

The following responses were provided by SVP.

a. SVP currently has five 60 kV loops plus an internal 60 kV loop at the Scott Receiving Station (SRS) and the Kifer Receiving Station (KRS). The number of Data Centers (DC) on each Loop:

i. North East Loop—4 DC

ii. North West Loop—5 DC

iii. East Loop—8 DC

iv. Center Loop--18 DC

v. South Loop—5 DC

vi. SRS Internal Loop – 2 DC

vii. KRS Internal Loop – 4 DC

b&c. There were four outages between January 1st, 2009 and June 16, 2021 where SVP lost both 60kV feeds into a substation that affected a data center where back-up generators were required to operate. Over this period, this equates to a system reliability of 99.98%.

The outages occurred on May 28th, 2016 (7 hours 23 minutes), December 2nd, 2016 (12 minutes) and two different outages on August 16th, 2020 (one 2 hours 21 minutes and second 10 hours 22 minutes). This is a total outage time affecting data centers of 20 hours and 18 minutes. Only the data centers at various locations on the associated loops were affected, not all data centers.

Since 2009, 60kV outage data is presented in the below table (over 12 years, 5 months of data). The items highlighted in yellow indicate that there was some kind of fault occurred. The items highlighted in blue is when we had a customer out of power as a result. The non-highlighted items are where an outage was taken to correct an observed situation.

d. Each loop has breaker/switches and they operated as expected. SVP does not have knowledge of how each data center reacts to an SVP-caused outage. SVP only know the times we restored service.

20. Please provide the following regarding PSPS events:

a. Would historical PSPS events have resulted in the emergency operationsof the backup generators at the proposed CA3DC?

b. Have there been changes to the SVP and PG&E system around the CA3DC that would affect the likelihood that future PSPS events would result in the operation of emergency generators at the proposed CA3DC?

**RESPONSE TO DATA REQUEST 20**

SVP provided the following responses.

a. To date, SVP has not had any historical PSPS events. As such there has been no impact to SVP or SVP customers by a PG&E initiated PSPS event in other areas.

b. SVP has not been notified of any changes related to PG&E's transmission system that would change the likelihood of futurePSPS events.

| DATE | LINE (S) | CAUSE | DURATION | CUSTOMERS OUT OF POWER |
|---|---|---|---|---|
| 01/29/21 | HOM-BRO | Tree Trimming | 1 Hour 38 Min | 0 |
| 12/29/20 | ZEN-URA | Tree Trimming | 1 Hour 25 Min | 0 |
| 09/26/20 | HOM-BRO | Tree Trimming | 2 Hours 55 Min | 0 |
| 09/22/20 | NAJ-PLM | Tree Trimming | 1 Hour 36 Min | 0 |
| 08/16/20 | KRS 60KV BUS AND LAF SUB | Multiple Lightning Strikes | 2 Hours 21 min | 1273 |
| 08/16/20 | WAL-FIB, WAL-URA | Multiple Lightning Strikes | 10 Hours 22 min | 5438 |
| 10/24/19 | MIS CB62 (NRS-MIS) | Hot Spot Repair | 29 Min | 0 |
| 10/11/19 | WAL-FIB | Balloons close to line | 6 Min | 0 |
| 09/17/16 | KRS-PLM | Rotten Pole Replacement | 10 Hours 5 Min | 0 |
| 08/14/19 | SRS CB982-(SRS-CEN) | Faulty JMUX Card | 4 Min | 0 |
| 03/30/19 | URA-WAL | Bird @ UW43 | 1 Hour 46Min | 0 |
| 11/22/18 | HOM-SER | Pole Fire HS9 (forceout) | 1 Hour 27Min | 0 |
| 07/5/18 | SER-HOM | Force out to removeballoons | 9 Min | 0 |
| 05/5/18 | SER-HOM | Force out to remove balloons | 11 Min | 0 |
| 09/1/17 | AGN-NAJ | Force out to cut trees | 1 hour 5 min | 0 |
| 08/8/17 | URA-ZEN | Force out to remove balloons | 20 Min | 0 |
| 05/25/17 | SRS-FRV | Tripped during SCADA commissioning | 1 Min | 0 |
| 05/8/17 | NWN-ZEN | Force out to remove bird | 50 Min | 0 |
| 04/29/17 | SRS-HOM | Force out to remove balloons | 2 hours 22 min | 0 |
| 03/20/17 | JUL-CEN | Third Party got into 60kV | 9 hours 55 min | 0 |
| 01/22/17 | SER-BRO | Tree in wires | 3 hours 31 min | 0 |
| 01/22/17 | NAJ-PLM | A phase contact guy wire when winds pick up | 1 hour 47 min | 0 |
| 01/19/17 | KRS-PLM | Palm frond between phases | 41 min | 0 |
| 01/18/17 | NAJ-PLM | A phase contact guy wire when winds pick up | 1 Hour 44 min | 0 |
| 12/02/16 | RAY T1 & T2 | Dropped both transformers during restoration switching due to relay not reset | 12 minutes | 257 |
| 09/06/16 | SRS-CEN | Bird Contact | 40 Min | 0 |
| 06/30/16 | WAL-FIB | Bird nest contact | 12 hours and 4 min | 0 |
| 05/28/16 | SRS-FRV- NWN-ZEN | Balloons in line and breaker fail | 7 hours 23 min | 28 |
| 02/17/16 | SRS-FRV | Palm tree with fire | 7 hours | 0 |
| 11/18/15 | SER-BRO | Arcing wires forced | 2 hours 59 min | 0 |
| 11/16/15 | SER-BRO | Rotten Pole- forced | 22 hours 32 min | 0 |
| 11/09/15 | JUL CB32 | Possible lightning | 53 min | 0 |
| 10/29/15 | SER-BRO | Roller arcing-forced | 3 hours 33 min | 0 |
| **DATE** | **LINE (S)** | **CAUSE** | **DURATION** | **CUSTOMERS OUT OF POWER** |
| 08/12/15 | BRO-DCJ, BRO T1 | Squirrel on CB100 | 3 hours 55 min | 2155 |
| 06/24/15 | CCA CB22 | Bad JMUX card | 3 hours 23 min | 0 |
| 05/30/15 | SER-BRO | No cause found | 3 hours 12 min | 0 |

| | | | | |
|---|---|---|---|---|
| 03/31/15 | BRO-DCJ 12KV BUS 1& 2 | Squirrel across 12kv bus tie | 3 hours 26 min | 2927 |
| 01/28/15 | Mission CB12 | Shorted control cable | 6 hours 29 min | 0 |
| 04/24/14 | DCJ CB42 | Tripped during relay work. BF wired as TT | 1 Hour 30 Min | 0 |
| 10/14/13 | URA_WAL | Sheared Hydrant hit 60kV above | 2 hours 26 min | 0 |
| 12/06/12 | Jul CB 32 | Tripped due to cabinet vibration | 2 min | 0 |

SILICON VALLEY POWER
CITY OF SANTA CLARA

September 24, 2020

Vantage Data Centers
Sam Huckaby, Vice President – Construction
2820 Northwestern Parkway
Santa Clara, CA 95051

Subject: New Data Center at 2590 Walsh

Dear Mr. Huckaby,

The City of Santa Clara's Electric Department, Silicon Valley Power, is the electric utility for the City of Santa Clara. Electric service to the subject project will be provided in accordance with the Rules and Regulations for the utility as approved by the Santa Clara City Council. Silicon Valley Power has reviewed the power needs and commitments at all Vantage sites within the City per the property list below:

- 2820 Northwestern
- 2897 Northwestern
- 737 Mathew
- 2590 Walsh (new proposed project not yet approved – request for 90 MVA)

Based on Vantage's existing and future power needs, Silicon Valley Power should be able to provide the following total power combined for all the sites:

- Up to 126.5 MVA from the current date to the end of Second Quarter of 2022
- Up to 192.5 MVA at Third Quarter of 2022 upon completion of the South Loop Project.
    - If there are delays on the South Loop Project, it will affect the timeline to increase from 126.5 to 192.5.
    - 737 Mathew is limited to 33 MW until the South Loop Project is completed.
- Silicon Valley Power is starting the process for additional transmission capacity to the City. The conceptual timeline for completion is Fourth Quarter of 2025. Upon completion of additional transmission, Vantage can increase from 192.5 MVA to 273 MVA.
- If Vantage has a need to exceed 192.5 MVA prior to these timeframes, the City would be interested in partnering on a battery storage project or other generation facility to serve those needs.

The specific details of this service and SVP system modifications required to provide this capacity for 2590 Walsh will be worked out in a Substation Service Agreement at a future date. The City is also in the process of reviewing and updating its load development fee, which will be applicable for any new project (or above 192.5 MVA). It is also important to note that all appropriate fees will need to be paid, and this letter does not supersede any requirements or

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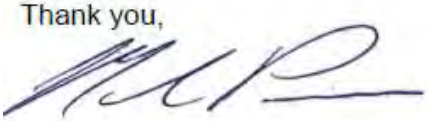
www.siliconvalleypower.com

agreements for the already approved sites at 2820 Northwestern, 2897 Northwestern, and 737 Mathew.

Questions can be directed to Wendy Stone at (408) 615-5648.

Thank you,



Manuel Pineda
Chief Electric Utility Officer
City of Santa Clara – Silicon Valley Power

cc: Michael Stoner

## B. VDC Responses to CEC Data Request Set 3 – CA3BGF on August 26, 2021

5. Please provide the System Impact Study.

### RESPONSE TO DATA REQUEST 5

The background provided is generally correct, but Vantage provides additional clarification. As described in the SPPE Application, the CA3DC will be constructed but leased to clients over time in accordance with the then present demand for data center space and services. Additionally, as with every data center project or any other project that would require electricity, Vantage's future clients cannot occupy portions of the CA3DC without Vantage's ability to provide the electricity necessary for the client's demand. This is unlike a power plant which upon reaching commercial operation would have the ability to transmit all of its electricity to the grid, the CA3DC will ramp up its electrical demand over time. That demand curve is unknown, but Vantage believes that ultimately the entire CA3DC can be successfully leased and occupied by clients.

As described by SVP at evidentiary hearing in prior proceedings, it works closely with all of its large electricity users, especially data centers, to forecast increasing electrical demand on an annual basis. If SVP simply did not have the ability to serve Vantage's predicted demand, Vantage could and would not increase its electrical demand until SVP could provide the electricity. Therefore, Staff's reliance on a System Impact Study for use in its CEQA analysis is misplaced. There can be no environmental impact associated with SVP's inability to provide electricity to meet Vantage's desired electrical demand.

Therefore, the background's assertion that "the build out of the data center would be restricted until the impacts on the SVP are understood" is only partially accurate. A better statement would be that Vantage simply could not use more electricity than SVP can provide. Therefore, as with other projects approved by the Commission, the System Impact Study is not needed for the Commission to be able to complete its analysis.

Unlike a System Impact Study for a power plant, the SVP System Impact Study will study the ability to serve the CA3DC over the long term in addition to serving other existing and new users. In other words, the System Impact Study is not solely studying the impacts to the system from the CA3DC alone.

Vantage has already included the known upgrades to the SVP system necessary for it to receive electricity at the CA3DC site. They include the new substation and switching station and the overhead wires and poles necessary to interconnect to the Uranium Substation. Any other upgrades would not be specifically attributable to the CA3 alone and therefore, would not be required for Staff's CEQA analysis.

For example, as shown in Attachment PD DR-5, SVP acknowledges that it requires outside the system upgrades to be performed by PG&E to increase electricity imports into its system. These network upgrades are not solely the result of the CA3DC, but instead are the result of all the increased electrical demand forecasted by SVP. These outside the system upgrades are part of the Transmission Planning Process. Such upgrade projects have not yet been defined but would be subject to CEQA at the time they are proposed by PG&E.

Similarly, as part of SVP's network upgrade evaluation, if it is determined that additional network upgrades would be necessary to serve future load, such network upgrades would be processed within the City of Santa Clara and compliance with CEQA would be conducted by the City at the time the network upgrade is proposed. This is how the upgrades to the SVP "loops" was performed. While new users benefit from the loop upgrades, no individual project was the sole cause for the loop upgrades.

Staff should not treat these potential future upgrades as "part of the whole of the action" with the CA3DC because they are not caused by CA3DC, are not necessary for the project to be built, and are part of the routine SVP planning processes to serve future load.

Vantage believes that the letter provided by SVP in Attachment PD DR-5 is sufficient for it to fulfill its obligations under CEQA and to determine that the CA3DC will not cause environmental impacts associated with SVP's supply of electricity.

6. Please identify any system upgrades that would be required to fully support the CA3DC.

**RESPONSE TO DATA REQUEST 6**

See Response to Data Request 5.

## C. Report of Conversation: CA3 Backup Generating Facility docketed on September 21, 2021

1. Generally, what is the System Impact Study?
   a. What is the purpose of the study?

**RESPONSE TO Question a.**

The System Impact Study evaluates the SVP transmission system for impacts based on the projected load from the specific project.

b. Does the study look at overall SVP system needs or is it specific to the Vantage Data Centers?

**RESPONSE TO Question b.**

The System Impact Study evaluates the overall SVP system and where we think issues will occur within SVP and potentially with the interconnection points we have with the CAISO controlled electric grid.

c. When will the study be completed?

**RESPONSE TO Question c.**

Anticipated completion 12/2021, but can be as late as Q2 of 2023. Depends on the CAISO TPP 2021/2022 Reliability report findings, and approved mitigation work by PG&E.

d. When completed, will the study identify specific SVP transmission/distribution system upgrades that are directly assigned to the CA3 Data Center at 2590 Walsh Ave?

**RESPONSE TO Question d.**

Yes, for SVP's system. The present CAISO TPP 2021/2022 reliability model does not account for CA3, however it does account for load growth of the Applicants two other data centers in SVP's territory that may be used to grow load at CA3 instead. The mitigations approved by the CAISO will provide a schedule when capacity may be available for CA3 to connect to the system. In addition SVP may decide to add CA3 to the new TPP 2022/2023 forecast presently being developed. The reliability model for this TPP 2022/2023 year will not be ready until August 2022. SVP expects that the TPP 2022/2023 reliability report and approved mitigation plans will provide a ramp up schedule for CA3.

2. The project owner's statement indicates that there are both SVP projects and PG&E projects that are "being developed" and until these projects are completed the CA3 Data Center will be limited in the amount of load it can connect to the SVP system.

a. What are the PG&E projects that are "being developed"?

**RESPONSE TO Question a.**

PG&E projects for CA3 have not yet been identified since this project was not included in the 2021/2022 Transmission Planning Process (TPP). If this project (CA3) is elected to be included in the SVP Load Forecast for TPP 2022/2023, and the CEC adopts SVP's load forecast. Then CA3 load will be included for the CAISO to consider in their approved TPP 2022/2023 projects.

i. Are there specific line upgrades that have been identified?

**RESPONSE TO Question i.**

It is anticipated that the TPP 2021/2022 Approved projects will provide for a significant increase in Load Service Capacity to the SVP system beyond its projected load growth. However, we will be monitoring any PG&E construction schedules provided by PG&E and provide the estimates to the customer on when capacity may be available for their load ramp.

ii. When are they expected to be completed?

**RESPONSE TO Question ii.**

Unknown

iii. Are these upgrades directly attributable to the CA3 Data Center or are they more generally being developed for SVP loads as a whole? What is the expected date of operation for any identified upgrades?

**RESPONSE TO Question iii.**

Unknown

b. What are the SVP projects that are "being developed"?

i. Are there specific line upgrades that have been identified?

**RESPONSE TO Question i.**

Yes

ii. When are they expected to be completed?

**RESPONSE TO Question ii.**

To be determined

iii. Are these upgrades directly attributable to the CA3 Data Center or are they more generally being developed for SVP loads as a whole? What is the expected date of operation for any identified upgrades?

**RESPONSE TO Question iii.**

Directly and as a whole to SVP's system. Upgrades will occur over the next 3-6 years.

3. If possible, we would appreciate a general description of what is happening on the SVP system as a whole with load growth due to data centers and other end users and how that relates to the need for upgrades on the PG&E system into SVP and upgrades within the SVP system.

**RESPONSE TO Question 3.**

Over the past several years, a number of data centers in Santa Clara have received a Small Power Plant Exemption (SPPE) from the CEC. The approved projects currently under construction in Santa Clara represents a significant increase in load. This information was presented to the CEC in the fall of 2020 for an update

to the CAISO 2021/2022 Transmission Planning Process (TPP). The CEC and CAISO evaluated SVP's data and ultimately recommended SVP's load growth be included in the Base Case for the 2021/2022 TPP process. During the CAISO Governors Board meeting in the Spring of 2021, SVP's growth was adopted the Base Case TPP plan approved by the Governor's Board.

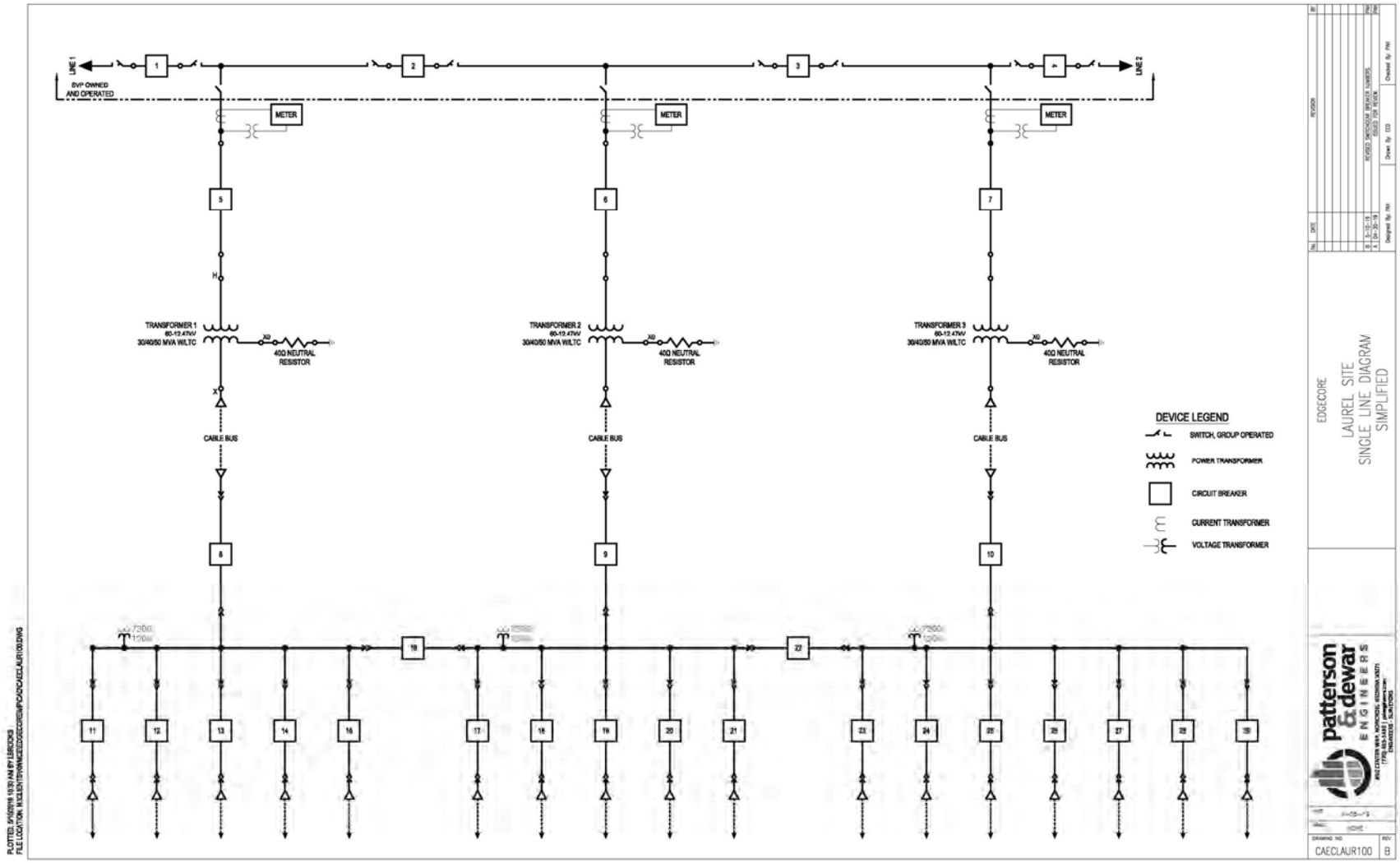
SVP's peak load has been near 600 MW. At approximately 780 MW, SVP experiences N-1 issues with SVP's ability to support a higher load. SVP's adopted load growth for the 1 in 10 scenario is an increase to 1,130 MW by 2031. PG&E is currently studying what projects are required to meet this load growth and will be providing its mitigation plans to the CAISO in September 2021. The CA3 data center is not included in this load growth. As the CA3 projects become real (once CEQA is finalized and the project earns entitlements), SVP will add it to our projections per the CEC guidance we have received. SVP will be updating the projections to the CEC on a yearly basis.

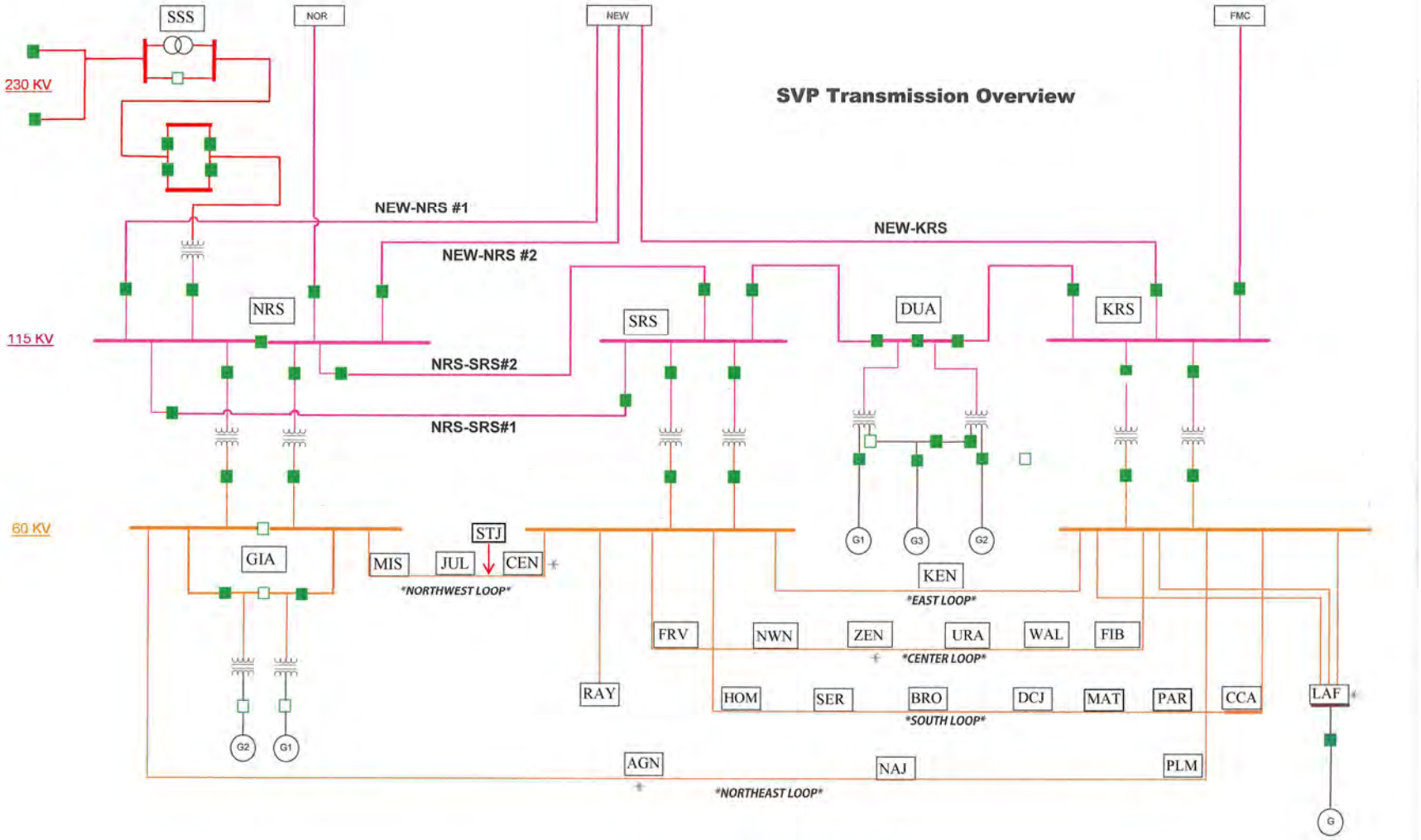
PG&E is currently studying the effects of this load growth and SVP has shared with PG&E potential projects being investigating. Identified projects will be presented Fall of 2021 and voted on by the CAISO Governors Board in the Spring of 2022. Timing of these projects is currently unknown.

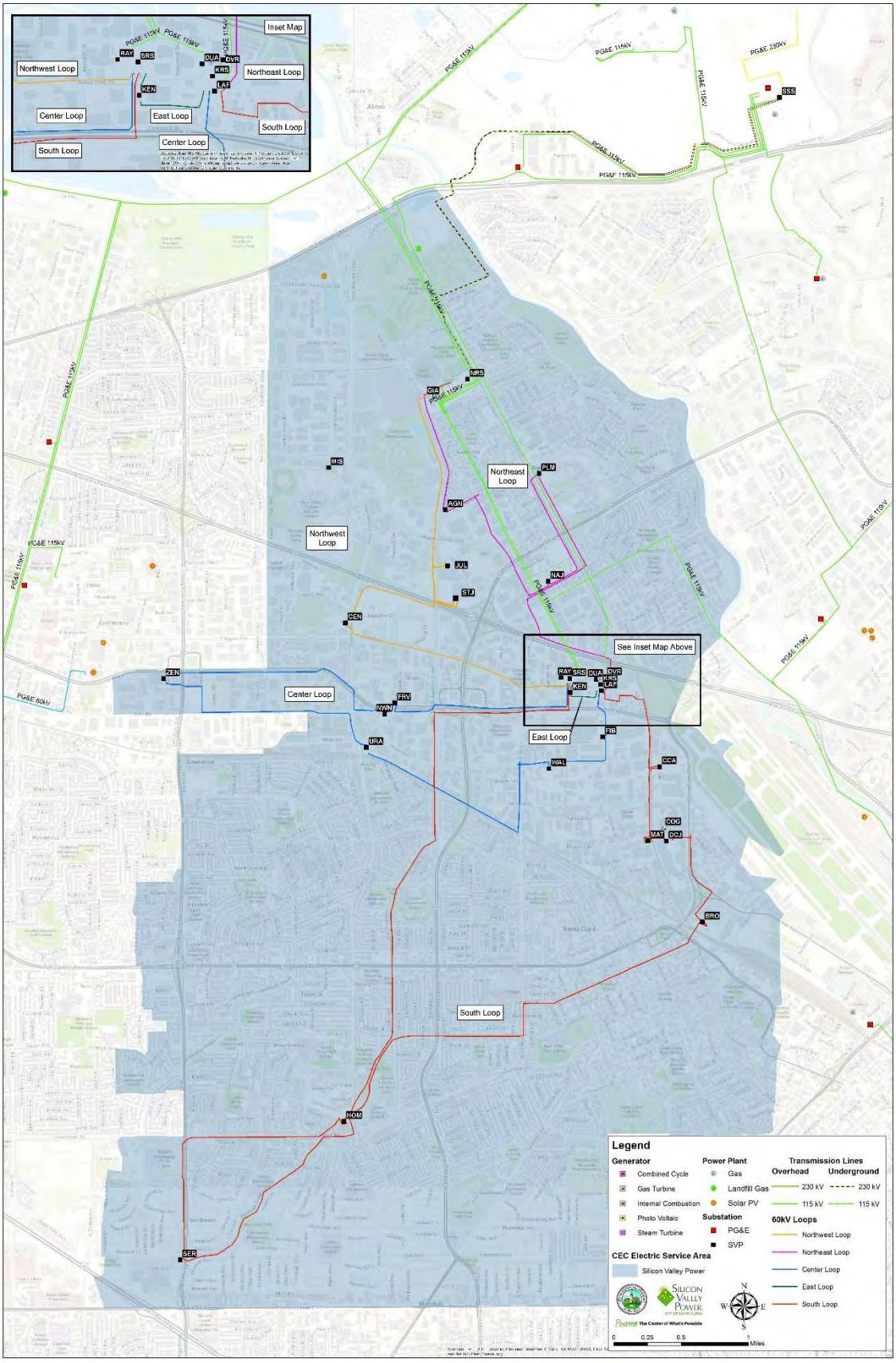
In regard to the Vantage projects, they approached SVP with utilizing unused capacity they currently have entitlements for in Santa Clara for a new data center, CA3. The letter you attached limits their ability to go above certain limits based on projects currently in progress and futures once yet to be identified. The first project is completion of the South Loop Project. This is a project that has been in developments for nearly 10 years, includes reconductoring and splitting of existing loops. This project has gone through CEQA, engineering, easement acquisition and is currently being bid. Construction should begin by the end of the year and be completed by end of 2nd quarter 2022. This will enable the McLaren data center to increase their load. The next level of projects required to go beyond the established numbers are in PG&E system. The McLaren data center, plus other approved data centers were included in the load forecast provided to the CEC and ultimately adopted by the CAISO Governors Board. These projects are currently being studied through the 2021/2022 TPP process.

SVP cannot provide an estimate when Vantage's portfolio will be able to go beyond the values included in the referenced letter. Specifically, the 192.5 MW value. There are options for additional storage facilities to accommodate above the 192.5 MW values. The SVP system limitations are during peak temperature days for up to 4 hours per day which may occur 20 to 30 times annually. Vantage has not approached SVP related the storage options.

**D. Schematic diagram of the SVP 230 kV, 115 kV and 60 kV transmission system, and SVP System Map**


LINE 1
LINE 2
SVP OWNED AND OPERATED
METER
METER
METER
TRANSFORMER 1
60-12.47kV
30/40/50 MVA W/LTC
TRANSFORMER 2
60-12.47kV
30/40/50 MVA W/LTC
TRANSFORMER 3
60-12.47kV
30/40/50 MVA W/LTC
40Ω NEUTRAL RESISTOR
40Ω NEUTRAL RESISTOR
40Ω NEUTRAL RESISTOR
CABLE BUS
CABLE BUS
CABLE BUS
DEVICE LEGEND
SWITCH, GROUP OPERATED
POWER TRANSFORMER
CIRCUIT BREAKER
CURRENT TRANSFORMER
VOLTAGE TRANSFORMER
EDGECORE
LAUREL SITE
SINGLE LINE DIAGRAM
SIMPLIFIED
patterson & dewar ENGINEERS
CAECLAUR100
B


SVP Transmission Overview
230 KV
115 KV
60 KV
SSS
NOR
NEW
FMC
NEW-NRS #1
NEW-NRS #2
NEW-KRS
NRS
SRS
DUA
KRS
NRS-SRS#2
NRS-SRS#1
GIA
MIS
JUL
STJ
CEN
*NORTHWEST LOOP*
KEN
*EAST LOOP*
FRV
NWN
ZEN
URA
WAL
FIB
*CENTER LOOP*
RAY
HOM
SER
BRO
DCJ
MAT
PAR
CCA
LAF
*SOUTH LOOP*
AGN
NAJ
PLM
*NORTHEAST LOOP*
G1
G3
G2
G2
G1
G


Inset Map
Northwest Loop
Northeast Loop
Center Loop
East Loop
South Loop
Center Loop
South Loop
PG&E 115kV
PG&E 230kV
PG&E 60kV
PC&E 115kV
SSS
NRS
GIA
MIS
PLM
AGN
JUL
STJ
CEN
NAJ
ZEN
FRV
NWN
URA
RAY
SRS
DUA
DVR
KRS
LAF
KEN
See Inset Map Above
RIB
NAL
CCA
COC
MAT
DCJ
BRO
HOM
SER
Legend
Generator
Combined Cycle
Gas Turbine
Internal Combustion
Photo Voltaic
Steam Turbine
Power Plant
Gas
Landfill Gas
Solar PV
Substation
PG&E
SVP
Transmission Lines
Overhead
Underground
230 kV
115 kV
60kV Loops
Northwest Loop
Northeast Loop
Center Loop
East Loop
South Loop
CEC Electric Service Area
Silicon Valley Power
Silicon Valley Power
N
W
E
S
0
0.25
0.5
1
Miles

## E. A list of the customers connected to each of the five 60 kV loops in the SVP system.

### SVP Loop Customers and Loading Peak - Substation:

| Substation | Loop | Customer/Industry | Substation | Loop | Customer/Industry |
|---|---|---|---|---|---|
| Fairview | Center | Mfg1 | Central | Northwest | Medical2 |
| Fairview | Center | Datacenter1 | Central | Northwest | Real Estate2 |
| Fairview | Center | Datacenter2 | Central | Northwest | Real Estate3 |
| Fairview | Center | Datacenter3 | Central | Northwest | Real Estate4 |
| Fairview | Center | Datacenter4 | Central | Northwest | Datacenter24 |
| FIB | Center | Mfg2 | Central | Northwest | Datacenter25 |
| Lafayette | Center | Mfg3 | Central | Northwest | R&D2 |
| Lafayette | Center | Datacenter5 | Central | Northwest | Real Estate5 |
| Lafayette | Center | Mfg4 | Central | Northwest | Real Estate6 |
| Lafayette | Center | Mfg5 | Central | Northwest | Healthcare equipment |
| Lafayette | Center | Datacenter6 | Central | Northwest | Education13 |
| Lafayette | Center | Mfg6 | Central | Northwest | Semiconductor/R&D |
| NWN | Center | Datacenter7 | JUL | Northwest | Datacenter26 |
| Uranium | Center | Datacenter8 | Mission | Northwest | Property Management7 |
| Uranium | Center | R&D1 | Mission | Northwest | Computer |
| Uranium | Center | Property | Mission | Northwest | Real Estate7 |
| Uranium | Center | Datacenter9 | Mission | Northwest | Datacenter27 |
| Uranium | Center | Datacenter10 | Mission | Northwest | Software1 |
| Uranium | Center | Datacenter11 | Mission | Northwest | Computer |
| Uranium | Center | Property | Mission | Northwest | Cyber Security 2 |
| Uranium | Center | Education1 | Mission | Northwest | Conventions 2 |
| Uranium | Center | Education2 | Mission | Northwest | Hotel3 |
| Uranium | Center | Education3 | Mission | Northwest | Medical3 |
| Uranium | Center | Education4 | Mission | Northwest | Cyber Security 3 |
| Uranium | Center | Semiconductor/ Telecommunications | Mission | Northwest | Education14 |
| Uranium | Center | Gaming/AI/ Semiconductors1 | Mission | Northwest | Datacenter28 |
| Uranium | Center | R&D/Mfg | Mission | Northwest | R&D3 |
| Uranium | Center | Mfg7 | Mission | Northwest | Semiconductor6 |
| Walsh | Center | Semiconductor1 | Mission | Northwest | Storage1 |
| Walsh | Center | Gaming/AI/ Semiconductors2 | Mission | Northwest | Entertainment3 |
| Walsh | Center | Mfg8 | Mission | Northwest | Property Management8 |
| Walsh | Center | Gaming/AI/ Semiconductors3 | Mission | Northwest | Medical4 |
| Walsh | Center | Datacenter12 | Mission | Northwest | Telecommunications2 |
| Walsh | Center | Education5 | Mission | Northwest | NFL5 |
| Walsh | Center | Government1 | Raymond | Northwest | Datacenter29 |
| Walsh | Center | Government2 | Raymond | Northwest | Datacenter30 |
| Walsh | Center | Semiconductor2 | Raymond | Northwest | Datacenter31 |
| Walsh | Center | Semiconductor/R&D/M | Raymond | Northwest | Datacenter32 |
| Walsh | Center | Mfg9 | Raymond | Northwest | Telecommunications3 |
| Walsh | Center | Telecommunications1 | Raymond | Northwest | Datacenter33 |
| Walsh | Center | Datacenter13 | Raymond | Northwest | Gaming/AI/Semiconduct |
| Walsh | Center | Education6 | Raymond | Northwest | Datacenter34 |
| Walsh | Center | Datacenter14 | Brokaw | South | Government3 |
| Zeno | Center | Education7 | Brokaw | South | Education15 |

| Substation | Loop | Customer/Industry | Substation | Loop | Customer/Industry |
|---|---|---|---|---|---|
| Zeno | Center | Education8 | Brokaw | South | Education16 |
| Zeno | Center | Semiconductor3 | Brokaw | South | Education17 |

| Substation | Loop | Customer/Industry | Substation | Loop | Customer/Industry |
|---|---|---|---|---|---|
| Zeno | Center | Datacenter15 | Brokaw | South | Real Estate8 |
| Zeno | Center | Bio Tech 1 | Brokaw | South | Design1 |
| Zeno | Center | Semiconductor/ Telecommunications | Brokaw | South | Security 2 |
| Zeno | Center | Semiconductor/R&D/M | Brokaw | South | Education18 |
| Agnew | Northeast | Security1 | Brokaw | South | Education19 |
| Agnew | Northeast | Property | CCA | South | Mfg12 |
| Agnew | Northeast | Property | DCJ | South | Datacenter35 |
| Agnew | Northeast | Entertainment1 | Homestead | South | Education20 |
| Agnew | Northeast | NFL1 | Homestead | South | Education21 |
| Agnew | Northeast | Property | Homestead | South | Education22 |
| Agnew | Northeast | Entertainment2 | Homestead | South | Education23 |
| Agnew | Northeast | Hotel1 | Homestead | South | Education24 |
| Agnew | Northeast | Datacenter18 | Homestead | South | Education25 |
| Agnew | Northeast | Medical1 | Homestead | South | Education26 |
| Agnew | Northeast | Mfg10 | Homestead | South | Healthcare1 |
| Agnew | Northeast | Datacenter19 | Homestead | South | Telecommunications4 |
| Agnew | Northeast | Datacenter20 | Homestead | South | Education27 |
| Agnew | Northeast | Datacenter21 | Homestead | South | Education28 |
| Agnew | Northeast | Datacenter22 | MAT | South | Datacenter36 |
| Agnew | Northeast | Cyber Security 1 | PRK | South | Datacenter37 |
| Agnew | Northeast | Hotel2 | Serra | South | Medical device |
| Agnew | Northeast | Property | Serra | South | Education29 |
| NAJ | Northeast | Mfg11 | Serra | South | Education30 |
| Palm | Northeast | Datacenter/software/ cloud computing | Serra | South | Healthcare2 |
| Palm | Northeast | NFL2 | Serra | South | Healthcare3 |
| Palm | Northeast | NFL3 | Serra | South | Healthcare4 |
| Palm | Northeast | NFL4 | Serra | South | Healthcare5 |
| Palm | Northeast | Education9 | Kenneth | East | Datacenter16 |
| Palm | Northeast | Education10 | Kenneth | East | Datacenter17 |
| Palm | Northeast | Conventions 1 | Kenneth | East | Gaming/AI/Semiconductors4 |
| Palm | Northeast | Education11 | | | |
| Palm | Northeast | Semiconductor4 | | | |
| Palm | Northeast | Datacenter23 | | | |
| Palm | Northeast | Education12 | | | |
| Palm | Northeast | Real Estate1 | | | |
| Palm | Northeast | Network hardware1 | | | |
| Palm | Northeast | Semiconductor5 | | | |
| Palm | Northeast | Computer hardware/software 1 | | | |

## SVP Loop Customers and Loading Peak - Loop:

| Center 141MW | East Loop 15MW | Northeast Loop 28MW | Northwest Loop 112MW | South Loop 65MW |
|---|---|---|---|---|
| Mfg1 | Datacenter16 | Security1 | Medical2 | Government3 |
| Datacenter1 | Datacenter17 | Property Management3 | Real Estate2 | Education15 |
| Datacenter2 | Gaming/AI/Semiconduct | Property Management4 | Real Estate3 | Education16 |
| Datacenter3 | | Entertainment1 | Real Estate4 | Education17 |
| Datacenter4 | | NFL1 | Datacenter24 | Real Estate8 |
| Mfg2 | | Property Management5 | Datacenter25 | Design1 |
| Mfg3 | | Entertainment2 | R&D2 | Security 2 |
| Datacenter5 | | Hotel1 | Real Estate5 | Education18 |
| Mfg4 | | Datacenter18 | Real Estate6 | Education19 |
| Mfg5 | | Medical1 | Healthcare equipment | Mfg12 |
| Datacenter6 | | Mfg10 | Education13 | Datacenter35 |
| Mfg6 | | Datacenter19 | Semiconductor/R&D | Education20 |
| Datacenter7 | | Datacenter20 | Datacenter26 | Education21 |
| Datacenter8 | | Datacenter21 | Property Management7 | Education22 |
| R&D1 | | Datacenter22 | Computer | Education23 |
| Property Management1 | | Cyber Security 1 | Real Estate7 | Education24 |
| Datacenter9 | | Hotel2 | Datacenter27 | Education25 |
| Datacenter10 | | Property Management6 | Software1 | Education26 |
| Datacenter11 | | Mfg11 | Computer | Healthcare1 |
| Property Management2 | | Datacenter/software/cloud | Cyber Security 2 | Telecommunicatio |
| Education1 | | NFL2 | Conventions 2 | Education27 |
| Education2 | | NFL3 | Hotel3 | Education28 |
| Education3 | | NFL4 | Medical3 | Datacenter36 |
| Education4 | | Education9 | Cyber Security 3 | Datacenter37 |
| Semiconductor/Telecommunic | | Education10 | Education14 | Medical device |
| Gaming/AI/Semiconductors1 | | Conventions 1 | Datacenter28 | Education29 |
| R&D/Mfg | | Education11 | R&D3 | Education30 |
| Mfg7 | | Semiconductor4 | Semiconductor6 | Healthcare2 |
| Semiconductor1 | | Datacenter23 | Storage1 | Healthcare3 |
| Gaming/AI/Semiconductors2 | | Education12 | Entertainment3 | Healthcare4 |
| Mfg8 | | Real Estate1 | Property Management8 | Healthcare5 |
| Gaming/AI/Semiconductors3 | | Network hardware1 | Medical4 | |
| Datacenter12 | | Semiconductor5 | Telecommunications2 | |
| Education5 | | Computer hardware/software 1 | NFL5 | |

| Center 141MW | East Loop 15MW | Northeast Loop 28MW | Northwest Loop 112MW | South Loop 65MW |
|---|---|---|---|---|
| Government1 | | | Datacenter29 | |
| Government2 | | | Datacenter30 | |
| Semiconductor2 | | | Datacenter31 | |
| Semiconductor/R&D/Mfg | | | Datacenter32 | |
| Mfg9 | | | Telecommunications3 | |
| Telecommunications1 | | | Datacenter33 | |
| Datacenter13 | | | Gaming/AI/Semiconductor | |
| Education6 | | | Datacenter34 | |
| Datacenter14 | | | | |
| Education7 | | | | |
| Education8 | | | | |
| Semiconductor3 | | | | |
| Datacenter15 | | | | |
| Bio Tech 1 | | | | |
| Semiconductor/Telecommunic | | | | |
| Semiconductor/R&D/Mfg | | | | |

## References


BAAQMD 2021b – Bay Area Air Quality Management District Comments (BAAQMD). (TN 239805). Letter for CA3 Data Center NOP, dated September 21, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

CAISO 2021 – California Independent System Operator (CAISO). Final Root Cause Analysis Mid-August 2020 Extreme Heat Wave, dated January 13, 2021. Accessed November 2021. Available online at: http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf

CEC 2020a – California Energy Commission (CEC). Walsh Data Center Initial Study and Proposed Mitigated Negative Declaration (TN 232078), February 2020. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-SPPE-02

CEC 2020b – California Energy Commission (CEC). Mission College Data Center Initial Study and Proposed Mitigated Negative Declaration (TN 232798), April 2020. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-SPPE-05

CEC 2021 – California Energy Commission (CEC). Record of Conversation with J. Zielkiewicz, BAAQMD Staff Regarding Emergency Operations: Great Oaks South Backup Generating Facility (TN 237631), May 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=20-SPPE-01

CPUC 2021a – California Public Utilities Commission (CPUC). Decision Directing Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company To Take Actions To Prepare For Potential Extreme Weather In The Summers Of 2021 and 2022. Decision 21-03-056 March 25, 2021. Available online at: https://docs.cpuc.ca.gov/publisheddocs/published/g000/m373/k745/373745051.pdf

CPUC 2021b – California Public Utilities Commission (CPUC). Phase 2 Decision Directing Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company To Take Actions To Prepare For Potential Extreme Weather In The Summers Of 2022 and 2023. Decision 21-12-015, December 2, 2021. Available online at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M428/K821/428821475.PDF

DayZenLLC 2021l – DayZenLLC (DayZenLLC). (TN 238416). VDC Supplemental Responses to Data Requests 15-20 CA3BGF, dated June 22, 2021. Available online

at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

SVP 2018a – Silicon Valley Power (SVP). Final 2018 Integrated Resource Plan for Silicon Valley Power. Adopted by the Santa Clara City Council, November 27, 2018. Available online at: http://www.siliconvalleypower.com/svp-and-community/about-svp/integrated-resource-plan.

# Appendix C:

Renewable Diesel and Natural Gas
Supplemental Information

# Appendix C: Renewable Diesel and Natural Gas Supplemental Information

# Renewable Diesel

## Introduction

Staff has researched the difference in cost, the production, supply, and emissions of renewable diesel in place of conventional, petroleum diesel for the emergency backup generators proposed for this project. Renewable diesel fuel supply is increasing year-by-year and limited emissions data indicate that greenhouse gas (GHG) emissions would be reduced if the ultra-low sulfur diesel (ULSD) fuel proposed for this facility is replaced with renewable diesel.

On July 31, 2013, the State Air Resources Board (CARB) and the State Water Resources Control Board issued a joint statement declaring that renewable diesel is fully equivalent to conventional low-sulfur diesel for sale in California.[1] Renewable diesel and CARB diesel (called ULSD below) both meet the same definition of "hydrocarbon oil" and American Society of Testing and Materials (ASTM) specification ASTM D975-12a. The joint statement states that renewable diesel is considered by these agencies to be a "drop in" fuel and fully equivalent to one another. A table attached to this joint statement shows that renewable diesel has much lower sulfur content than CARB diesel, a higher cetane number (for improved auto-ignition), and a much lower total aromatic content.

## Cost Difference Between Renewable Diesel and ULSD

As explained more fully below, renewable diesel is manufactured at industrial facilities, such as refineries, using high pressures and temperatures to convert feedstocks to the final product. Currently, the most likely source of renewable diesel that could substitute for ULSD is the Neste facility located in Singapore.

There is very little data available comparing the unsubsidized cost of renewable diesel to ULSD. A representative of Western States Oil Company[2], which is a distributor of Neste renewable diesel, indicated that federal and state subsidies that are only available for transportation uses "pretty much covers the differential cost," which he estimated to be around $2.50 to $3.00 per gallon. In addition, transportation fuels are subject to approximately $0.66 per gallon in road taxes, and for a stationary source to avoid these taxes, the fuel supplier must dye the fuel red to distinguish it as a non-taxed use. Staff at the US Environmental Protection Agency (U.S. EPA) confirmed that federal tax credits are only available for transportation fuel uses at this time and that it would take an act

1 Letter from Air Resources Board, signed by Ricard Corey, Executive Officer of CARB and Tom Howard, Executive Director of SWRCB, dated July 31, 2013. Link:
https://ww2.arb.ca.gov/resources/documents/renewable-diesel-joint-statement

2 Email exchanges of information occurred by phone and email on June 22 and June 24, 2020, between Gerry Bemis of CEC staff and Bob Brown of Western State Oil (TN 233855).

of congress to extend them to stationary source use.[3] In addition, CARB staff confirmed that credits issued under the state's Low Carbon Fuel Standard (LCFS) regulation (California Code of Regulations, Title 17, sec. 95480 et. seq) are only available for transportation uses.[4]

CARB initially approved the LCFS regulation in 2009 with the operative date beginning on January 1, 2011. CARB approved some amendments to the LCFS in December 2011, which became operative on January 1, 2013. In September 2015, CARB approved the re-adoption of the LCFS, which became operative on January 1, 2016, to address procedural deficiencies in the way the original regulation was adopted.

Due to the complexity of the LCFS program, CARB staff have indicated that it was more likely CARB would establish a parallel program for stationary uses rather than to expand the existing LCFS Program.

The applicant estimated the worst-case annual amount of petroleum diesel fuel needed for readiness testing and maintenance activities to be approximately 421,740 gallons per year of ULSD, assuming each generator is tested at full load for a maximum of 50 hours per year[5]. However, the applicant is proposing an annual limit of 35 hours of readiness testing and maintenance per year per generator. Therefore, the annual amount of petroleum diesel fuel needed would be prorated to 295,218 gallons. If the cost of renewable diesel is $3.00 per gallon more than ULSD, this equates to an annual increase in fuel cost of about $886,000 per year.[6] For comparison purposes, the cost of providing electricity to the CA3 data center (project) is estimated to be about $87 million dollars per year.[7]

## Production of Renewable Diesel

Almost all renewable diesel fuel currently used in California is produced in Singapore by Neste, using a patented vegetable oil refining process[8]. Chemically, the production

3 Information exchanges occurred by email between Gerry Bemis of CEC staff and Paul Michiele, Fuel Center Director, Office of Transportation and Air Quality, US EPA. These emails were dated July 6 and 7, 2020 (TN 234353 in the Great Oaks South Data Center proceeding).
4 Information exchange occurred by email between Gerry Bemis of CEC staff and Rachel Connors of ARB staff on July 17, 2020 (TN 235915 in the Great Oaks South Data Center proceeding).
5 VDC CA3BGF SPPE Application Part II (TN 237423), dated April 12, 2021. Available online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=237423&DocumentContentId=70609
6 Computed from 295,218 gallons/yr. x $3.00/gallon = ~$886,000/yr.
7 Computed assuming a maximum data center occupancy and cooling load equal to 96 MW and 8,760 hours per year, or 840,960,000 kWh/yr. x $0.173 per kWh (PG&E's E-20P rate) x 0.60 (assumed occupancy rate) = ~$87 million per year. This is likely an overstatement of annual electricity procurement costs because the cooling portion of the electricity demand is based on the hottest day of the year.
8 Vegetable oil refining is a process to transform vegetable oil into biofuel by hydrocracking or hydrogenation. Hydrocracking breaks big molecules into smaller ones using hydrogen while hydrogenation adds hydrogen to molecules. Diesel fuel produced from these sources is known as *green diesel* or *renewable diesel*.

process entails direct catalytic hydrodeoxygenation [9] of plant oils, which are triglycerides[10], into the corresponding alkanes[11] and propane[12]. The glycerol chain of the triglyceride is hydrogenated to propane.

Thus, renewable diesel is made in an industrial facility that can accommodate the high temperatures and pressures needed to manufacture it.

## Adequacy of Renewable Diesel Supply

Currently, renewable diesel is used mostly in mobile source applications in California. This use is supported by both the federal and state credits discussed above that are only available to transportation uses of renewable diesel. As explained above, these credits currently are high enough to cover the increased price of renewable diesel over ULSD for those uses that qualify for these credits.

Renewable diesel produced by Neste and ULSD are both available from a terminal located near the proposed project. The distributor is Western States Oil Company, located at 1790 South 10th Street, San Jose. A representative of this company indicated that they could easily supply one million gallons of renewable diesel per year. It is located approximately 7.5 miles southeast of the project's proposed location, and the drive time is typically less than 20 minutes.

CARB began reporting the consumption of renewable diesel in 2011. Annual sales volumes have grown from approximately 1.8 million gallons sold in 2011 to 618 million gallons sold in 2019. The annual consumption of ULSD for the project for readiness testing and maintenance is estimated to be about 295,218 gallons. If this were replaced with renewable diesel, this level of demand would be about 0.05 percent of renewable diesel consumption in 2019. Thus, if the project used renewable diesel in place of ULSD, there would be little change in the annual consumption of renewable diesel in California and the current supply should be adequate. See **Figure D-1** for annual sales of renewable diesel in California from 2011 to 2019.

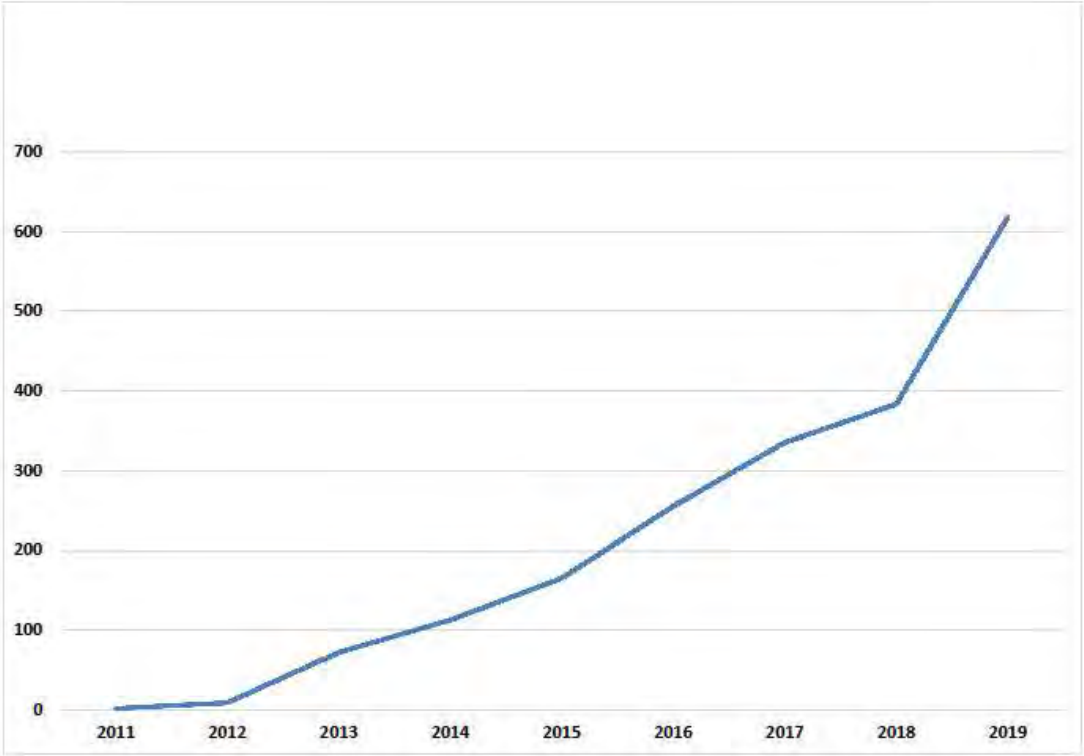
9 Hydrodeoxygenation (HDO) is a hydrogenolysis process for removing oxygen from oxygen containing compounds.

10 A triglyceride is an ester derived from glycerol and three fatty acids. Triglycerides are the main constituents of body fat in humans and other vertebrates, as well as vegetable fat.

11 An alkane consists of hydrogen and carbon atoms arranged in a structure in which all the carbon-carbon bonds are single.

12 Propane is a three-carbon alkane with the molecular formula C3H8. It is a by-product of natural gas process and petroleum refining and is commonly used as a fuel.

**FIGURE D-1 CALIFORNIA'S ANNUAL SALES OF RENEWABLE DIESEL (MILLIONS OF GALLONS)**




## Renewable Diesel Emissions Compared to ULSD

Previous limited test results for motor vehicle engines show renewable diesel would have lower criteria air pollutants emissions, GHG emissions (over the full fuel-cycle), and toxics substance emissions than conventional ULSD. However, the previously tested engines did not have selective catalytic reduction (SCR) or diesel particulate filter (DPF) exhaust aftertreatment systems. CARB's most recent testing on new technology diesel engines (NTDE) with SCR and DPF shows no statistically significant differences in oxides of nitrogen (NOx), particulate matter (PM), and total hydrocarbon emissions, but lower carbon monoxide (CO) and carbon dioxide ($CO_{2)}$ emissions using renewable diesel compared to CARB reference fuel. This should be confirmed with testing under controlled conditions in the size of engine proposed for this facility and using the same source test protocol used for engine certification.

### *Criteria Air Pollutant, Carbon Dioxide, and Fuel Use Test Results*

CARB has conducted testing to evaluate emissions from the use of renewable diesel/biodiesel in one on-road and one off-road NTDE with SCR and DPF exhaust after treatment systems, and one off-road non-NTDE (legacy engine) without DPF and SCR.[13]

[13] Low Emission Diesel (LED) Study: Biodiesel and Renewable Diesel Emissions in Legacy and New Technology Diesel Engines, Final Report – November 2021. Available Online at: https://ww2.arb.ca.gov/resources/documents/low-emission-diesel-led-study-biodiesel-and-renewable-diesel-emissions-legacy. Accessed December 2021.

The emissions and performance effects of three renewable diesel/biodiesel blends – 100 percent renewable diesel (R100), 65 percent renewable diesel/35 percent biodiesel (R65/B35), and 50 percent renewable diesel/50 percent biodiesel (R50/B50) – were tested in each engine against a petroleum-based CARB reference fuel (CARB reference fuel).

**Table D-1** summarizes the test results comparing R100 and CARB reference fuel from CARB's report.

For the off-road legacy engine (115 horsepower [hp] 2009 John Deere 4045HF285, without DPF and SCR), test results are consistent with previous observations. R100 showed statistically significant NOx reduction of 5.4 percent using the Non-Road Transient Cycle (NRTC) for testing and 4.9 percent using the five-mode D2 ISO 8718 steady state cycle (D2 cycle) for testing compared to CARB reference diesel. Emissions of PM decrease by 38 percent using the NRTC and 27 percent using the D2 cycle. Total Hydrocarbon (THC) emissions showed significant decreases (45 percent using the NRTC and 35 percent using the D2 cycle) using R100 compared to CARB reference diesel. Emissions of CO showed statistically significant decreases (22 percent using the NRTC and 14 percent using the D2 cycle) using R100 compared to CARB reference diesel. Emissions of $CO_2$ showed statistically significant reductions (4.1 percent using the NRTC and 4.6 percent using the D2 cycle) using R100 compared to CARB reference diesel. Brake Specific Fuel Consumption (BSFC), measured in gallons/bhp-hr, showed statistically significant increases of 3.5 percent for R100 using the NRTC. For the D2 cycle, there was no statistically significant change in BSFC for R100. Total particle number ([TPN] greater than 3 nm in diameter) and solid particle number ([SPN] greater than 23 nm in diameter) emissions show reductions for R100, except for the TPN tested in the D2 cycle that also showed a relatively large measurement variability.

For the on-road NTDE (450 hp 2019 Cummins C-15, with DPF and SCR), no statistically significant NOx emissions differences were found between the CARB reference fuel and R100. Emissions of PM of the on-road NTDE are low and near background levels. PM emissions observed for the CARB reference fuel and R100 did not show statistically significant differences. Emissions of THC were near or below background values. With the Federal Test Procedure (FTP), R100 showed no statistically significant difference in THC emissions relative to the CARB reference fuel. With the steady state Ramped Modal Cycles (RMC), THC emissions levels were below the background levels for all tests, and hence there were no measurable THC emissions. Emissions of CO from the FTP testing showed no statistically significant changes, but the RMC testing showed a slight reduction of 5 percent with R100. Emissions of $CO_2$ showed statistically significant decreases (3.2 percent using the FTP and 2.9 percent using the RMC) using R100 compared to CARB reference diesel. BSFC showed statistically significant increases (4.8 percent using the FTP and 5.1 percent using the RMC) using R100 compared to CARB reference diesel. Emissions of TPN show reductions (16 percent using the FTP and 14 percent using the RMC) for R100. Emissions of SPN also show reductions (22 percent using the FTP and 19 percent using the RMC) for R100.

| TABLE D-1 COMPARISON OF TEST RESULTS FOR R100 AND CARB REFERENCE FUEL | | | |
|---|---|---|---|
| | Percent Difference Comparing R100 and CARB Reference Fuel | | |
| | **Off-Road Legacy Engine** | **On-Road New Technology Diesel Engine (NTDE)** | **Off-Road NTDE** |
| **NOx** | -5.4 (NRTC), -4.9 (D2 cycle) | No Statistically Significant Difference | No Statistically Significant Difference |
| **PM** | -38 (NRTC), -27 (D2 cycle) | No Statistically Significant Difference | No Statistically Significant Difference |
| **Total Hydrocarbon (THC)** | -45 (NRTC), -35 (D2 cycle) | No Statistically Significant Difference | No Statistically Significant Difference |
| **CO** | -22 (NRTC), -14 (D2 cycle) | No Statistically Significant Difference (FTP), -5 (RMC) | -44 (NRTC), Below Background Levels (C1 cycle) |
| **$CO_2$** | -4.1 (NRTC), -4.6 (D2 cycle) | -3.2 (FTP), -2.9 (RMC) | -3.8 (NRTC), -3.0 (C1 cycle) |
| **Brake Specific Fuel Consumption (BSFC)** | +3.5 (NRTC), No Statistically Significant Difference (D2 cycle) | +4.8 (FTP), +5.1 (RMC) | +4.1 (NRTC), +5.0 (C1 cycle) |
| **Total Particle Number (TPN) Emissions** | -16 (NRTC), No Statistically Significant Difference (D2 cycle) | -16 (FTP), -14 (RMC) | Not Tested |
| **Solid Particle Number (SPN) Emissions** | -19 (NRTC), -21 (D2 cycle) | -22 (FTP), -19 (RMC) | Not Tested |

Source: See footnote 13.

For the off-road NTDE (225 hp 2018 Caterpillar C7.1 ACERT, with DPF and SCR), NOx emissions showed no statistically significant differences between the CARB reference fuel and R100. Emissions of PM were more than a factor of 30 below the Tier 4 PM standard of 0.015 g/bhp-hr in that size category. No statistically significant differences in PM emissions were seen between different fuels. Emissions of THC were below the background levels for both the NRTC and eight-mode C1 ISO 8718 steady state cycle (C1) cycles and for all fuels. Therefore, there were no statistically significant differences in THC emissions relative to the CARB reference fuel. Emissions of CO from the NRTC testing for R100 were 44 percent lower than those for the CARB reference fuel. With the C1 cycle testing, CO emissions were near or below background levels for all tests. Emissions of $CO_2$ showed statistically significant reductions (3.8 percent using the NRTC and 3.0 percent using the C1 cycle) using R100 compared to CARB reference diesel. BSFC showed statistically significant increases (4.1 percent using the NRTC and 5.0 percent using the C1 cycle) using R100 compared to CARB reference diesel. Emissions of TPN and SPN were not tested for the off-road NTDE.

In summary, test results for the off-road legacy engine are consistent with previous observations, which showed that renewable diesel is expected to reduce criteria air pollutant and tailpipe $CO_2$ emissions from levels expected for ULSD. However, for the on-road NTDE and off-road NTDE engines, which were equipped with DPF and SCR, no statistically significant differences were found in the NOx, PM, and THC emissions using renewable diesel and CARB reference diesel. Emissions of CO for the on-road NTDE and off-road NTDE engines showed reduction using the renewable diesel for some testing cycles. Emissions of $CO_2$ for the on-road NTDE and off-road NTDE engines also showed reduction using the renewable diesel. Fuel consumption (shown as BSFC) is increased for the renewable diesel for all three engines tested, which is likely due to its slightly lower energy density per gallon, around 4 to 10 percent lower than ULSD. TEmissions of TPN and SPN are generally reduced using renewable diesel for the off-road legacy engine and the on-road NTDE.

The Caterpillar 3516E engines proposed by the applicant to be used at the project for the backup generators are rated at a nominal 2.75 megawatt (MW) (4,043 hp), much larger than the engines tested in the report cited above. The Caterpillar 3516E engines proposed for the project would be equipped with SCR and DPF to achieve compliance with Tier 4 emission standards. Test results for the new technology diesel engines would be more comparable to the proposed engines than the legacy engine. Ideally, tests should be performed on the proposed engine using renewable diesel compared with ULSD to have a better understanding of the amount of reduction in emissions expected using renewable diesel in place of ULSD. However, based upon testing to date, criteria air pollutant emissions should be significantly reduced when replacing ULSD with renewable diesel.

**Toxics Emissions Test Results.** Toxics emissions were tested previously on a 475 hp 2000 Caterpillar C-15 engine in the Freightliner chassis tested on a heavy-duty vehicle dynamometer.[14] The previous test data show good potential for reducing toxics substance emissions by substituting renewable diesel for ULSD. However, the results obtained for increased acetone emissions may need further study and analysis. In addition, the tested engine did not have SCR and DPF, and, therefore, it may not be comparable to the proposed engines.

Toxics emissions were not tested for CARB's most recent report. Based on the test results for total hydrocarbon emissions and PM emissions for the NTDE (shown in **Table D-1**), staff expects no statistically significant difference in toxics emissions using renewable diesel compared to ULSD.

14 CARB Assessment of the Emissions from the Use of Biodiesel as a Motor Vehicle Fuel in California—Biodiesel Characterization and NOx Mitigation Study (October 2011); Appendix G.

## Fuel-cycle Greenhouse Gas Emissions Comparison

As shown in **Table D-1** above, renewable diesel used in place of ULSD can reduce $CO_2$ tailpipe emissions approximately 3 to 4 percent. However, renewable diesel is produced with a fuel-cycle that is a far lower carbon intensity (CI) than ULSD. To have a more complete understanding of the impact of replacing ULSD with renewable diesel, it is necessary to examine the full fuel-cycle of each fuel from origin to use. This is because GHGs have a global impact rather than a local impact.

To compute full fuel-cycle GHG emissions, a model called GREET[15] is commonly used to evaluate full fuel-cycle GHG emissions for transportation. Although staff has not computed fuel-cycle emissions using GREET, we can estimate the relative change in GHG emissions using CI values from the LCFS program. Although the use of renewable diesel does not qualify for obtaining credits from LCFS as explained above, CI values obtained from that program[16] can be used to estimate the expected GHG emissions reductions associated with switching from ULSD to renewable diesel in this project. CARB staff use a version of GREET called CA-GREET to compute CI values for the LCFS program.[17]

The data shown below in **Table D-2** are CARB-estimated values for Neste reformulated diesel supplied from various feedstocks with the renewable diesel produced at the Neste refinery located in Singapore. These CI values include the feedstock and transport to California via oceangoing tanker. They apparently do not include the consumption of the fuel. Combining the CI of the fuel-cycle with the reduced tailpipe emissions from **Table D-1** provides an approximate estimate of the full fuel-cycle benefit of replacing ULSD with renewable diesel. For comparison purposes, the CI for ULSD/CARB diesel has a value of 100.45.

15 Greenhouse gases, Regulated Emissions, and Energy use in Transportation. Available from Argonne National Labs. From the Arbonne web site: Analysis of transportation systems on a life-cycle basis permits us to better understand the breadth and magnitude of impacts produced when vehicle systems are operated on different fuels or energy options like electricity or hydrogen. Such detailed analysis also provides the granularity needed to investigate policy implications, set R&D goals, and perform follow-on impact and policy assessments. US Department Energy's Office of Energy Efficiency and Renewable Energy, Systems Assessment Group in Argonne's Energy Systems Division has been developing the GREET model to provide a common, transparent platform for lifecycle analysis (LCA) of alternative combinations of vehicle and fuel technologies.Vehicle technologies include conventional internal combustion engines, hybrid electric systems, battery electric vehicles, and fuel cell electric vehicles. Fuel/energy options include petroleum fuels, natural gas-based fuels, biofuels, hydrogen, and electricity. LCAs conducted with the GREET platform permit consideration of a host of different fuel production, and vehicle material and production pathways, as well as alternative vehicle utilization assumptions. GREET includes all transportation modes – on-road vehicles, aircraft, marine vessels, and rail (to be added in a new GREET release). The Systems Assessment Group has conducted various LCAs of vehicle/fuel systems for DOE and other agencies. There are more than 20,000 registered GREET users.

16 https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities

17 https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities.

| TABLE D-2 CARBON INTENSITY VALUES COMPUTED FROM CA-GREET MODEL | | |
|---|---|---|
| **Feedstock** | **Carbon intensity (CI)** | **Percent Reduction of Renewable Diesel From ULSD (%)** |
| Asian-sourced used cooking oil | 16.89 | -83 |
| Globally averaged used cooking oil | 25.61 | -75 |
| Southeast Asian fish oil | 33.08 | -67 |
| North American tallow | 34.19 | -66 |
| New Zealand tallow | 34.81 | -65 |
| Australian tallow | 36.83 | -63 |
| Midwest corn oil | 37.39 | -63 |
| Globally averaged tallow | 39.06 | -61 |
| ULSD/CARB Diesel | 100.45 | 0 |

Thus, the 61 to 83 percent reduction in CI values from **Table D-2** should be combined with results in **Table D-1** above. However, it can be seen that using renewable diesel in place of ULSD would greatly reduce the project's full fuel-cycle GHG emissions associated with operating diesel-fueled equipment during the construction period and onsite fuel consumption during the operations period. However, renewable diesel still has some carbon associated with the fuel-cycle, as evidenced by the CI values in **Table D-2** not being zero, so additional measures would be needed before the project could be considered a carbon-free facility.

# Natural Gas Internal Combustion Engines

## Introduction

Staff has researched the difference in cost, supply, and emissions of using natural-gas-fueled internal combustion engines (ICEs) in place of conventional petroleum diesel for the emergency backup generators proposed for this project. Currently, there is limited information available on the fuel supply reliability of natural gas delivered to the site by pipeline versus the reliability of delivering liquid petroleum diesel by tanker truck to the site. However, most backup generators currently in place use diesel. A nationwide survey in 2016 revealed that 85 percent of the emergency backup generation was served by diesel, while 10 percent was served by natural gas and the remainder by propane.[18]

## Cost Difference Between Natural Gas and Petroleum Diesel Emergency Backup Generators

The reliability of a system is an important consideration when selecting an emergency backup generator. But cost is important as well. Many factors contribute to the life-cycle costs of a backup system, such as equipment, maintenance, and fuel costs.

18 National Renewable Energy Laboratory report. A Comparison of Fuel Choices for Backup Generators; https://www.nrel.gov/docs/fy19osti/72509.pdf.

Both, natural gas ICEs and diesel engines are reciprocating engines. They are available in sizes up to 18 MW. The fast start-up capability of reciprocating engines allows for the timely resumption of the system following a maintenance procedure. In peaking or emergency power applications, reciprocating engines can quickly supply electricity on demand. The annual energy cost ($/MMBtu) for natural gas fuel is lower than conventional diesel. But diesel generators generally have a lower component cost than ICEs. It is notable that improvements in ICEs and recently promulgated air quality regulations have reduced some of the cost advantages of diesel systems.[19]

The size of the engines can impact operating cost. If switching from one generating technology to another requires more engines to deliver the same total MW capacity, the repair and maintenance frequency and testing requirements could increase, which may result in an increase in associated costs.

## Space Needs

Diesel-fueled emergency backup generators are typically built on a rack over their fuel supply tank, requiring space between each generator and a staircase and service deck at the elevation of the diesel engine. Based on air quality modeling files, staff estimated the footprint of the 44 engines proposed at the project site as approximately 0.48 acres for 121 MW (peak power) or approximately 252 MW per acre.

Enchanted Rock, a vendor for natural gas ICEs, provided a drawing showing how they would arrange their engines at a typical site. The result was an approximate capacity of 78 MW per acre.

## Natural Gas ICE Emissions Compared to Petroleum Diesel

### *Criteria Air Pollutant and Carbon Dioxide Emissions Comparison*

Staff compared criteria air pollutant emissions and carbon dioxide emissions of natural gas ICEs against the proposed diesel-fired engines for the project. The proposed 44, 2.75-MW engines would be equipped with SCR and DPF to achieve compliance with Tier 4 emission standards. However, it takes time for the SCR to reach the activation temperature and become fully effective in controlling NOx emissions. Depending on load, the SCR would be expected to kick on within 15 minutes.

Information for the natural gas ICEs is primarily based on the data provided for the Small Power Plant Exemption application for the San Jose Data Center (Jacobs 2021s). The natural gas ICEs for the San Jose Data Center would be equipped with a 3-way catalyst system to reduce emissions of NOx, CO, volatile organic compounds (VOC), and air toxics. The applicant for the San Jose Data Center also assumed 15 minutes of operation with uncontrolled emissions and 45 minutes of operation with controlled emissions to estimate hourly emissions (Jacobs 2021o).

**Table D-3** compares the emission factors in pounds per megawatt-hour (lbs/MWe-hr) for the proposed diesel engines at the project and those for the natural gas ICEs proposed at the San Jose Data Center. Staff assumed the same 15-minute warm up period for the SCRs of the diesel engines and the 3-way catalyst system for the natural gas ICEs.

**TABLE D-3 CRITERIA AIR POLLUTANT EMISSIONS NATURAL GAS ICE VERSUS PETROLEUM DIESEL ICE**

| | Units | Proposed Petroleum Diesel Engine | Natural Gas ICE | Difference | Percent Difference (%) |
|---|---|---|---|---|---|
| NOx | Lbs/MWe-hr | 4.89 | 0.09 | -4.81 | -98.2 |
| PM | Lbs/MWe-hr | 0.06 | 0.01 | -0.05 | -83.1 |
| VOC | Lbs/MWe-hr | 0.19 | 0.10 | -0.09 | -45.9 |
| CO | Lbs/MWe-hr | 1.89 | 1.68 | -0.21 | -11.3 |
| $SO_2$ | Lbs/MWe-hr | 0.01 | 0.009 | -0.003 | -25.4 |
| $CO_2$ | Lbs/MWe-hr | 1,556 | 1,440 | -116 | -7.4 |

Sources: DayZenLLC 2021b, Jacobs 2021s, and Energy Commission staff analysis

### *Toxics Emissions*

Staff is not able to find data comparing toxics emissions of natural gas ICEs with those for diesel engines. However, these are expected to be reduced due to the reductions reported above for VOCs and PM.

## Fuel-cycle Greenhouse Gas Emissions Comparison

As mentioned above, to compute full fuel-cycle GHG emissions, the GREET model is commonly used to evaluate full fuel-cycle GHG emissions for transportation. Although staff has not computed fuel-cycle emissions using GREET, we can estimate the relative change in GHG emissions using carbon intensity (CI) values from the LCFS program. GREET results should be combined with stack emissions shown above to get an understanding of the relative GHG emissions associated with both natural gas ICEs and petroleum diesel ICEs.

CI values indicate that natural gas ICEs fueled with pipeline natural gas produced from fossil feedstocks have a CI about 20 percent lower than petroleum diesel, as shown in the first three rows of **Table D-4**, compared to petroleum diesel, which is shown at the bottom of the table.

Natural gas feedstocks from renewable feedstocks have a CI that is much lower, with most of the renewable feedstocks associated with a net reduction in fuel-cycle carbon emissions. In other words, these feedstock options act as a way of capturing GHG emissions that would otherwise escape. Negative values in **Table D-4** below reflect this outcome. Converting these feedstocks into a fuel would provide substantial societal benefits since the feedstock would otherwise be contributing directly to global warming.

A recent study done for the State Water Resources Control Board by Carollo Engineers[19] and published in June 2019 illustrates how food wastes can be converted to renewable natural gas and achieve significant GHG emissions reductions. Through the co-digestion of food waste diverted from landfills and processed in anaerobic digesters, municipal wastewater treatment plants have the potential produce, capture, and make beneficial use of biogas, which is a renewable source of methane.

The Carollo report stated that landfills accounted for approximately 8,560,000 metric tons of carbon dioxide equivalent (MT $CO_2e$) emissions as methane in 2016, or about 22 percent of statewide methane emissions. They estimated that by the year 2030, approximately 3.4 million short wet tons of food waste could be diverted from landfills to municipal wastewater treatment plants for co-digestion and processing into renewable natural gas for beneficial use. This would reduce methane emissions from landfills and reduce GHG emissions from this sector by up to approximately 2.4 $MMTCO_2e$.

**TABLE D-4 CARBON INTENSITY VALUES COMPUTED FROM CA-GREET MODEL**

| Feedstock | Carbon intensity (CI) | Percent Reduction of Natural Gas ICEs From Petroleum Diesel (%) |
|---|---|---|
| PG&E Gas | 80.59 | -19.7 |
| Average Pipeline Gas | 79.21 | -21.1 |
| SoCal Gas | 78.21 | -22.1 |
| Landfill Gas | -5.28 to 62.30 | -105 to -38 |
| Food Wastes | -22.93 | -122 |
| Dairy Manure | -377.83 to -192.49 | -476 to -292 |
| Renewable Natural Gas | -630.72 to -151.41 | -728 to -251 |
| ULSD/CARB Diesel | 100.45 | 0 |

While using pipeline natural gas in place of ULSD would reduce fuel-cycle GHG emissions approximately 20 percent, a 2018 report funded by the Public Utilities Commission (CPUC) evaluated issues with injecting fuels other than natural gas into natural gas pipelines. The report was titled: *Biomethane in California Common Carrier Pipelines: Assessing Heating Value and Maximum Siloxane Specifications -- An Independent Review of Scientific and Technical Information*.[20] Assembly Bill 1900 (Chapter 602, Statutes of 2012), which became operative beginning in 2013, required, among other things, that the CPUC review and upgrade as appropriate specifications for adding biogas to the state's existing natural gas pipeline system.

In 2006, the CPUC adopted Decision 06-09-039, which increased the specified minimum allowable biomethane heating value (HV) from 970 British Thermal Units per standard cubic foot of gas (BTU/scf) to 990 BTU/scf.

19 WRCB, Co-Digestion Capacity In California; Co-Digestion Capacity Analysis Prepared for the California State Water Resources Control Board under Agreement #17-014-240; https://www.waterboards.ca.gov/water_issues/programs/climate/docs/co_digestion/final_co_digestion_capacity_in_california_report_only.pdf; June 2019.

20 See: https://ccst.us/wp-content/uploads/2018biomethane.pdf

In 2014 the CPUC adopted Decision 14-01-034, which included additional gas quality specification requirements that biogas would need to meet before it could be added to natural gas pipelines, including a maximum siloxane content of 0.1 mg siloxane per cubic meter of gas (Si/$m^3$). This level was set to protect against equipment damage and catalyst poisoning.

The 2018 CPUC report recommends that CPUC conduct further work to determine the acceptability of allowing an HV as low as 970 BTU/scf, which is the value that was allowed before the 2006 CPUC decision to increase the HV to 990 BTU/scf.

The 2018 CPUC report stated that siloxanes are not expected to be present in dairy waste, agriculture waste, or forestry residues. It concluded that some sources are very unlikely to have siloxanes (e.g., dairies or agricultural waste) and that these sources could be held to a reduced and simplified verification regime.

Further work may be needed to integrate renewable natural gas into the existing natural gas pipeline system in a cost-effective manner.

Contracting to obtain rights for renewable gas would lead to greater GHG benefits. This can be accomplished simply by displacement if the issues identified above can be resolved, assuming that the location of the use of the renewable natural gas is different from the source of the renewable natural gas unless they are close enough together to use a dedicated pipeline.

As shown in **Table D-2**, *fossil* natural gas and some forms of renewable natural gas still has some carbon associated with the fuel cycle. These show up in the table for those fuels with a CI that is greater than zero. In these cases, additional measures could be needed before the project would be considered a carbon-free facility.

## References


DayZenLLC 2021b – DayZenLLC (DayZenLLC). (TN 237381). VDC CA3BGF SPPE Application Part III, dated April 5, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

Jacobs 2021o – Jacobs (Jacobs). (TN 239409). SJC Data Center SPPE Application Supplemental Filing Volume 1, dated August 20, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-SPPE-04

Jacobs 2021s – Jacobs (Jacobs). (TN 239413). SJC Data Center SPPE Application Supplemental Filing Appendix Air - Traffic, Part 1, dated August 20, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-SPPE-04

# Appendix D:

Mailing List

# Appendix D: Mailing List

The following is the mailing list for the San Jose Data Center project.

The following is a list of the State agencies that received State Clearinghouse notices and documents:

- California Air Resources Board (ARB)
- California Department of Conservation (DOC)
- California Department of Fish and Wildlife, Marin Region 7 (CDFW)
- California Department of Parks and Recreation
- California Department of Transportation, District 4 (DOT)
- California Department of Water Resources (DWR)
- California Energy Commission
- California Governor's Office of Emergency Services (OES)
- California Highway Patrol (CHP)
- California Natural Resources Agency
- California Public Utilities Commission (CPUC)
- California Regional Water Quality Control Board, San Francisco Bay Region 2 (RWQCB)
- California State Lands Commission (SLC)
- Department of Toxic Substances Control, Office of Historic Preservation
- San Francisco Bay Conservation and Development Commission (BCDC)
- State Water Resources Control Board, Division of Drinking Water
- State Water Resources Control Board, Division of Water Quality
- California Native American Heritage Commission (NAHC)
- California Department of Fish and Wildlife, Bay Delta Region 3 (CDFW)

**Table E-1** presents the list of occupants and property owners contiguous to the project site.

**Table E-2** presents the list of property owners within 1,000 feet of the project site and 500 feet of the project linears.

**Table E-3** presents the list of agencies, including responsible and trustee agencies and libraries.

**Table E-4** presents the list of interested parties including environmental justice and community-based organizations.

| TABLE E-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE | | | | |
|---|---|---|---|---|
| **Name** | **Address** | **City** | **State** | **Zip** |
| CITY OF SANTA CLARA | 1500 WARBURTON AVE. | SANTA CLARA | CA | 95050 |
| PENINSULA CORRIDOR JOINT POWERS, BOARD | 1250 SAN CARLOS AVE | SAN CARLOS | CA | 94070 |
| WALSH INVESTMENT PROPERTIES LLC | 2630 WALSH AVE | SANTA CLARA | CA | 95051 |
| JJ & W-WALSH LLC | 2490 CHARLESTON RD | MOUNTAIN VIEW | CA | 94043 |

| TABLE E-2 PROPERTY OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF LINEARS | | | | |
|---|---|---|---|---|
| **Name** | **Address** | **City** | **State** | **ZIP** |
| SANTA CLARA UNIFIED SCHOOL DISTRICT | 1889 LAWRENCE ROAD | SANTA CLARA | CA | 95051 |
| ACHK ASSOCIATES LLC | 2775 NORTHWESTERN PKWY | SANTA CLARA | CA | 95051 |
| | 465 CALIFORNIA ST | SAN FRANCISCO | CA | 94104 |
| PEAK REALTY INVESTMENT LLC | 2625 WALSH AVE | SANTA CLARA | CA | 95051 |
| KEYPOINT CREDIT UNION | 2805 BOWERS AVE | SANTA CLARA | CA | 95051 |
| IPX WALSH BOWERS INVESTORS LP | 225 W SANTA CLARA ST 12TH FL | SAN JOSE | CA | 95113 |
| SCPO LLC | 5674 SONOMA DR | PLEASANTON | CA | 94566 |
| JST COMMERCIAL PROP LLC | 2050 SEABROOK CT | REDWOOD CITY | CA | 94065 |
| LBA RV-COMPANY I LLC | PO BOX 847 | CARLSBAD | CA | 92018 |
| SPTC ESMT MURRA N, U | 1500 SANSOME ST | SAN FRANCISCO | CA | 94111 |
| MEAD VENTURES INC | 10920 PRIETA CT, | SAN JOSE | CA | 95127 |
| SILVER HORSE EQUITIES LLC | 265 SUNSET DR | WESTLAKE VILLAGE | CA | 91361 |
| PROLOGIS EXCHANGE 2800 MEAD AVENUE LLC | 1800 WAZEE ST | DENVER | CO | 80202 |
| BODO, JOSEPH; BODO, VALERIE | 2695 WALSH AVE | SANTA CLARA | CA | 95051 |
| STEPHENS & STEPHENS | 2590 WALSH AVE | SANTA CLARA | CA | 95051 |
| DIGITAL REALTY TRUST LP | 16600 WOODRUFF AVE | BELLFLOWER | CA | 90706 |
| NVIDIA CORP | 2788 SAN TOMAS EXPY | SANTA CLARA | CA | 95051 |
| CHUNYUAN PHOTONICS LLC | 2701 NORTHWESTERN PKWY | SANTA CLARA | CA | 95051 |
| CHUNYUAN PHOTONICS LLC | 2710 NORTHWESTERN DR | SANTA CLARA | CA | 95051 |
| VANTAGE DATA CENTERS 4 LLC; VANTAGE DATA CENTERS 3 LLC | 2820 NORTHWESTERN PKWY | SANTA CLARA | CA | 95051 |
| VANTAGE DATA CENTERS 3 LLC | 2880 NORTHWESTERN PKWY | SANTA CLARA | CA | 95051 |

| TABLE E-3 AGENCIES AND LIBRARIES | | | | | | | |
|---|---|---|---|---|---|---|---|
| **FIRST NAME** | **LAST NAME** | **TITLE** | **AGENCY** | **ADDRESS** | **CITY** | **STATE** | **ZIP** |
| ARIANA | HUSAIN | PERMIT ENGINEER | BAY AREA AIR QUALITY MANAGEMENT DISTRICT | 375 BEALE STREET, SUITE 600 | SAN FRANCISCO | CA | 94105 |
| DR. STACY | SHERMAN | ACTING REGIONAL MANAGER | CA. DEPT. OF FISH AND WILDLIFE, BAY DELTA REGION (REGION 3) | 2825 CORDELIA ROAD SUITE 100 | FAIRFIELD | CA | 94534 |
| GERRY | HAAS | CONSERVATION PLANNER | SANTA CLARA VALLEY HABITAT AGENCY | 535 ALKIRE AVENUE | MORGAN HILL | CA | 95037 |
| SIMON | BAKER | DIRECTOR, ENERGY DIVISION | CALIFORNIA PUBLIC UTILITIES COMMISSION | 505 VAN NESS AVENUE | SAN FRANCISCO | CA | 94102 |
| RYAN | OLAH | DIVISION CHIEF | US FISH & WILDLIFE SERVICE, SACRAMENTO FISH & WILDLIFE OFFICE, COAST BAY DIVISION | 2800 COTTAGE WAY RM W-2605 | SACRAMENTO | CA | 95825 |
| KERRI | KISKO | ENVIRONMENTAL SCIENTIST | CALIFORNIA DEPARTMENT OF CONSERVATION | 801 K STREET, MS 14-15 | SACRAMENTO | CA | 95814 |
| LAURA | MIRANDA | COMMISSIONER | NATIVE AMERICAN HERITAGE COMMISSION | 1550 HARBOR BLVD, SUITE 100 | WEST SACRAMENTO | CA | 95691 |
| SYLVIA | FUNG | SUPERVISING TRANSPORTATON ENGINEER | IGR, CALTRANS, DISTRICT 4 | P.O. BOX 23660 | OAKLAND | CA | 94623 -0660 |
| KEITH | LICHTEN | | SAN FRANCISCO BAY RWQCB, REGION 2 | 1515 CLAY SUITE 1400 | OAKLAND | CA | 94612 |
| LORI | KOCH | ACTING CHIEF BERKELEY/HQ | DEPT. OF TOXIC SUBSTANCES CONTROL | 700 HEINZ AVENUE SUITE 200 | BERKELEY | CA | 94710 -2721 |
| | | | SAN FRANCISCO BAY CONSERVATION & DEVELOPMENT COMMISSION | 375 BEALE STREET, SUITE 510 | SAN FRANCISCO | CA | 94105 |
| BINAYA | SHRESTHA | SUBJECT MATTER EXPERT, PG&E | CALIFORNIA INDEPENDENT SYSTEM OPERATOR | 250 OUTCROPPING WAY | FOLSOM | CA | 95630 |
| WADE | CROWFOOT | SECRETARY | NATURAL RESOURCES AGENCY | 1416 NINTH STREET, SUITE 1311 | SACRAMENTO | CA | 95814 |
| PHILLIP | CRADER | ASST. DEPUTY DIRECTOR | STATE WATER RESOURCES CONTROL BOARD, WATER QUALITY DIVISION | P.O. BOX 100 | SACRAMENTO | CA | 95812 -0100 |

| TABLE E-3 AGENCIES AND LIBRARIES | | | | | | | |
|---|---|---|---|---|---|---|---|
| **FIRST NAME** | **LAST NAME** | **TITLE** | **AGENCY** | **ADDRESS** | **CITY** | **STATE** | **ZIP** |
| ALYSON | AQUINO | SOIL CONVERSATIONIST | NATURAL RESOURCES CONSERVATION SERVICES | 3585 GREENVILLE ROAD SUITE 2 | LIVERMORE | CA | 94550-6707 |
| KARLA | NEMETH | DIRECTOR | DEPARTMENT OF WATER RESOURCES | P.O. BOX 942836 | SACRAMENTO | CA | 94236-0001 |
| | | | COUNTY OF SANTA CLARA, OFFICE OF THE CLERK RECORDER | 70 WEST HEDDING STREET | SAN JOSE | CA | 95110 |
| DENNIS | JANG | SUPERVISING AIR QUALITY ENGINEER | BAQMD, ENGINEERING DIVISION | 375 BEALE STREET, SUITE 600 | SAN FRANCISCO | CA | 94105 |
| PAMELA | LEONG | DIRECTOR, OFFICER | BAQMD, ENGINEERING DIVISION | 375 BEALE STREET, SUITE 600 | SAN FRANCISCO | CA | 94105 |
| REBECCA | FANCHER | | CALIFORNIA AIR RESOURCES BOARD | 1001 I ST | SACRAMENTO | CA | 95814 |
| COURTNEY | GRAHAM | MANAGER | CALIFORNIA AIR RESOURCES BOARD, ENFORCEMENT DIVISION | 1001 I ST | SACRAMENTO | CA | 95814 |
| GLORIA | SCIARA | DEVELOPMENT REVIEW OFFICER | CITY OF SANTA CLARA PLANNING DIVISION | 1500 WARBURTON AVENUE | SANTA CLARA | CA | 95050 |
| ROY | MOLSEED | SENIOR ENVIRONMENTAL PLANNER | SANTA CLARA VALLEY TRANSPORTATION AUTHORITY | 3331 NORTH FIRST STREET | SAN JOSE | CA | 95134-1927 |
| ARUNA | BODDUNA | ASSOCIATE TRANSPORTATION PLANNER | COUNTY OF SANTA CLARA ROADS AND AIRPORT DEPARTMENT | 101 SKYPORT DRIVE | SAN JOSE | CA | 95110 |
| MARK | CONNOLLY | PLANNER | SANTA CLARA COUNTY AIRPORT LAND USE COMMISSION | 70 WEST HEDDING STREET; EAST WING, 7TH FLOOR | SAN JOSE | CA | 95110 |
| GWEN | GOODMAN | KEY CUSTOMER SERVICE REPRESENTATIVE | SILICON VALLEY POWER | 1500 WARBURTON AVENUE | SANTA CLARA | CA | 95050 |
| KATHRIN | TURNER | ASSISTANT ENGINEER II | SANTA CLARA VALLEY WATER DISTRICT-- COMMUNITY PROJECTS REVIEW UNIT | 5750 ALMADEN EXPRESSWAY | SAN JOSE | CA | 95118 |

| TABLE E-3 AGENCIES AND LIBRARIES | | | | | | | |
|---|---|---|---|---|---|---|---|
| **FIRST NAME** | **LAST NAME** | **TITLE** | **AGENCY** | **ADDRESS** | **CITY** | **STATE** | **ZIP** |
| | | STAFF LIAISON | HISTORICAL AND LANDMARKS COMMISSION | 1500 WARBURTON AVENUE | SANTA CLARA | CA | 95050 |
| FREDERICK | CHUN | ASSOCIATE FIRE MARSHAL/HAZARDOUS MATERIALS MANAGER | CITY OF SANTA CLARA--FIRE PREVENTION/HAZARDOUS MATERIALS | 1675 LINCOLN STREET | SANTA CLARA | CA | 95050-4653 |
| | | | SANTA CLARA FIRE STATION #2 | 1900 WALSH AVE | SANTA CLARA | CA | 95050 |
| RUBEN | TORRES | FIRE CHIEF | SANTA CLARA FIRE DEPARTMENT, FIRE STATION NO. 1 /FIRE ADMINISTRATION | 777 BENTON STREET | SANTA CLARA | CA | 95050 |
| KEVIN | KEATING | ELECTRIC DIVISION MANAGER | SILICON VALLEY POWER (CITY OF SANTA CLARA) | 1500 WARBURTON AVENUE | SANTA CLARA | CA | 95050 |
| KATHERINE | KENNEDY | AIRPORT PLANNER | FEDERAL AVIATION ADMINISTRATION (FAA) | 1000 MARINA BOULEVARD, SUITE 220 | BRISBANE | CA | 94005 |
| DREW | NIEMEYER | ADMINISTRATIVE OFFICES, AIRPORT DEPARTMENT | NORMAN Y. MINETA SAN JOSÉ INTERNATIONAL AIRPORT | 1701 AIRPORT BOULEVARD, SUITE B-1130 | SAN JOSE | CA | 95110-1206 |
| | | ENVIRONMENTAL REVIEW, PLANNING DIVISION | DEPARTMENT OF PLANNING, BUILDING, AND CODE ENFORCEMENT | 200 E. SANTA CLARA STREET | SAN JOSE | CA | 95113 |
| CARY | GREENE | AIRPORT PLANNER | CITY OF SAN JOSE AIRPORT DEPARTMENT | 1701 AIRPORT BOULEVARD, SUITE B-1130 | SAN JOSE | CA | 95510 |
| | | | SAN FRANCISCO BAY-DELTA FISH AND WILDLIFE | 650 CAPITOL MALL, SUITE 8-300 | SACRAMENTO | CA | 95814 |
| Nicole | WAUGH | | CEC - ENERGY LIBRARY | 1516 9TH ST, MS 10 | SACRAMENTO | CA | 95814-5504 |
| | | | FRESNO COUNTY FREE LIBRARY | 2420 MARIPOSA ST | FRESNO | CA | 93721-2204 |
| | | | HUMBOLDT COUNTY MAIN LIBRARY | 1313 3RD STREET | EUREKA | CA | 95501-0553 |

| TABLE E-3 AGENCIES AND LIBRARIES | | | | | | | |
|---|---|---|---|---|---|---|---|
| **FIRST NAME** | **LAST NAME** | **TITLE** | **AGENCY** | **ADDRESS** | **CITY** | **STATE** | **ZIP** |
| | | SERIALS DIVISION | LOS ANGELES PUBLIC LIBRARY | 630 W 5TH ST | LOS ANGELES | CA | 90071-2002 |
| | | SCIENCE & INDUSTRY DIV | SAN DIEGO PUBLIC LIBRARY | 330 PARK BLVD | SAN DIEGO | CA | 92101-6478 |
| | | GOVERNMENT INFORMATION CENTER | SAN FRANCISCO PUBLIC LIBRARY | 100 LARKIN ST | SAN FRANCISCO | CA | 94102-4733 |
| | | GOV PUBS | STANLEY MOSK LIBRARY & COURTS BLDG | 914 CAPITOL MALL, 3RD Floor | SACRAMENTO | CA | 95814-5512 |
| | | Librarian | Northside Branch Library | 695 Moreland | Santa Clara | CA | 95054-5134 |

| TABLE E-4 INTERESTED PARTIES INCLUDING ENVIRONMENTAL JUSTICE AND COMMUNITY-BASED ORGANIZATIONS | | | | | | |
|---|---|---|---|---|---|---|
| **First Name** | **Last Name** | **Organization** | **Address** | **City** | **State** | **Zip** |
| Carol | Zabin | Center for Labor Research and Education (Labor Center) | 2521 Channing Way #5555 | Berkeley | CA | 94704 |
| | | Californians for Pesticide Reform (CPR) | 2029 University Ave., Suite 200 | Berkeley | CA | 94704 |
| Amy D. | Kyle | UC Berkeley, School of Public Health | 140 Warren Hall | Berkeley | CA | 94720 |
| | | Rising Sun Center For Opportunity | 111 36th Street | Oakland | CA | 94608 |
| Brooks | Andrew | Association for Energy Affordability West | 5900 Hollis Street, Suite R2 | Emeryville | CA | 94608 |
| | | San Mateo County Union Community Alliance (SMCUCA) | 1153 Chess Dr. | Foster City | CA | 94404 |
| | | Communities for a Better Environment | 6325 Pacific Blvd. Ste 300 | Huntington Park | CA | 90255 |
| LeVonne | Stone | Fort Ord Environmental Justice Network, Inc. | PO Box 361 | Marina | CA | 93933 |
| | | Asian Pacific Environmental Network | 426 17th St #500 | Oakland | CA | 94612 |
| Stephanie | Chen | Greenlining Institute | 360 14th Street, 2nd Floor | Oakland | CA | 94612 |

| TABLE E-4 INTERESTED PARTIES INCLUDING ENVIRONMENTAL JUSTICE AND COMMUNITY-BASED ORGANIZATIONS | | | | | | |
|---|---|---|---|---|---|---|
| **First Name** | **Last Name** | **Organization** | **Address** | **City** | **State** | **Zip** |
| | | Local Initiatives Support Corporation (LISC) Bay Area | 1970 Broadway Suite 1100 | Oakland | CA | 94612 |
| | | GRID Alternatives | 1171 Ocean Avenue, Suite 200 | Oakland | CA | 94608 |
| Strela | Cervas | California Environmental Justice Alliance | 1904 Franklin Street, Ste. 250 | Oakland | CA | 94612 |
| Mia | Kitahara | StopWaste | 1537 Webster St. | Oakland | CA | 94612 |
| | | Center for Biological Diversity (CBD) | 1212 Broadway, St. #800 | Oakland | CA | 94612 |
| | | The People's Senate | 1999 Harrison Street, Suite 650 | Oakland | CA | 94612 |
| | | Center on Race, Poverty and Environment (CRPE) | 1999 Harrison Street, Suite 650 | Oakland | CA | 94612 |
| | | The East Oakland Collective | PO Box 5382 | Oakland | CA | 94605 |
| Bob | Allen | Urban Habitat Program | 2000 Franklin Street | Oakland | CA | 94612 |
| | | Union of Concerned Scientists | 500 12th Street, Suite 340 | Oakland | CA | 94607 |
| | | People United for a Better Oakland (PUEBLO) | 1728 Franklin Street | Oakland | CA | 94612 |
| Susannah | Churchill | Vote Solar | 360 22nd Street, Suite 730 | Oakland | CA | 94612 |
| Bradley | Angel | GreenAction | 315 Sutter Street, 2nd Fl | San Francisco | CA | 94108 |
| | | Literacy for Environmental Justice | P.O. Box 170039 | San Francisco | CA | 94117-0039 |
| | | Bluegreen Alliance | 369 Pine Street, Suite 700 | San Francisco | CA | 94104 |
| Maria | Stamas | Natural Resources Defense Council (NRDC) | 111 Sutter Street, 21st Floor | San Francisco | CA | 94104 |
| Eddie | Ahn | Brightline Defense | 1028A Howard Street | San Francisco | CA | 94103 |
| Jennifer | Berg | Association of Bay Area Governments (ABAG) | 375 Beale Street, suite 700 | San Francisco | CA | 94105-2066 |
| Ivan | Jimenez | Brightline Defense | 1028A Howard Street | San Francisco | CA | 94103 |
| Erica | McConnell | Shute, Mihaly & Weinberger LLP | 396 Hayes St. | San Francisco | CA | 94102 |

| TABLE E-4 INTERESTED PARTIES INCLUDING ENVIRONMENTAL JUSTICE AND COMMUNITY-BASED ORGANIZATIONS | | | | | | |
|---|---|---|---|---|---|---|
| **First Name** | **Last Name** | **Organization** | **Address** | **City** | **State** | **Zip** |
| Antonio | Diaz | People Organizing to Demand Environmental and Economic Rights (PODER) | 474 Valencia Street, #125 | San Francisco | CA | 94103 |
| | | Environmental Law and Justice Clinic | 536 Mission Street | San Francisco | CA | 94105 |
| | | Bayview Hunters Point Community Advocates (Karen Pierce) | 186 Maddux Avenue | San Francisco | CA | 94124 |
| | | Silicon Valley Toxics Coalition | PO Box 27669 | San Franciso | CA | 94127 |
| | | Santa Clara Valley Audubon Society (SCVAS)--McClellan Ranch Preserve | 22221 McClellan Road | Cupertino | CA | 95014 |
| | | Loma Prieta Sierra Club Chapter Office | 39821 East Bayshore Road, Suite 204 | Palo Alto | CA | 94303 |

# APPENDIX B

June 22, 2022

MEMORANDUM AND UPDATE TO AIR QUALITY SECTION OF FINAL EIR

**State of California** **California Natural Resources Agency**

# M e m o r a n d u m

**To:** Vice Chair Siva Gunda, Presiding Member
Commissioner Kourtney Vaccaro, Associate Member

**Date**: June 22, 2022
**Telephone**:(916) 661-8458

**From**: **Eric Veerkamp, Project Manager**
**STEP, Siting and Environmental Office**
**California Energy Commission**
**715 P Street**
**Sacramento, California 95814-6400**

**Subject**: **UPDATE TO AIR QUALITY SECTION OF FEIR; FOR THE CA3 BACKUP GENERATING FACILITY (CA3BGF) SMALL POWER PLANT EXEMPTION (21-SPPE-01)**

In compliance with the Committee's direction following the CA3 Evidentiary Hearing conducted on May 27, 2022, staff is providing an update to the Air Quality section of the final environmental impact report (FEIR); the attached revised section constitutes staff's update. Staff has developed this update in coordination with the applicant. The data refinements contained in this update provide additional clarity to staff's analysis in three main areas; to provide clearer definitions of the Bay Area Air Quality Management District's CEQA Guidelines' thresholds of significance, a more thorough explanation of the reduction in background emissions associated with the Caltrain electrification, and discussion of impacts from all stationary sources within 1,000 feet as opposed to 2,000 feet.

# 4.3 Air Quality

This section describes the environmental setting and regulatory background and discusses impacts specific to air quality associated with the demolition/construction, readiness testing and maintenance, and the potential for emergency operation of the CA3 Data Center (CA3DC) and the associated CA3 Backup Generating Facility (CA3BGF), known together as the project. It is important to note that intermittent and standby emitting sources, like those proposed in this project, could operate for emergency use, and such emergency operations would be infrequent and for unplanned circumstances, which are beyond the control of the project owner. Emergency operations and the impacts of air pollutants during emergencies are generally exempt from air district offsetting and modeling requirements. Emissions from emergency operations are not regular, expected, or easily quantifiable such that they cannot be modeled or predicted with certainty.

| **AIR QUALITY**<br><br>Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project: | **Potentially Significant Impact** | **Less Than Significant with Mitigation Incorporated** | **Less Than Significant Impact** | **No Impact** |
|---|---|---|---|---|
| a. Conflict with or obstruct implementation of the applicable air quality plan? | ☐ | ☐ | ☒ | ☐ |
| b. 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? | ☐ | ☒ | ☐ | ☐ |
| c. Expose sensitive receptors to substantial pollutant concentrations? | ☐ | ☒ | ☐ | ☐ |
| d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? | ☐ | ☐ | ☒ | ☐ |

Environmental checklist established by CEQA Guidelines, Appendix G.

## 4.3.1 Summary

In this analysis, CEC staff (staff) concludes that, with the implementation of mitigation measure **AQ-1** and oxides of nitrogen (NOx) emissions fully offset through the permitting process with Bay Area Air Quality Management District (BAAQMD), the project would not have a significant impact on air quality. Staff analyzes two primary types of air emissions: (1) criteria pollutants, which have health-based ambient air quality standards (AAQS); and (2) toxic air contaminants (TACs), which are identified as potentially harmful even at low levels and have no established safe levels or health-based AAQS. The project would be constructed in two phases, with Phase I including demolition, grading, the installation of utility services, the construction of an on-site substation, the construction of the entire

shell of the CA3DC building, and placement of approximately one-half of the gensets, and Phase II including the interior buildout and placement of the emergency backup generators for the second half of the CA3DC building (CEC 2022a). Staff analyzes the project's impacts on air quality during demolition/construction, routine operation, and the potential for emergency operation of the emergency backup generators (gensets). Staff also analyzes the potential cumulative effects of the project on air quality.

### 4.3.1.1 Significance Criteria

This air quality evaluation assesses the degree to which the project would potentially cause a significant impact according to the California Environmental Quality Act (CEQA) guidelines. BAAQMD is the local air district responsible for the attainment and maintenance of the federal and state AAQS and associated program requirements at the project location. The analysis is based upon the methodologies and related thresholds of significance in BAAQMD's May 2017 CEQA Air Quality Guidelines (BAAQMD 2017b) to determine the significance of the potential air quality emissions and impacts. These methodologies include qualitative determinations and the quantification of whether project construction or operation would exceed numeric emissions and health risk thresholds (BAAQMD 2017b).

BAAQMD CEQA Guidelines project-level thresholds of significance ("BAAQMD significance thresholds") for criteria pollutants and precursor pollutants and the health risks of TACs that apply during construction and operation are shown in **Table 4.3-1**. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the Bay Area region's existing air quality conditions. Staff evaluates project emissions against the BAAQMD significance thresholds under environmental checklist criterion "b."

For fugitive dust emissions during construction periods, the BAAQMD CEQA Guidelines do not have a significance threshold. Rather, BAAQMD recommends using a current Best Management Practices (BMPs) approach, which has been a pragmatic and effective approach to the control of fugitive dust emissions.

Staff also evaluates the project's potential to expose sensitive receptors to substantial pollutant concentrations under environmental checklist criterion "c." Staff addresses both the ambient air quality impacts of criteria pollutants, which have health-based standards, and the impacts of TACs, which are identified as potentially harmful even at low levels and have no established safe levels or health-based ambient air quality standards.

The analysis includes ambient air quality impact modeling for demolition/construction and operation, which consists of readiness testing and maintenance, of the proposed diesel-fueled gensets to estimate the air quality impacts caused by the emissions. The AAQS, shown in **Table 4.3-2**, are health protective values, so staff uses these health-based regulatory standards to help define what is considered a substantial pollutant

concentration for criteria pollutants.[1] Staff's analysis determines whether the project would be likely to exceed any AAQS or contribute substantially to an existing or projected air quality violation, and, if necessary, proposes mitigation to reduce or eliminate these pollutant exceedances or substantial contributions.

**TABLE 4.3-1 BAAQMD THRESHOLDS OF SIGNIFICANCE**

| Pollutant | Construction | Operation | |
|---|---|---|---|
| | Average Daily Emissions (lbs/day) | Average Daily Emissions (lbs/day) | Maximum Annual Emissions (tpy) |
| ROG | 54 | 54 | 10 |
| NOx | 54 | 54 | 10 |
| PM10 | 82 (exhaust) | 82 | 15 |
| PM2.5 | 54 (exhaust) | 54 | 10 |
| PM10/ PM2.5 (fugitive dust) | Best Management Practices | None | |
| Local CO | None | 9.0 ppm (8-hour average), 20.0 ppm (1-hour average) | |
| Risk and Hazards for New Sources and Receptors (Individual Project) | Same as Operation Threshold | Compliance with Qualified Community Risk Reduction Plan<br>OR<br>Increased cancer risk of >10.0 in a million<br>Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute)<br>Ambient PM2.5 increase: > 0.3 µg/m$^3$ annual average<br><br>Zone of Influence: 1,000-foot radius from property line of source or receptor | |
| Risk and Hazards for New Sources and Receptors (Cumulative Threshold) | Same as Operation Threshold | Compliance with Qualified Community Risk Reduction Plan<br>OR<br>Cancer: > 100 in a million (from all local sources)<br>Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic)<br>PM2.5: > 0.8 µg/m$^3$ annual average (from all local sources)<br><br>Zone of Influence: 1,000-foot radius from property line of source or receptor | |

Source: BAAQMD 2017b, Table 2-1

Significance criteria also include Significant Impact Levels (SILs) for the particulate matter portions of the analysis. Regulatory agencies have traditionally applied SILs as a de minimis value, which represents the off-site concentration predicted to result from a source's emissions that does not warrant additional analysis or mitigation. If a source's modeled impacts at any off-site location do not exceed relevant SILs, the source owner

1 This approach provides a complete analysis that describes the foreseeable effects of the project in relation to all potential air quality related health impacts, including impacts of criteria pollutants to sensitive receptors; and therefore, addresses the California Supreme Court December 2018 *Sierra Club v. County of Fresno* opinion (https://www.courts.ca.gov/opinions/archive/S219783A.PDF).

would typically not need to assess multi-source or cumulative air quality to determine whether or not that source's emissions would cause or contribute to a violation of the relevant National Ambient Air Quality Standard (NAAQS) or California Ambient Air Quality Standard (CAAQS). In the project's vicinity, based on data from the local San Jose-Jackson Street air quality monitoring station about 4.6 miles east-southeast of the project site, shown in **Table 4.3-4**, the background levels of particulate matter of 10 micrometers or less in diameter (PM10) and particulate matter of 2.5 micrometers and smaller in diameter (PM2.5) already exceed the 24-hour and annual AAQS even before accounting for the project's emissions. Staff compares the project's contribution to local criteria pollutant concentrations to SILs to determine whether the project's emissions would contribute significantly to those exceedances.

BAAQMD does not have significance criteria in terms of PM10 concentrations or 24-hour concentrations of PM2.5. To determine if the project could contribute substantially to the existing PM10 exceedances, this analysis relies on the United States Environmental Protection Agency (U.S. EPA) PM10 SILs established in federal regulations for non-attainment areas (40 CFR 51.165(b)(2)) for 24-hour impacts (5 $\mu g/m^3$) and for annual impacts (1 $\mu g/m^3$). The same federal regulation (40 CFR 51.165(b)(2)) also established the U.S. EPA PM2.5 SILs concentrations for 24-hour impacts (1.2 $\mu g/m^3$) and for annual impacts (0.3 $\mu g/m^3$).

- The BAAQMD significance threshold for a project-level increase in annual PM2.5 concentrations is also 0.3 micrograms per cubic meter ($\mu g/m^3$), as shown in **Table 4.3-1**. However, in April 2018, the U.S. EPA issued *Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program* (U.S. EPA 2018a), which recommends PM2.5 SILs levels for 24-hour impacts to be 1.2 $\mu g/m^3$ (as in [40 CFR 51.165(b)(2)]) and for annual impacts to be 0.2 $\mu g/m^3$ (lower than 0.3 $\mu g/m^3$). Note that the U.S. EPA SILs values are all based on the forms of the applicable NAAQS. For example, the 24-hour PM2.5 SILs of 1.2 $\mu g/m^3$ is based on the 98$^{th}$ percentile 24-hour concentrations averaged over three years. The annual PM2.5 SILs of 0.2 $\mu g/m^3$ is based on a three-year average of annual average concentrations. For this analysis, staff uses the U.S. EPA SILs as well as the BAAQMD CEQA Guidelines significance threshold to determine project impact significance of PM2.5 concentrations.

The health risks from the project's TACs emissions are compared with the BAAQMD significance thresholds for a single source. If risks to the maximally exposed sensitive receptors are below significance thresholds, then impacts to other receptors would also be below significance thresholds. Cumulative health risk assessment (HRA) results are also compared with the BAAQMD significance thresholds for cumulative risk and hazards. For HRA purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Therefore, there are two kinds of thresholds for TACs: cancer risk and non-cancer risk. Cancer risk is expressed as excess cancer cases per one million exposed individuals,

typically over a lifetime of exposure. Acute and chronic exposure to non-carcinogens is expressed as a hazard index (HI), which is the ratio of expected exposure levels to acceptable reference exposure levels (REL) for each of the TACs with acute and chronic health effects. The significance thresholds for TACs and PM2.5 are listed in **Table 4.3-1** and summarized in the following text (BAAQMD 2017b).

CEQA requires staff to consider: "whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable," [CEQA Guidelines § 15064(h)(1)]. The following paragraphs show the two sets of thresholds used by staff in the assessment of: (1) whether the effects of the project are cumulatively considerable; and (2) the significance of the cumulative impact for public health.

The BAAQMD recommends that operational-related TAC and PM2.5 emissions generated by a single source would be a significant impact and a cumulatively considerable contribution to local community risk and hazard impacts if emissions would cause impacts or cancer risks that would exceed the following thresholds (BAAQMD 2017b, pp.5-3 and 5-4)~~significance thresholds for a single source are as follows~~:

- An excess lifetime cancer risk level of more than 10 in one million.
- A non-cancer chronic HI greater than 1.0.
- A non-cancer acute HI greater than 1.0.
- An incremental increase in the annual average PM2.5 concentration of greater than 0.3 µg/$m^3$.

The BAAQMD CEQA Guidelines significance thresholds for cumulative impacts are also summarized below. Following the BAAQMD CEQA Guidelines (BAAQMD 2017b, p.5-16),~~A project would have a~~the cumulative~~ly considerable~~ impact would be significant if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot distance from the fence line of a source and the contribution from the project, exceeds the following:

- An excess lifetime cancer risk level of more than 100 in one million.
- A non-cancer chronic HI greater than 10.0.
- An annual average PM2.5 concentration of greater than 0.8 µg/$m^3$.

Additionally, if a project would not exceed the BAAQMD significance thresholds discussed above, then a project would also be consistent with and not have any impact on BAAQMD's Bay Area 2017 Clean Air Plan. This plan provides a regional strategy to protect public health and the climate, and it defines an integrated, multipollutant control strategy to reduce emissions of particulate matter, TACs, ozone and key ozone precursors, and greenhouse gases (GHG). The environmental checklist criterion "a" in this air quality analysis addresses the consistency of the project with BAAQMD's Bay Area 2017 Clean Air Plan.

### 4.3.1.2 Criteria Pollutants (including Fugitive Dust)

#### *i. Construction*

Under environmental checklist criterion "b," staff explains that construction-phase emissions are a result of construction equipment, material movement, paving activities, and on-site and off-site vehicle trips, such as material haul trucks, worker commutes, and delivery vehicles. The project would be constructed in two phases, with Phase I including demolition, grading, the installation of utility services, the construction of an on-site substation, the construction of the entire shell of the CA3DC building, and placement of approximately one-half of the gensets and Phase II including the interior buildout and placement of the emergency backup generators for the second half of the CA3DC building. Project construction would occur for a total of about 22 months.

As shown in **Table 4.3-5**, the project's average daily criteria pollutant emissions during construction would be lower than the relevant numeric BAAQMD significance thresholds. There is no numerical threshold for fugitive dust generated during construction. The BAAQMD CEQA Guidelines recommend the control of fugitive dust through BMPs to conclude that impacts from fugitive dust emissions are less than significant (BAAQMD 2017b). Staff recommends **AQ-1**, which incorporates the project applicant's proposed measures that would include BAAQMD's recommended construction BMPs and exhaust emissions mitigation measures. With the implementation of **AQ-1**, the fugitive dust impacts from construction would be less than significant.

Under environmental checklist criterion "c," staff also analyzes the localized impacts of construction criteria pollutant emissions by comparing them with the AAQS. As shown in **Table 4.3-7**, staff finds that construction emissions would not contribute to any exceedance of the AAQS, except to the preexisting exceedances of PM10 and PM2.5. For PM10 and PM2.5, the project's contributions to the concentrations of PM10 and PM2.5 at sensitive receptor locations would be below the relevant SILs. Therefore, the project would not expose sensitive receptors to substantial criteria pollutant concentrations during construction. Construction is considered short-term, and construction impacts would be further reduced with the implementation of **AQ-1**, which includes BAAQMD's recommended construction BMPs and exhaust emissions mitigation measures.

With the implementation of **AQ-1**, criteria pollutant and fugitive dust emissions from project construction would not exceed any BAAQMD CEQA Guidelines significance threshold, cause a cumulatively considerable net increase of any criteria pollutant, conflict with or obstruct any applicable regional or local air quality plan, or expose sensitive receptors to substantial criteria pollutant concentrations, and would, thus, be less than significant.

### *ii. Operation and Maintenance*

Staff evaluates criteria pollutant emissions from operation and maintenance in two sections: (A) "routine operation" emissions including, among other things, emissions from readiness testing and maintenance of the 44 gensets; and (B) "emergency operation" emissions from using the gensets to support the electricity demand of the project.

(A) Routine Operation

Under environmental checklist criterion "b," staff concludes that criteria pollutant emissions from the project's routine operation would be less than significant with NOx emissions fully offset through the permitting process with BAAQMD. Routine operation of the project would generate criteria pollutant emissions from readiness testing and maintenance of the 44 gensets, off-site vehicle trips for worker commutes and material deliveries, and facility upkeep, such as architectural coatings, consumer product use, landscaping, water use, waste generation, natural gas use for comfort heating, and electricity use.

As shown in **Table 4.3-6**, staff finds that the project's total annual and average daily emissions of criteria pollutants from routine operation would be below the BAAQMD CEQA Guidelines significance thresholds, except for NOx emissions. The project's gross total NOx emissions would exceed BAAQMD significance thresholds and could, therefore, contribute to a cumulatively considerable net increase of NOx emissions. However, during BAAQMD's permitting process, BAAQMD will require the applicant to fully offset its NOx emissions. With NOx emissions fully offset, the project's total net annual and average daily emissions would not exceed any of the BAAQMD significance thresholds.

The project would also emit ammonia from the urea used in the selective catalytic reduction (SCR) system. There is no BAAQMD threshold for ammonia, which is not a criteria pollutant but instead a precursor to particulate matter. Because the project's primary emissions of particulate matter are well below the BAAQMD CEQA Guidelines significance thresholds, secondary particulate matter impacts from the project's ammonia emissions of 0.29 tons per year (tpy) would be less than significant and not require additional mitigation or offsets.

Under environmental checklist criterion "c," staff also analyzes the localized impacts of the project's criteria pollutant emissions during readiness testing and maintenance of the gensets by comparing them with the AAQS. As shown in **Table 4.3-8**, staff finds that the project's routine operation emissions would not contribute to any exceedance of any AAQS, except to the preexisting exceedances of PM10 and PM2.5. However, staff finds that the project's contributions to concentrations of PM10 and PM2.5 would be below the relevant SILs, and, therefore, would not expose sensitive receptors to substantial criteria pollutant concentrations.

Staff concludes that, with NOx emissions fully offset through the BAAQMD permitting process, criteria pollutant emissions from routine operation of the project would not exceed any BAAQMD CEQA Guidelines significance threshold, cause a cumulatively considerable net increase of any criteria pollutant, conflict with or obstruct any applicable regional or local air quality plan, or expose sensitive receptors to substantial criteria pollutant concentrations, and would, thus, be less than significant.

(B) Emergency Operation

The emergency use of the gensets could occur in the event of a power outage or other disruption, upset, or instability that triggers a need for the project to use emergency backup power.

(1) Criteria Pollutant Emissions from Emergency Operation

As discussed under environmental checklist criterion "b," the BAAQMD 2019 policy, *Calculating Potential to Emit for Emergency Backup Power Generators*, requires a facility's potential to emit (PTE) to be calculated based on emissions proportional to emergency operation for 100 hours per year per genset, in addition to the permitted limits for readiness testing and maintenance (BAAQMD 2019). However, after comparing the PTE calculated to determine the account eligibility threshold, the applicant would only be required to offset permitted emissions from readiness testing and maintenance and not the emissions from emergency operation. BAAQMD requires the use of offsets to counterbalance increases in regular and predictable emissions, not increases in emissions occurring infrequently when emergency conditions arise.

In addition, emissions during routine operation are conservatively estimated with the assumption of 35 hours of readiness testing and maintenance per year per engine. As discussed in **Section 4.8 Greenhouse Gas Emissions**, the project applicant would probably need to limit the readiness testing and maintenance to 20 hours per year per engine to lower the GHG emissions to the pending, still-to-be-adopted BAAQMD CEQA GHG threshold of significance of 2,000 metric tons of carbon dioxide equivalent per year ($MTCO_2e/yr$) if applicable at the time of permitting. However, other data center project applicants previously have stated that routine testing and maintenance would rarely exceed 12 hours per year. Based on the evidence about the likelihood and duration of emergency operation, the allowance of 20 (or 35) hours per engine per year likely accommodates the average annual emergency operation emissions. Thus, staff concludes that the project would be unlikely to cause a cumulatively considerable net increase of any criteria pollutant.

(2) Criteria Pollutant Impacts from Emergency Operation

As discussed in detail under ***Emergency Operations Impacts for Criteria Pollutants*** under environmental checklist criterion "c," the air quality impacts of genset operation during emergencies are not quantified below because the impacts of emergency operations are typically not evaluated during facility permitting and local air districts do not normally conduct an air quality impact assessment of such impacts. Staff assessed the likelihood of emergency events but finds that assessing the air quality impacts of emergency operations would require a host of unvalidated, unverifiable, and speculative assumptions about when and under what circumstances such a hypothetical emergency would occur. Such a speculative analysis is not required under CEQA (CEQA Guidelines §§ 15064(d)(3) and 15145), and, most importantly, would not provide meaningful information by which to determine project impacts. If emergency operation becomes a more frequent occurrence and more data is gathered regarding when and how these facilities operate during emergency situations, this conclusion might change.

Staff reviewed the BAAQMD comments on the Notice of Preparation (NOP) regarding the use of diesel engines for "non-testing/non-maintenance" purposes (BAAQMD 2021b) and confirmed that these types of events are infrequent, irregular, and unlikely and the resulting emissions are not easily predictable or quantifiable. See more detailed discussion under ***Emergency Operations Impacts for Criteria Pollutants*** under environmental checklist criterion "c."

### *iii. Cumulative Impacts*

Staff concludes that the project's criteria pollutant emissions would not be cumulatively significant. BAAQMD CEQA Guidelines state that if a project's daily average or annual emissions of operational-related criteria pollutants or precursors do not exceed any BAAQMD threshold of significance, as listed in **Table 4.3-1** above, the project would not result in a cumulatively significant impact. As explained above, staff finds that all the criteria pollutant emissions would be below the BAAQMD CEQA Guidelines thresholds of significance with the implementation of **AQ-1** and NOx emissions would be fully offset through the BAAQMD permitting process.

In addition, under environmental checklist criterion "c," staff performed a cumulative impacts analysis for annual PM2.5 impacts as part of a cumulative HRA. Staff concludes that the project's contribution to the annual PM2.5 concentrations would not be cumulatively significant.

Thus, staff concludes that the project's criteria pollutant emissions from the routine operation of the project would not be cumulatively significant.

### 4.3.1.3 Toxic Air Contaminants (TACs)

Under environmental checklist criterion "c," staff analyzes the potential impacts of the project's TAC emissions separately for construction and routine operation. Staff also analyzes the cumulative effects of the project's TAC emissions together with the impacts of other sources within 1,000 feet. Staff concludes that the individual and cumulative impacts from the project's TAC emissions would be less than significant.

Staff finds the health risks at ~~most~~ all sensitive receptor locations would be less than the BAAQMD CEQA Guidelines significance thresholds shown in **Table 4.3-1**. Staff concludes that the health risks from project construction and routine operation would not cause a cumulatively considerable contribution to local community risk and hazard impacts, ~~be less than significant~~ and the construction impact would be further reduced with the implementation of **AQ-1**.

Staff finds that significant cumulative health risks would not occur at sensitive receptor locations, and the project's contribution is not cumulatively considerable because the project effects would be less than the BAAQMD CEQA Guidelines significance thresholds shown in **Table 4.3-1**. Staff concludes that the effect of cumulative TAC emissions would be less than significant.

### 4.3.1.4 Background on Air Quality Evaluation

#### Criteria Pollutant Evaluation

California Air Resources Board (CARB) and U.S. EPA have each established federal and state AAQS for criteria pollutants. While both NAAQS and CAAQS apply to every location in California, typically the state standards are lower (i.e., more stringent) than federal standards. Air monitoring stations, usually operated by local air districts or CARB, measure the ambient air to determine an area's attainment status for NAAQS and CAAQS. Depending on the pollutant, the time over which these pollutants are measured varies from 1-hour, to 3-hours, to 8-hours, to 24-hours and to annual averages. Most criteria pollutants have ambient standards with more than one averaging time. Pollutant concentrations are expressed in terms of mass of pollution per unit volume of air, typically using micrograms for the mass portion of the expression and cubic meters of air for the volume, or "micrograms per cubic meter of air, expressed as "$\mu g/m^3$." The concentration can also be expressed as parts of pollution per million parts of air or "ppm." AAQS appear in Section 4.3.2 of this analysis.

Some forms of air pollution are primary air pollutants, which are gases and particles directly emitted from stationary and mobile sources. Other forms of air pollution are secondary air pollutants that result from complex interactions between primary pollutants, background atmospheric constituents, and other secondary pollutants. Some pollutants can be a combination of both primary and secondary formation, such as PM2.5. In this case, the primary pollutant component of PM2.5 is directly emitted from the stack of diesel-fueled engines and the secondary pollutant component of PM2.5 is formed in the

air by the transformation of gaseous NOx and sulfur oxides (SOx) into particles. In this case, the NOx and SOx emissions are precursors to the formation of the secondary aerosol pollutant.

Emissions of NOx include nitric oxide (NO) and nitrogen dioxide ($NO_2$). In the case of stack emissions from diesel-fueled engines, approximately 90 percent of the NOx is in the form of NO while the remainder is directly emitted $NO_2$. The ambient standards are expressly for $NO_2$, not NO. Once these gases exit the stack, chemical reactions in the region downwind of the facility, meteorological conditions, and sunlight interact to convert the NO into $NO_2$, ozone, and particulates. Most ozone in the ambient air is not directly emitted. Rather, it is formed in the air when the NO to $NO_2$ reaction occurs, followed by a set of complex reactions including interactions with volatile organic compounds (VOC). BAAQMD uses the term precursor organic compounds (POC) instead of VOC.

California is divided into 35 local air districts. Some of these local governmental agencies are called "air quality management districts," while others are called "air pollution control districts." Generally, state law designates local air districts as having primary responsibility for the control of air pollution from all sources other than mobile sources while the control of vehicular air sources is the responsibility of CARB. (Health and Safety Code, §39002) Additionally, CARB is charged with coordinating efforts to attain and maintain CAAQS and NAAQS. (Health and Safety Code, §39003) Areas that meet the AAQS, based upon air monitoring measurements made by either the local air district or CARB, are classified as "attainment areas," and areas that have monitoring data that exceed AAQS are classified as "nonattainment areas." (Health and Safety Code, §39608) Additionally, any given area can be classified as attainment for some pollutants and nonattainment for others. Even for the same pollutant, an area can be attainment for one averaging time and nonattainment for another.

Air districts adopt rules and attainment and maintenance plans aimed at protecting public health and reducing emissions. (Health and Safety Code, §40001) Air districts incorporate these requirements into the State Implementation Plan (SIP), which CARB submits for approval to the U.S. EPA as the state's overall plan to come into attainment for federal NAAQS. (Health and Safety Code, §39602) Once a SIP is approved by the U.S. EPA and published in the Federal Register, the requirements in the SIP become federally enforceable. Consistency of the project with the applicable air quality management plan is addressed as part of environmental checklist criterion "a" in this air quality analysis.

For those facilities subject to CEC jurisdiction, the project is evaluated to determine whether it would be able to comply with all applicable local, state, and federal requirements. If the CEC is issuing the license, this analysis occurs during the review of the Application for Certification (AFC), with the local air district participating in this process by preparing a Determination of Compliance (DOC). However, since this project is going through an exemption to the AFC process under the Small Power Plant Exemption, the DOC is not prepared. If the proposed generating capacity is 50 megawatts (MW) to

100 MW, the CEC conducts a CEQA review before allowing the project to be exempt from CEC's AFC licensing. Once the CEC's jurisdictional process is approved, the local air district would then implement its permit review process and, if the proposed facility meets local air district requirements, an operating permit would be issued by that air district.

The local air district's New Source Review (NSR) program does the following: (1) defines the facility's potential-to-emit; (2) determines whether the sources would achieve minimum performance standards; (3) assesses whether the sources would achieve the Best Available Control Technology (BACT) requirements; and (4) determines whether the project would trigger offset requirements. These issues are addressed as part of environmental checklist criterion "b" in this air quality analysis.

## Non-Criteria Pollutant Evaluation

Non-criteria pollutants that are typically evaluated are airborne toxic pollutants identified to have potential harmful human health impacts. Evaluations assess the potential risks from TACs and hazardous air pollutants (HAPs). TACs include toxic air pollutants identified by CARB, and HAPs include toxic air pollutants identified at the federal level. Most toxic air pollutants do not have AAQS; however, AAQS have been established for a few pollutants. Since TACs have no AAQS that specify health-based levels considered safe for everyone, a HRA is used to determine if people might be exposed to those types of pollutants at unhealthy levels.

TACs are separated into "carcinogens" and "non-carcinogens" based on the nature of the physiological effects associated with exposure. There are two types of thresholds for TACs: cancer risk and non-cancer risk. Cancer risk is expressed as excess cancer cases per 1 million exposed individuals, typically over a lifetime of exposure. Acute and chronic exposure to non-carcinogens is expressed as a HI, which is the ratio of expected exposure levels to acceptable REL for each of the TACs associated with acute and chronic health effects.

The impact evaluation of toxic pollutants focuses on the project's incremental impact due to diesel particulate matter (DPM) exhaust from construction equipment and from the stacks of the diesel-fueled gensets. That is because DPM is the primary TAC of concern. This issue is addressed as part of environmental checklist criterion "c" in this air quality analysis.

## Odor Impact Evaluation

Aside from criteria pollutants and TACs, impacts may arise from other emissions, notably related to odor. This issue is addressed as part of environmental checklist criterion "d" in this air quality analysis.

## 4.3.2 Environmental Setting

The proposed project is proposed to be located at 2590 Walsh Avenue in Santa Clara. The property is irregularly shaped and is bounded on the northwest by an existing microelectronics testing facility, on the northeast by a software research and development facility, on the south by an operational Caltrain rail line, on the east by Walsh Avenue, and on the west by an existing Silicon Valley Power (SVP) substation (Uranium Substation). The Vantage Santa Clara Data Center Campus CA1 is east across Walsh Avenue.

Refer to the **Section 3 Project Description** for further details regarding the project.

### Criteria Pollutants

The U.S. EPA and the CARB have established AAQS for several pollutants based on their adverse health effects. The U.S. EPA has set NAAQS for ozone ($O_3$), carbon monoxide (CO), $NO_2$, PM10, PM2.5, sulfur dioxide ($SO_2$), and lead (Pb). These pollutants are commonly referred to as "criteria pollutants." Primary standards were set to protect public health; secondary standards were set to protect public welfare against visibility impairment, damage to animals, crops, vegetation, and buildings. In addition, CARB has established CAAQS for these pollutants, as well as for sulfate ($SO_4$), visibility reducing particles, hydrogen sulfide ($H_2S$), and vinyl chloride. CAAQS are generally stricter than NAAQS. The standards currently in effect in California and relevant to the project are shown in **Table 4.3-2**.

**TABLE 4.3-2 NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS**

| Pollutant | Averaging Time | California Standards [a] | National Standards [b] | |
|---|---|---|---|---|
| | | | Primary | Secondary |
| $O_3$ | 1-hour | 0.09 ppm (180 µg/m$^3$) | — | Same as Primary Standard |
| | 8-hour | 0.070 ppm (137 µg/m$^3$) | 0.070 ppm (137 µg/m$^3$) | |
| PM10 | 24-hour | 50 µg/m$^3$ | 150 µg/m$^3$ | Same as Primary Standard |
| | Annual Mean | 20 µg/m$^3$ | — | |
| PM2.5 | 24-hour | — | 35 µg/m$^3$ | Same as Primary Standard |
| | Annual Mean | 12 µg/m$^3$ | 12 µg/m$^3$ | 15 µg/m$^3$ |
| CO | 1-hour | 20 ppm (23 mg/m$^3$) | 35 ppm (40 mg/m$^3$) | — |
| | 8-hour | 9.0 ppm (10 mg/m$^3$) | 9 ppm (10 mg/m$^3$) | — |
| $NO_2$ | 1-hour | 0.18 ppm (339 µg/m$^3$) | 0.100 ppm (188 µg/m$^3$) [c] | — |
| | Annual Mean | 0.030 ppm (57 µg/m$^3$) | 0.053 ppm (100 µg/m$^3$) | Same as Primary Standard |
| $SO_2$ [d] | 1-hour | 0.25 ppm (655 µg/m$^3$) | 75 ppb (196 µg/m$^3$) | — |
| | 3-hour | — | — | 0.5 ppm (1,300 µg/m$^3$) |
| | 24-hour | 0.04 ppm (105 µg/m$^3$) | 0.14 ppm (for certain areas) [d] | — |
| | Annual Mean | — | 0.030 ppm (for certain areas) [d] | — |

Notes: ppm=parts per million; ppb = parts per billion; µg/m$^3$ = micrograms per cubic meter; mg/m$^3$ = milligrams per cubic meter; "—" = no standard

[a] California standard for $O_3$, CO (except 8-hour Lake Tahoe), $SO_2$ (1 and 24 hour), $NO_2$, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded.

[b] National standards (other than $O_3$, PM, $NO_2$ [see note c below], and those based on annual arithmetic mean) are not to be exceeded more than once a year. The 8-hour $O_3$ standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. The 24-hour PM10 standard of 150 µg/m$^3$ is not to be exceeded more than once per year on average over a 3-year period. The 24-hour PM2.5 standard is attained when the 3-year average of 98th percentile concentration is less than or equal to 35 µg/m$^3$.

[c] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 0.100 ppm.

[d] On June 2, 2010, a new 1-hour $SO_2$ standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The previous $SO_2$ standards (24-hour and annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous $SO_2$ standards or is not meeting the requirements of a SIP call under the previous $SO_2$ standards (40 CFR 50.4(3)). A SIP call is a U.S. EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Sources: BAAQMD 2021a, U.S. EPA 2021a

## Attainment Status and Air Quality Plans

The U.S. EPA, CARB, and the local air districts classify an area as attainment, unclassified, or nonattainment, depending on whether the monitored ambient air quality data show compliance, insufficient data are available, or non-compliance with the AAQS, respectively. The proposed project would be in Santa Clara County in the San Francisco Bay Area Air Basin (SFBAAB), under the jurisdiction of BAAQMD. **Table 4.3-3** summarizes attainment status for the relevant criteria pollutants in the SFBAAB with both NAAQS and CAAQS.

**TABLE 4.3-3 ATTAINMENT STATUS FOR SFBAAB**

| Pollutant | Averaging Time | State Designation | Federal Designation |
|---|---|---|---|
| $O_3$ | 1-hour | Nonattainment | — |
| | 8-hour | Nonattainment | Nonattainment |
| PM10 | 24-hour | Nonattainment | Unclassified |
| | Annual | Nonattainment | — |
| PM2.5 | 24-hour | — | Nonattainment [a] |
| | Annual | Nonattainment | Unclassifiable/attainment [b] |
| CO | 1-hour | Attainment | Attainment |
| | 8-hour | Attainment | Attainment |
| $NO_2$ | 1-hour | Attainment | Unclassifiable/Attainment |
| | Annual | Attainment | Attainment |
| $SO_2$ | 1-hour | Attainment | Attainment/Unclassifiable [c] |
| | 24-hour | Attainment | — [d] |
| | Annual | — | — [d] |

Notes:
[a] On January 9, 2013, U.S. EPA issued a final rule to determine that the Bay Area attains the 24-hour PM2.5 national standard (U.S. EPA 2013). This U.S. EPA rule suspends key SIP requirements as long as monitoring data continues to show that the Bay Area attains the standard. Despite this U.S. EPA action, the Bay Area will continue to be designated as "non-attainment" for the national 24-hour PM2.5 standard until such time as the BAAQMD submits a "redesignation request" and a "maintenance plan" to U.S. EPA, and U.S. EPA approves the proposed redesignation.
[b] In December 2012, U.S. EPA strengthened the annual PM2.5 NAAQS from 15.0 to 12.0 $\mu g/m^3$. In December 2014, U.S. EPA issued final area designations for the 2012 primary annual PM2.5 NAAQS (U.S. EPA 2014). Areas designated "unclassifiable/attainment" must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.
[c] On January 9, 2018, U.S. EPA issued a final rule to establish the initial air quality designations for certain areas in the U.S. for the 2010 $SO_2$ primary NAAQS (U.S. EPA 2018b). This final rule designated the SFBAAB as attainment/unclassifiable for the 2010 $SO_2$ primary NAAQS.
[d] See noted under **Table 4.3-2**.
Sources: CARB 2021a, BAAQMD 2021a, U.S. EPA 2013, U.S. EPA 2014, U.S. EPA 2018b

Overall air quality in the SFBAAB is better than most other developed areas in California, including the South Coast, San Joaquin Valley, and Sacramento air basin regions. This is due to a more favorable climate with cooler temperatures and regional air flow patterns that transport pollutants emitted in the air basin out of the air basin. Although air quality improvements have occurred, violations and exceedances of the state ozone and PM standards continue to persist in the SFBAAB, and still pose challenges to CARB and local air districts (CARB 2013). The project area's proximity to both the Pacific Ocean and the San Francisco Bay has a moderating influence on the climate. This portion of the Santa Clara Valley is bounded by the San Francisco Bay to the north, the Santa Cruz Mountains to the southwest and west, and the Diablo Range to the northeast. The surrounding terrain greatly influences winds in the valley, resulting in a prevailing wind that flows along the Santa Clara Valley's northwest-southeast axis.

Pollutants in the air can cause health problems, especially for children, the elderly, and people with heart or lung problems. Healthy adults may experience symptoms during periods of intense exercise. Pollutants can also cause damage to vegetation, animals, and property.

## Existing Ambient Air Quality

The nearest background ambient air quality monitoring station to the project is the San Jose-Jackson Street station, which is about 4.6 miles east-southeast of the project site. **Table 4.3-4** presents the air quality monitoring data from the San Jose-Jackson Street monitoring station from 2016 to 2020, the most recent years for which data are available. Data in this table that are marked in **bold** indicate that the most-stringent current standard was exceeded during that period.

**TABLE 4.3-4 AMBIENT AIR QUALITY MONITORING DATA**

| Pollutant | Averaging Time | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| $O_3$ (ppm) | 1-hour | 0.087 | **0.121** | 0.078 | **0.095** | **0.106** |
| | 8-hour | 0.066 | **0.098** | 0.061 | **0.081** | **0.085** |
| PM10 (µg/m$^3$) | 24-hour | 41 | **70** | **121.8** | **77.1** | **137.1** |
| | Annual | 18.5 | **21.3** | **23.1** | 19.1 | **24.8** |
| PM2.5 (µg/m$^3$) | 24-hour (98th percentile) | 19 | 34.3 | **73.4** | 20.6 | **56.1** |
| | Annual | 8.4 | 9.5 | **12.9** | 9.1 | 11.5 |
| $NO_2$ (ppb) | 1-hour (maximum) | 51.1 | 67.5 | 86.1 | 59.8 | 51.9 |
| | 1-hour (98th percentile) | 42 | 50 | 59 | 52 | 45 |
| | Annual | 11.26 | 12.24 | 12.04 | 10.63 | 9 |
| CO (ppm) | 1-hour | 2 | 2.1 | 2.5 | 1.7 | 1.9 |
| | 8-hour | 1.4 | 1.8 | 2.1 | 1.3 | 1.5 |
| $SO_2$ (ppb) | 1-hour (maximum) | 1.8 | 3.6 | 6.9 | 14.5 | 2.9 |
| | 1-hour (99th percentile) | 2 | 3 | 3 | 2 | 2 |
| | 24-hour | 0.8 | 1.1 | 1.1 | 1.5 | 0.8 |

Notes: All data from San Jose-Jackson Street monitoring station.
Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.
Sources: CARB 2021b, U.S. EPA 2021b

The maximum concentration values listed in **Table 4.3-4** have not been screened to remove values that are designated as exceptional events. Violations that are the result of exceptional events, such as wildfires, are normally excluded from consideration as AAQS violations. Exceptional events undoubtedly affected many of the maximum concentration values in recent years, especially between September to mid-November during wildfire activity. The ozone, PM10, and PM2.5 in 2017, 2018, and 2020 illustrate the effect of events like the extensive northern California wildland fires.[2] Even though fires tended to be far from the monitoring stations, the blanket of smoke and adverse air quality most likely affected air monitoring stations in the urban areas surrounding the project. For a conservative analysis, staff uses the background ambient air quality concentrations from 2018 to 2020 to represent the baseline condition at the project site.

### *Health Effects of Criteria Pollutants*

Below are descriptions of the health effects of criteria pollutants that are a concern in the regional study area. Health and Safety Code, section 39606 requires CARB to adopt ambient air quality standards at levels that adequately protect the health of the public, including infants and children, with an adequate margin of safety. Ambient air quality standards define clean air (CARB 2021c).

**Ozone.** Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and NOx, including $NO_2$. ROG and NOx are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight.

Ozone can cause the muscles in the airways to constrict, trapping air in the alveoli, potentially leading to wheezing and shortness of breath. Ozone can make it more difficult to breathe deeply and vigorously; cause shortness of breath and pain when taking a deep breath; cause coughing and sore or scratchy throat; inflame and damage the airways; aggravate lung diseases, such as asthma, emphysema, and chronic bronchitis; increase the frequency of asthma attacks; make the lungs more susceptible to infection; continue to damage the lungs even when the symptoms have disappeared; and cause chronic obstructive pulmonary disease. Long-term exposure to ozone is linked to the aggravation of asthma and is likely to be one of many causes of asthma development. Long-term exposures to higher concentrations of ozone may also be linked to permanent lung damage, such as abnormal lung development in children. The inhalation of ozone causes inflammation and irritation of the tissues lining human airways, causing, and worsening a variety of symptoms, and exposure to ozone can reduce the volume of air that the lungs breathe in and cause shortness of breath.

2 Wildfires also emit substantial amounts of volatile and semi-volatile organic materials and nitrogen oxides that form ozone and organic particulate matter (NOAA 2019).

People most at risk for adverse health effects from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers. Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure. Studies show that children are no more or less likely to suffer harmful effects than adults; however, children and teens may be more susceptible to ozone and other pollutants because they spend nearly twice as much time outdoors and engage in vigorous activities compared to adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults and are less likely than adults to notice their own symptoms and avoid harmful exposures.

**Particulate Matter.** PM10 and PM2.5 represent size fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health. The health effects of particulate matter may include cardiovascular effects, such as cardiac arrhythmias and heart attacks, and respiratory effects, such as asthma attacks and bronchitis. Particulates can also reduce visibility.

**Nitrogen Dioxide.** Breathing air with a high concentration of $NO_2$ can irritate airways in the human respiratory system. Such exposures over short periods (as represented by the 1-hour standards) can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions, and visits to emergency rooms. Longer exposures to elevated concentrations of $NO_2$ (as represented by the annual standards) may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly, are generally at greater risk for the health effects of $NO_2$. NOx (includes $NO_2$ and NO) reacts with other chemicals in the air and sunlight to form both particulate matter and ozone.

**Carbon Monoxide.** CO is a pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in the reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

**Sulfur Dioxide.** $SO_2$ is produced through the combustion of sulfur or sulfur-containing fuels, such as coal. $SO_2$ is also a precursor to the formation of atmospheric sulfate and particulate matter (PM10 and PM2.5) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain.

**Lead.** Lead has a range of adverse neurotoxin health effects and previously was predominately released into the atmosphere primarily via the combustion of leaded gasoline. The phase-out of leaded gasoline has resulted in decreasing levels of atmospheric lead.

## Toxic Air Contaminants

Health and Safety Code, section 39655 defines a toxic air contaminant as "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." In addition, substances that have been listed as HAPs pursuant to 42 U.S.C. section 7412 are TACs under the state law pursuant to Health and Safety Code, section 39657 (b). CARB formally identified HAPs in California Code of Regulations, Title 17, section 93001 (OEHHA 2021). TACs, also referred to as HAPs or air toxics, are different from criteria pollutants, such as ground-level ozone, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Criteria pollutants are regulated using NAAQS and CAAQS, as noted above. However, there are no ambient standards for most TACs[3] so site-specific HRAs are conducted to evaluate whether risks of exposure to TACs create an adverse impact. Specific TACs have known acute, chronic, and cancer health impacts. CARB has identified TACs in California Code of Regulations, Title 17, sections 93000 and 93001. The nearly 200 regulated TACs include asbestos, organic chemical compounds, and inorganic chemical compounds and compound categories, diesel exhaust, and certain metals. The requirements of the Air Toxic "Hot Spots" Information and Assessment Act of 1987 (Health and Safety Code, sec. 44300 et. seq) apply to facilities that emit these listed TACs above regulated threshold quantities.

### *Health Effects of TACs*

The health effects associated with TACs are quite diverse and generally are assessed locally rather than regionally. TACs could cause long-term health effects, such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage; or short-term effects, such as eye watering, respiratory irritation (a cough), runny nose, throat pain, and headaches (BAAQMD 2017b, pg. 5-1). Numerous other health effects also have been linked to exposure to TACs, including heart disease, Sudden Infant Death Syndrome, respiratory infections in children, lung cancer, and breast cancer (OEHHA 2015).

The primary on-site TAC emission sources for the CA3BGF would be diesel engines, including engines in vehicles and equipment used during construction and stationery genset engines during readiness testing and maintenance. Diesel exhaust is a complex mixture of thousands of gases and fine particles and contains over 40 substances listed by the U.S. EPA as HAPs and by CARB as TACs. The solid material in diesel exhaust is known as DPM (CARB 2021d).

3 Ambient air quality standards for TACs exist for lead (federal and state standards), hydrogen sulfide (state standard), and vinyl chloride (state standard).

DPM has been the accepted surrogate for whole diesel exhaust since the late 1990s. CARB identified DPM as the surrogate compound for whole diesel exhaust in its Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant staff report in April 1998 (Appendix III, Part A, Exposure Assessment [CARB 1998]). DPM is primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust deserves particular attention mainly because of its ability to induce serious noncancerous effects and its status as a likely human carcinogen. Diesel exhaust is also characterized by CARB as "particulate matter from diesel-fueled engines." The impacts from human exposure would include both short and long-term health effects. Short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Effects from long-term exposure can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer. Diesel exhaust is listed by the U.S. EPA as "likely to be carcinogenic to humans" (U.S. EPA 2002).

### *Sensitive Receptors*

Sensitive receptors are defined as groups of individuals that may be more susceptible to health risks due to chemical exposure. Sensitive individuals, such as infants, the aged, and people with specific illnesses or diseases, are the subpopulations that are more sensitive to the effects of toxic substance exposure. Examples of sensitive receptors include residences, schools and school yards, parks and playgrounds, daycare centers, nursing homes, and medical facilities. Residences could include houses, apartments, and senior living complexes. Medical facilities could include hospitals, convalescent homes, and health clinics. Playgrounds could be play areas associated with parks or community centers (BAAQMD 2017b, pg. 5-8). The potential sensitive receptor locations evaluated in the HRA for CA3DC include (DayZenLLC 2021b, pg. 2):

- Residential dwellings, including apartments, houses, and condominiums.
- Schools, colleges, and universities.
- Daycare centers.
- Hospitals and health clinics.
- Senior-care facilities.

### *Sensitive Receptors Near the Project*

BAAQMD CEQA Guidelines recommends that any proposed project, including the siting of a new TAC emissions source, assess associated community risks and hazards impacts within 1,000 feet of the proposed project and take into account both individual and nearby cumulative sources (that is, proposed project plus existing and foreseeable future projects). Cumulative sources represent the combined total risk values of each individual source within the 1,000-foot evaluation zone. A lead agency should enlarge the 1,000-foot radius on a case-by-case basis if an unusually large source or sources of risk or

hazard emissions that may affect a proposed project is beyond the recommended radius (BAAQMD 2017b, Table 2-1, pg. 5-2, and pg. 5-3).

Staff previously used a six-mile radius for cumulative impacts analyses of power plant projects. Based on staff's modeling experience, beyond six miles there is no statistically significant concentration overlap for nonreactive pollutant concentration between two stationary emission sources. The six-mile radius is more appropriate to be used for the turbines with tall stacks and more buoyant plumes. But the diesel genset engines would result in more localized impacts due to shorter stacks and less buoyant plumes. The worst-case impacts of the diesel genset engines would occur at or near the fence line and decrease rapidly with distance from fence line. Therefore, staff believes that the BAAQMD CEQA Guidelines-recommended 1,000 feet is reasonable for the cumulative HRA of the project.

The project site is approximately 6.69 acres (DayZenLLC 2021a, pg. 2-1). The applicant conducted a sensitive receptor search within the 1,000-meter (3,280-ft) of the project, which is farther than the BAAQMD recommended 1,000-ft evaluation zone and determined that the closest residential uses are to the south across the existing Caltrain railroad right-of-way. The applicant also included a park directly south of the project site across the rail line as a potential sensitive receptor. The nearest sensitive receptor would be the nearest residential areas to the south across the existing Caltrain railroad right-of-way, which is about 175 feet from the fence line. The nearest school or daycare to the facility was found to be a school (i.e., Bracher Elementary) approximately 650 feet south of the project boundary. All schools and daycare facilities with 1,000 meters were also analyzed in the HRA (DayZenLLC 2021b, pg. 2). A list of the nonresidential sensitive receptors, such as school, recreation, and daycare, within or just beyond a 1,000-foot radius of the CA3DC project site was presented in Response to Data Request 22 (DayZenLLC 2021t, pg. 18). **Figure 4.3-1** shows the map of sensitive receptors near the project.

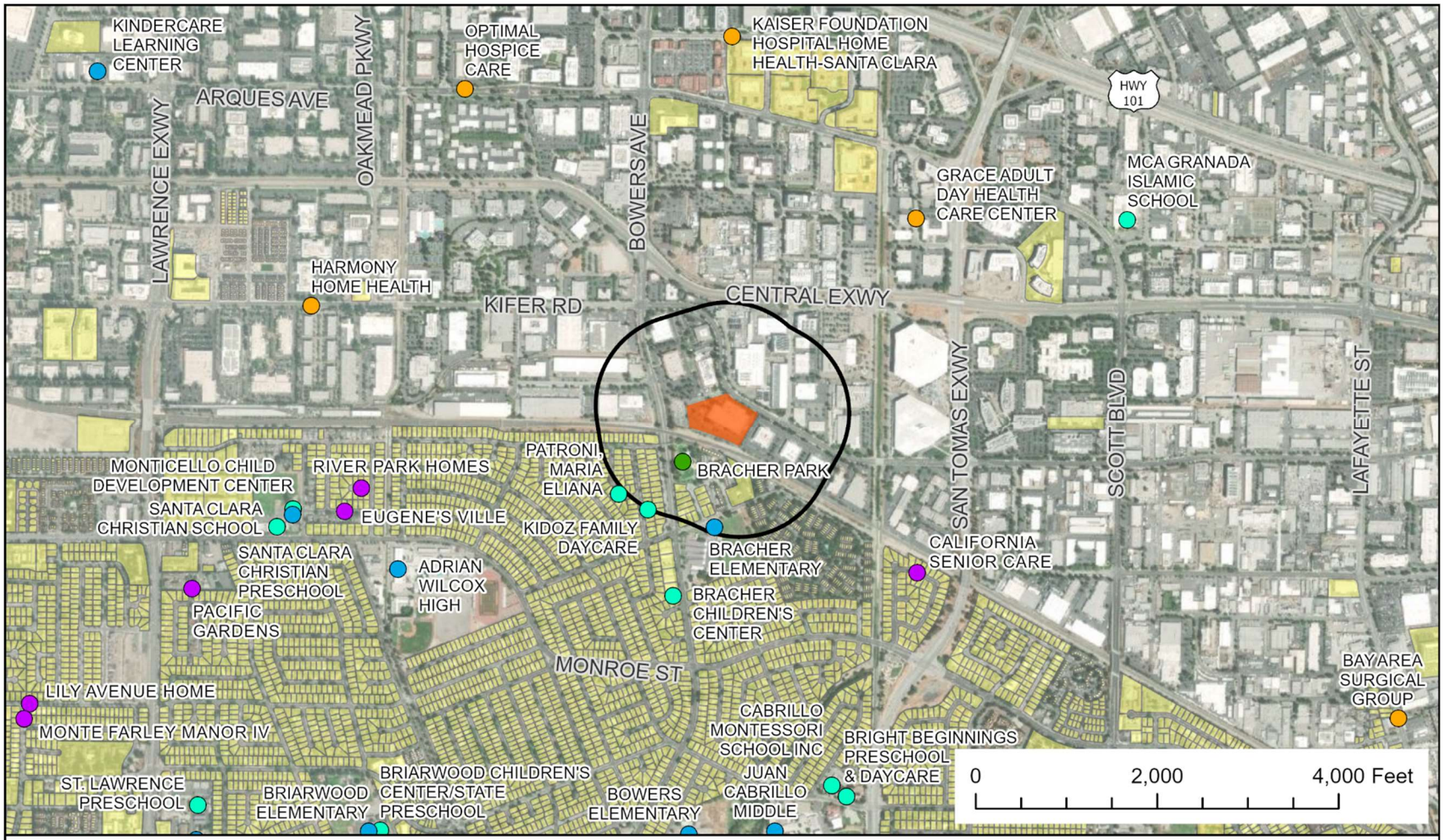



**Figure 4.3-1**
**1,000 Foot Influence Zone**

## Regulatory Background

Federal, state, and regional agencies share responsibility for managing and regulating air quality in the SFBAA.

### *Federal*

**Federal Clean Air Act.** The federal Clean Air Act (CAA) (42 U.S.C. section 7401 et. seq) establishes the statutory framework for regulation of air quality in the United States. Under the CAA, the U.S. EPA oversees the implementation of federal programs for permitting new and modified stationary sources, controlling TACs, and reducing emissions from motor vehicles and other mobile sources.

Title I (Air Pollution Prevention and Control) of CAA requires the establishment of NAAQS, air quality designations, and plan requirements for nonattainment areas. States are required to submit a SIP to the U.S. EPA for areas in nonattainment with NAAQS. The SIP must demonstrate how state and local regulatory agencies will institute rules, regulations, and other programs to attain NAAQS. Once approved by the U.S. EPA and published in the Federal Register, the local air district rules contained in the SIP are federally enforceable.

The Prevention of Significant Deterioration (PSD) program is a federal program for federal attainment areas. The purpose of the federal PSD program is to ensure that attainment areas remain in attainment of NAAQS based upon a proposed facility's annual PTE. If the annual emissions of a proposed project are less than prescribed amounts, a PSD review is not required. CA3DC is not expected to be subject to PSD, with a final determination made by BAAQMD at the time of permitting subsequent to the CEC determination.

**New Source Performance Standard (NSPS) Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.** CAA section 111 (42 U.S.C. section 7411) authorizes the U.S. EPA to develop technology-based standards for specific categories of sources. Manufacturers of emergency stationary internal combustion engines (ICE) using diesel fuel must certify that new engines comply with these emission standards (40 CFR 60.4205). Under NSPS Subpart IIII, owners and operators of emergency engines must limit operation to a maximum of 100 hours per year for maintenance and testing, which allows for some use if necessary, to protect grid reliability; there is no time limit on the use of an emergency stationary ICE in emergency situations (40 CFR 60.4211(f)). The project's Tier 4 diesel-fired gensets would be subject to and likely to comply with the requirements in NSPS Subpart IIII.

**National Emission Standards for Hazardous Air Pollutants.** CAA section 112 42 U.S.C. section 7412) addresses emissions of HAPs. CAA defines HAPs as a variety of substances that pose serious health risks. Direct exposure to HAPs has been shown to cause cancer, reproductive effects or birth defects, damage to the brain and nervous system, and respiratory disorders. Categories of sources that cause HAP emissions are controlled through separate standards under CAA Section 112: National Emission

Standards for Hazardous Air Pollutants (NESHAP). These standards are specifically designed to reduce the potency, persistence, or potential bioaccumulation of HAPs. New sources that emit more than 10 tpy of any specified HAP or more than 25 tpy of any combination of HAPs are required to apply Maximum Achievable Control Technology (MACT).

Asbestos is a HAP regulated under the NESHAP. The asbestos NESHAP is intended to provide protection from the release of asbestos fibers during activities involving the handling of asbestos. CAA air toxics regulations specify work practices for asbestos to be followed during demolitions and renovations. The regulations require a thorough inspection of the area where the demolition or renovation would occur and advance notification of the appropriate delegated entity. Work practice standards that control asbestos emissions must be implemented, such as removing all asbestos-containing materials (ACM), adequately wetting all regulated ACM, and sealing ACM in leak-tight containers and disposing of the asbestos-containing waste material as expediently as practicable.

### *State*

Generally, state law designates local air districts as having primary responsibility for the control of air pollution from all sources other than mobile sources while the control of vehicular air sources is the responsibility of CARB. (Health and Safety Code, §39002) CARB is also responsible for the state's overall air quality management, including, among other things, establishing CAAQS for criteria pollutants identifying TACs of statewide concern and adopting measures to reduce the emissions of those TACs through airborne toxic control measures (ATCM), and regulating emissions of GHGs.

**Air Toxic "Hot Spots" Information and Assessment Act of 1987.** The Air Toxic "Hot Spots" Information and Assessment Act of 1987 (Health and Safety Code, sec. 44300 et. seq), also known as Assembly Bill (AB) 2588, identifies TAC hot spots where emissions from specific stationary sources may expose individuals to an elevated risk of adverse health effects, particularly cancer or reproductive harm. Many TACs are also classified as HAPs. AB 2588 requires that a business or other establishment identified as a significant stationary source of toxic emissions provide the affected population with information about the health risks posed by their emissions.

**Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines, Emergency Standby Diesel-Fueled Compression Ignition Engines.** Statewide regulations govern the use of and emissions performance standards for emergency standby diesel-fueled engines, including those of the project. As defined in regulation (17 CCR §93115.4(a)(29)), an emergency standby engine is, among other possible use, one that provides electrical power during an emergency use and is not the source of primary power at the facility and is not operated to supply power to the electric grid. The corresponding ATCM (17 CCR §93115.6) restricts each emergency standby engine to operate no more than 50 hours per year for maintenance and testing purposes.

The ATCM establishes no limit on engine operation for emergency use or for emission testing to show compliance with the ATCM's standards.

**Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations.** CARB has adopted the Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations to minimize the generation of asbestos from earth disturbance or construction activities (17 CCR §93105). The Asbestos ATCM applies to any project that would include sites to be disturbed in a geographic ultramafic rock unit area or an area where naturally occurring asbestos (NOA), serpentine, or ultramafic rocks are determined to be present. Based upon review of the U.S. Geological Survey map detailing the natural occurrence of asbestos in California, NOA is not expected to be present at the project site (Van Gosen and Clinkenbeard 2011).

### *Regional*

BAAQMD is the regional agency charged with preparing, adopting, and implementing emissions control measures and standards for stationary sources of air pollution pursuant to state and federal authority for all stationary projects located within their jurisdiction. Under the California CAA state law, the BAAQMD is required to develop an air quality plan to achieve and/or maintain compliance with federal and state nonattainment AAQS within the air district's boundary.

**Bay Area 2017 Clean Air Plan.** BAAQMD adopted the Bay Area 2017 Clean Air Plan on April 19, 2017 (BAAQMD 2017a). The 2017 Clean Air Plan provides a regional strategy to protect public health and protect the climate. The 2017 Clean Air Plan updates the most recent Bay Area ozone plan, the 2010 Clean Air Plan, pursuant to air quality planning requirements defined in state law. The 2017 Clean Air Plan defines an integrated, multi-pollutant control strategy to reduce emissions of particulate matter, TACs, ozone and key ozone precursors, and greenhouse gases.

**BAAQMD California Environmental Quality Act Guidelines.** BAAQMD publishes CEQA Air Quality Guidelines to assist lead agencies in evaluating a project's potential impacts on air quality. The BAAQMD published the most recent version of its CEQA Air Quality Guidelines in May 2017 (BAAQMD 2017b).

**BAAQMD Regulation 2, Rule 2: New Source Review (NSR).** This rule applies to all new or modified sources requiring an Authority to Construct permit and/or Permit to Operate. The NSR process requires the applicant to use BACT to control emissions if the source will have the PTE of a BAAQMD BACT pollutant in an amount of 10 or more pounds per day (lbs/day). The NSR process also establishes the requirements to offset emissions increases and to protect NAAQS.

For emergency-use diesel engines with output over 1,000 brake horsepower, BAAQMD updated the definition of BACT in December 2020 to reflect the use of engines achieving Tier 4 exhaust standards (BAAQMD 2020); this requires Tier 4-compliant engines that may include Tier 2 engines abated by catalyzed diesel particulate filter (DPF) and selective

catalytic reduction (SCR). Each of the 44 diesel back-up emergency generators would be equipped with SCR equipment and DPF to achieve compliance with Tier 4 emission standards. Staff expects the proposed generators would meet the current BAAQMD BACT requirements. However, BAAQMD would make the final determination of BACT during the permitting process.

To prevent sources from worsening regional nonattainment conditions, the NSR rule requires offsets at a 1:1 ratio if more than 10 tpy of $NO_X$ or Precursor Organic Compounds (POC), or more than 100 tpy of PM2.5, PM10, or $SO_2$, are emitted. If the PTE for NOx or POC is more than 10 tpy but less than 35 tpy, BAAQMD needs to provide any required offsets at 1:1 ratio from the Small Facility Banking Account in BAAQMD's Emissions Bank. If the PTE for NOx or POC is 35 tpy or more, the offset ratio increases to 1.15:1 and offsets can no longer be obtained through the Small Facility Banking Account.

On June 3, 2019, BAAQMD staff issued a new policy to protect the Small Facility Banking Account from over-withdrawal by new emergency backup generator sources. The policy provides procedures, applicable to the determination of access to the Small Facility Banking Account only, for calculating a facility's PTE to determine eligibility for emission reduction credits (ERCs) from the Small Facility Banking Account for emergency backup generators (BAAQMD 2019). When determining the PTE for a facility with emergency backup generators, the PTE shall include as a proxy, emissions proportional to emergency operation for 100 hours per year per standby generator, in addition to the permitted limits for readiness testing and maintenance (generally 50 hours/year or less per standby or backup engine). BAAQMD would not allow an owner/operator to accept a permit condition to limit emergency operation to less than 100 hours per year to reduce the source's PTE for purposes of qualifying for the Small Facility Banking Account.

After comparing the PTE calculated to determine the account eligibility threshold, the amount of offsets required would be determined only upon the permitted emissions from readiness testing and maintenance and not the emissions from emergency operation. Emissions offsets represent ongoing emission reductions that continue every year, year after year, in perpetuity. BAAQMD requires the use of offsets to counterbalance increases in regular and predictable emissions, not increases in emissions occurring infrequently when emergency conditions arise. An owner/operator may reduce the hours of readiness testing and maintenance or install emissions controls to achieve a PTE of less than 35 tons per year (BAAQMD 2019).

**BAAQMD Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants**. This rule provides for the review of new and modified sources of TAC emissions to evaluate potential public exposure and health risk. Under this rule, a project would be denied an Authority to Construct permit if it exceeds any of the specified risk limits, which are consistent with BAAQMD's recommended significance thresholds. Best Available Control Technology for Toxics (TBACT) would also be required for any new or modified source of TACs where the source has a cancer risk greater than 1.0 in 1 million or a chronic hazard index (HI) greater than 0.20. The specific toxicity values of each TAC for

use in an HRA, as identified by California Office of Environmental Health Hazard Assessment (OEHHA), are listed in Table 2-5-1 of BAAQMD Rule 2-5.

**BAAQMD Regulation 9, Rule 8: Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines.** This rule limits NOx and CO emissions from stationary internal combustion engines with an output rated by the manufacturer at more than 50 brake horsepower, including the standby gensets of the project. This regulation (Rule 9-8-231) defines emergency use as "the use of an emergency standby or low usage engine during any of the following:"

- In the event of unforeseeable loss of regular natural gas supply;
- In the event of unforeseeable failure of regular electric power supply;
- Mitigation or prevention of an imminent flood;
- Mitigation of or prevention of an imminent overflow of sewage or waste water;
- Fire or prevention of an imminent fire;
- Failure or imminent failure of a primary motor or source of power, but only for such time as needed to repair or replace the primary motor or source of power; or
- Prevention of the imminent release of hazardous material.

### *Local*

The city of Santa Clara 2010-2035 General Plan (General Plan) includes goals and policies to reduce exposure of the city's sensitive population to the exposure of air pollution and TACs. The following goals, policies, and actions are applicable to the project:

- Air Quality Goals
    - 5.10.2-G1 Improved air quality in Santa Clara and the region.
    - 5.10.2-G2 Reduced greenhouse gas (GHG) emissions that meet the State and regional goals and requirements to combat climate change.

- Air Quality Policies
    - 5.10.2-P1 Support alternative transportation modes and efficient parking mechanisms to improve air quality.
    - 5.10.2-P2 Encourage development patterns that reduce vehicle miles traveled and air pollution.
    - 5.10.2-P3 Encourage implementation of technological advances that minimize public health hazards and reduce the generation of air pollutants.
    - 5.10.2-P4 Encourage measures to reduce GHG emissions to reach 30 percent below 1990 levels by 2020.
    - 5.10.2-P5 Promote regional air pollution prevention plans for local industry and businesses.

- 5.10.2-P6 Require "Best Management Practices" for construction dust abatement.

## 4.3.3 Environmental Impacts

### a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

This section considers the project's consistency with the applicable air quality plan (AQP). This is a qualitative determination that considers the combined effects of project construction and operation.

#### *Construction and Operations*

*Less Than Significant Impact.* BAAQMD has permit authority over stationary sources, acts as the primary reviewing agency for environmental documents, and adopts rules that must be consistent with or more stringent than federal and state air quality laws and regulations. The applicable AQP is the Bay Area 2017 Clean Air Plan (BAAQMD 2017a).

A project would be consistent with the AQP if that project (BAAQMD 2017b, pg. 9-2 and 9-3):

1) Supports the primary goals of the AQP.

The determination for this criterion can be met through consistency with the BAAQMD significance thresholds. As can be seen in the discussions under environmental checklist criteria "b" and "c" of this air quality analysis, the project would have less than significant impacts related to the BAAQMD significance thresholds. Therefore, the project would have a less than significant impact related to the primary goals of the AQP.

2) Includes applicable control measures from the AQP.

The project would include the implementation of applicable control measures from the AQP. The project-level applicable control measures set forth in the Bay Area 2017 Clean Air Plan include: Decarbonize Electricity Generation (EN1), Green Buildings (BL1), and Bicycle and Pedestrian Access and Facilities (TR9). The project would comply with these control measures through compliance with General Plan and the city's Climate Action Plan, as demonstrated in more detail in **Section 4.8 Greenhouse Gas Emissions**.

3) Does not disrupt or hinder implementation of any AQP control measures.

Examples of disrupting or hindering implementation of an AQP would be proposing excessive parking or precluding the extension of public transit or bike paths. The project design as proposed is not known to hinder the implementation of any AQP control measure.

The analysis in this section demonstrates that the project emissions would not exceed BAAQMD significance thresholds with NOx emissions fully offset through the permitting process with BAAQMD, as discussed under criterion "b" of the environmental checklist, and the project would not expose sensitive receptors to substantial pollutant

concentrations, as discussed under criterion "c" of the environmental checklist. Thus, the project would be consistent with the Bay Area 2017 Clean Air Plan and would have a less than significant impact related to implementation of the applicable AQP.

**BAAQMD Regulation 2, Rule 2: New Source Review (NSR).** As discussed under criterion "b" of the environmental checklist, the NOx emissions of the gensets during readiness testing and maintenance would be fully offset through the permitting process with BAAQMD. Final details regarding the calculation of the facility's PTE and the ultimate NSR permitting requirements under BAAQMD's Regulation 2, Rule 2, would be determined through the permitting process with BAAQMD. The discussion below explains how the district will calculate the necessary offsets.

### b. 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?

This section quantifies the project's nonattainment criteria pollutant emissions and other criteria pollutant emissions to determine whether the net emissions increase would exceed any of the BAAQMD emissions thresholds for criteria pollutants. TAC effects are not included because this section focuses only on criteria pollutants.

#### *Construction*

*Less Than Significant with Mitigation Incorporated*.

Project demolition/construction would include two phases. The first phase of construction (Phase I) would take approximately 15 months. Phase I construction includes demolition activities, grading and site work installation of utility services for interim power, construction of an on-site substation, construction of the entire shell of the CA3DC building, and placement of approximately one-half of the gensets. The second phase of construction (Phase II) would take approximately seven months. Phase II includes the placement of the remaining half of the gensets and interior buildout (CEC 2022a) Construction-phase emissions are a result of construction equipment, material movement, paving activities, and on-site and off-site vehicle trips, such as material haul trucks, worker commutes, and delivery vehicles.

Emissions from the 22-month construction period were estimated using the California Emissions Estimator Model [4] (CalEEMod) program. The estimated criteria pollutant construction-phase emissions are summarized in **Table 4.3-5**.

4 CalEEMod was developed by the California Air Pollution Control Officers Association in collaboration with California Air Districts. This model is a construction and emissions estimating computer model that estimates direct criteria pollutant and direct and indirect greenhouse gas emissions for a variety of land use projects. The model calculates maximum daily and annual emissions. The model also identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures.

**TABLE 4.3-5 CRITERIA POLLUTANT EMISSIONS FROM PROJECT CONSTRUCTION**

| Pollutant | Average Daily Emissions (lbs/day) [a] | | Maximum Annual Construction Emissions (tpy) | BAAQMD Significance Thresholds for Construction-related Average Daily Emissions (lbs/day) [c] | Threshold Exceeded ? |
|---|---|---|---|---|---|
| | Phase I | Phase II | | | |
| ROG/VOC | 15.9 | 0.3 | 2.4 | 54 | No |
| CO | 22.5 | 5.3 | 3.2 | None | N/A |
| NOx | 9.9 | 0.7 | 1.5 | 54 | No |
| SOx | 0.06 | 0.01 | 0.009 | None | N/A |
| PM10 [b] | 0.07 (exhaust) 2.5 (fugitive) | 0.02 (exhaust) 0.8 (fugitive) | 0.009 (exhaust) 0.4 (fugitive) | 82 | No |
| PM2.5 [b] | 0.06 (exhaust) 0.8 (fugitive) | 0.02 (exhaust) 0.2 (fugitive) | 0.009 (exhaust) 0.1 (fugitive) | 54 | No |

Notes:
[a] There are no annual construction-related BAAQMD significance thresholds. BAAQMD's thresholds are average daily thresholds for construction. Accordingly, the average daily emissions are the total estimated construction emissions in each phase averaged over total workdays for that phase.
[b] The average daily PM10 and PM2.5 exhaust emissions are compared to BAAQMD's significance thresholds for exhaust emissions. Fugitive emissions will be controlled with best management practices (BMPs), in accordance with the significance threshold.
[c] BAAQMD 2017b, Table 2-1.
Source: CEC 2022a, CEC staff analysis

The average daily emissions for each phase shown in **Table 4.3-5** indicate that construction emissions would be lower than the applicable BAAQMD significance thresholds for all criteria pollutants.

BAAQMD's numerical thresholds for PM10 and PM2.5 construction-phase emissions apply to exhaust emissions only. BAAQMD has no numerical threshold for fugitive dust generated during construction. The BAAQMD CEQA Guidelines recommend the control of fugitive dust through BMPs to conclude that impacts from fugitive dust emissions are less than significant (BAAQMD 2017b). The applicant proposed measures that would incorporate BAAQMD's recommended construction BMPs as well as exhaust emissions mitigation measures. Staff reviewed the measures and finds them sufficient to address impacts from construction emissions. Staff recommends **AQ-1** to ensure that PM10 and PM2.5 emissions are reduced to a level that would not result in a considerable increase of these pollutants. This impact would be reduced to less than significant with the implementation of **AQ-1**.

### *Operation*

*Less Than Significant Impact*

Operation emissions would result from diesel fuel combustion from the gensets, off-site vehicle trips for worker commutes and material deliveries, and facility upkeep, such as architectural coatings, consumer product use, landscaping, water use, waste generation, natural gas use for comfort heating, and electricity use (DayZenLLC 2021e). Each of the primary emission sources are described in more detail below.

**Stationary Sources – Generator Emissions.** The project would include 44 gensets powered by 2.75-MW Caterpillar Model 3516E engines. Each engine would be equipped with SCR and DPF to achieve compliance with Tier 4 emission standards (DayZenLLC 2021a).

All gensets would be operated for routine readiness maintenance and testing to ensure they would function during an emergency event. During routine readiness testing, criteria pollutants and TACs would be emitted directly from the gensets. The applicant used emissions factors provided by Peterson Power Systems for the ecoCUBE engine configuration based on inlet and outlet emission performance (DayZenLLC 2021b). In estimating the annual emissions, the applicant assumed that testing would occur for no more than 35 hours per year averaged over all engines for a total of 1,540 hours. The average daily emissions are estimated by averaging the annual emissions (assuming all generators are operated for 35 hours per year) over the year (i.e. 365 days). The Airborne Toxic Control Measure for Stationary Compression Ignition Engines (CCR, Title 17, Section 93115) limits testing to 50 hours per year per engine. However, it is the applicant's experience that each engine would be operated for considerably less than 50 hours a year. The applicant is proposing an annual readiness testing and maintenance schedule not to exceed 35 hours per year averaged over all engines for a total of 1,540 hours. The NOx emissions are conservatively based on the Tier 2 emissions standards (uncontrolled emission factors), with the conservative assumption that the SCR will not operate during testing and maintenance purposes. Additionally, **GHG-1** could limit this to no more than 20 hours if BAAQMD updates its threshold of significance before this project receives its permit.

**Emergency Operations.** Emissions that could occur in the event of a power outage or other disruption, upset, or instability that triggers emergency operations would not occur on a regular or predictable basis. However, the BAAQMD 2019 policy, *Calculating Potential to Emit for Emergency Backup Power Generators*, requires a facility's PTE to be calculated based on emissions proportional to emergency operation for 100 hours per year per genset, in addition to the permitted limits for readiness testing and maintenance (BAAQMD 2019). However, after comparing the PTE calculated to determine the account eligibility threshold, the applicant would only be required to offset permitted emissions from readiness testing and maintenance and not the emissions from emergency

operation. BAAQMD requires the use of offsets to counterbalance increases in regular and predictable emissions, not increases in emissions occurring infrequently when emergency conditions arise. The potential ambient air quality impacts of emissions during emergency operations are analyzed qualitatively under environmental checklist criterion "c."

**Miscellaneous Operational Emissions.** Miscellaneous emissions would occur from operational activities, such as worker travel, deliveries, energy and fuel use for facility electrical, heating and cooling needs, periodic use of architectural coatings, and landscaping. The applicant estimated the miscellaneous operational emissions using CalEEMod.

**Table 4.3-6** provides the annual and average daily criteria pollutant emission estimates for project operation, including readiness testing and maintenance, using the emission source assumptions noted above. The average daily emissions are based on annual emissions averaged over 365 days per year. The NOx emissions of the gensets are conservatively estimated using Tier 2 emission factors, assuming the SCRs are not effective during readiness testing and maintenance (even though, depending on load, the SCR would be expected to kick on within 15 minutes, providing some additional emissions control for tests that run longer than this). With the conservative assumption of Tier 2 emissions, the NOx PTE of the project would exceed 35 tpy, and, therefore, the NOx emissions would be fully offset by the applicant through the air permitting process at a ratio of 1.15:1. However, in response to staff's Data Request #4, the applicant provided a more refined calculation of the NOx PTE assuming 35 individual 1-hour readiness testing and maintenance, each consisting of 15 minutes of warm up with Tier 2 emissions and 45 minutes with Tier 4 emissions. For the 100 hours of emergency operations (considering the BAAQMD 2019 policy [BAAQMD 2019]), the applicant assumed 15 minutes of uncontrolled emissions and 2 hours and 45 minutes of controlled emissions for every three hours of operation. Total NOx PTE from the applicant's refined calculation would be 28.7 tpy, which is less than 35 tpy (DayZenLLC 2021t). Therefore, the offset ratio would be 1:1 with the refined calculation. The exact amount and the source of the NOx offsets would be confirmed through the permitting process with BAAQMD. When BAAQMD reviews the permit application for the project, it would perform a refined emissions calculation if the applicant provides a detailed testing plan (including testing frequency, duration, and load, etc.) and the specifications from the SCR vendor. If it is uncertain whether the SCR would become effective during readiness testing and maintenance, BAAQMD would also use the most conservative calculation assuming Tier 2 emissions.

Therefore, the NOx emissions and offsets shown in **Table 4.3-6** assuming Tier 2 emissions are conservative estimates. Analysis of Tier 4 emissions would result in less impact than that for the analysis of Tier 2 emissions. Nonetheless, the NOx emissions of the gensets during readiness testing and maintenance would be fully offset through the permitting process with BAAQMD. Emissions from miscellaneous sources are not required to be offset under BAAQMD permitting policy, which only applies to stationary sources.

**Table 4.3-6** shows that with NOx emissions from the readiness testing and maintenance of the gensets fully offset through the permitting process with BAAQMD, the project would not exceed any of the BAAQMD emissions significance thresholds. The BAAQMD CEQA Guidelines state that, if the project's daily average or annual emissions of operational-related criteria pollutants or precursors do not exceed any applicable threshold of significance listed in **Table 4.3-1**, the proposed project would not result in a cumulatively significant impact (BAAQMD 2017b). Therefore, **Table 4.3-6** shows that the project would not be expected to result in a cumulatively considerable net increase of criteria pollutants during the lifetime of the project, including the readiness testing and maintenance of the gensets.

In addition to the emissions shown in **Table 4.3-6**, ammonia would also be emitted from the urea used in the SCR system. Ammonia is considered a particulate precursor but not a criteria pollutant. Reactive with sulfur and nitrogen compounds, ammonia is common in the atmosphere primarily from natural sources or as a byproduct of tailpipe controls on motor vehicles. Currently, there are no BAAQMD-recommended models or procedures for estimating secondary particulate nitrate or sulfate formation from individual sources, such as the proposed project. BAAQMD CEQA Guidelines do not include a significance threshold for ammonia emissions. The primary emissions of particulate matter from this project are well below the BAAQMD significance threshold and do not require additional mitigation or trigger the need for offsets. In addition, the applicant conservatively estimated the ammonia emissions of the project to be 0.29 tpy (582 lbs/yr), assuming the SCR is effective for a total of 35 hours per year per engine (DayZenLLC 2021w). However, it would take time for the SCR to warm up, especially during low-load readiness testing and maintenance, and, therefore, actual ammonia emissions would be less than applicant's estimates. Therefore, staff expects the secondary particulate matter impacts from ammonia emissions would be less than significant and would not require additional mitigation or offsets.

The project's operations would not result in a cumulatively considerable net increase of any criteria pollutant, and these impacts would be less than significant.

### *Cumulative Impacts*

According to the 2017 BAAQMD CEQA Guidelines (BAAQMD 2017b), in developing thresholds of significance for air pollutants (as shown in **Table 4.3-1**), BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

As discussed above, with the implementation of mitigation measure **AQ-1** during construction and NOx offsets required through the BAAQMD permitting process for readiness testing and maintenance, the project emissions would not exceed the BAAQMD significance thresholds. Therefore, the project would not result in a cumulatively

considerable net increase of any criteria pollutant, and these impacts would be less than significant with mitigation incorporated.

**TABLE 4.3-6 CRITERIA POLLUTANT EMISSIONS FROM PROJECT READINESS TESTING AND MAINTENANCE**

| Source Type | ROG/VOC | CO | NOx | $SO_2$ | PM10 | PM2.5 |
|---|---|---|---|---|---|---|
| | **Annual Emissions (tpy)** | | | | | |
| Phase I Miscellaneous Operational Emissions | 1.14 | 0.48 | 0.09 | 0.001 | 0.15 | 0.04 |
| Phase II Miscellaneous Operational Emissions | 2.16 | 0.82 | 0.16 | 0.003 | 0.29 | 0.08 |
| Standby Generators (Testing Only) [a] | 0.44 | 4.39 | 35.14 [b] | 0.03 [c] | 0.14 | 0.14 |
| Proposed Offsets [d] | -- | -- | (-40.41) | -- | -- | -- |
| Total Phase I Net Emissions | 1.36 | 2.68 | -2.54 | 0.02 | 0.22 | 0.11 |
| Total Full Buildout Net Emissions | 2.60 | 5.22 | -5.11 | 0.03 | 0.42 | 0.22 |
| BAAQMD Annual Significance Thresholds | 10 | -- | 10 | -- | 15 | 10 |
| Net Emissions Exceed BAAQMD Threshold? (Y/N) | N | N/A | N | N/A | N | N |
| | **Average Daily Emissions (lbs/day) [e]** | | | | | |
| Phase I Miscellaneous Operational Emissions | 6.27 | 2.63 | 0.51 | 0.01 | 0.83 | 0.23 |
| Phase II Miscellaneous Operational Emissions | 11.82 | 4.51 | 0.90 | 0.01 | 1.57 | 0.43 |
| Standby Generators (Testing Only) | 2.41 | 24.07 | 192.55 | 0.17 | 0.75 | 0.75 |
| Proposed Offsets [c] | -- | -- | (-221.43) | -- | -- | -- |
| Total Phase I Net Emissions | 7.48 | 14.67 | -13.93 | 0.09 | 1.20 | 0.60 |
| Total Full Buildout Net Emissions | 14.24 | 28.58 | -27.98 | 0.19 | 2.33 | 1.18 |
| BAAQMD Average Daily Significance Thresholds | 54 | -- | 54 | -- | 82 | 54 |
| Net Emissions Exceed BAAQMD Threshold? (Y/N) | N | N/A | N | N/A | N | N |

Notes:
[a] The annual emissions of the standby generators are estimated assuming readiness testing and maintenance would occur 35 hours per year per engine.
[b] The NOx emissions for readiness testing and maintenance are conservatively estimated based on Tier 2 emission factors.
[c] Staff estimated the $SO_2$ emissions of the standby generators based on the hourly $SO_2$ emission rate of from the VDC Supplemental Responses to CEC Data Request Set 2 Air Quality (DayZenLLC 2021t, Table 7-5) assuming readiness testing and maintenance would occur 35 hours per year per engine.
[d] The conservatively estimated NOx emissions of the standby generators would exceed 35 tpy based on Tier 2 emission factors. Therefore, the offset ratio would be 1.15:1 (DayZenLLC 2021e).
[e] The average daily emissions and offsets are based on the annual emissions and offsets averaged over 365 days per year.
Sources: DayZenLLC 2021e, DayZenLLC 2021b, DayZenLLC 2021t with calculation spreadsheets, CEC staff analysis

### c. Would the project expose sensitive receptors to substantial pollutant concentrations?

This section quantifies the ambient air quality pollutant concentrations caused by the project and determines whether sensitive receptors could be exposed to substantial pollutant concentrations.

This section is comprised of separate discussions addressing impacts from criteria pollutants in staff's Air Quality Impact Analysis (AQIA) and impacts from TACs in staff's HRA. Staff's AQIA discusses criteria pollutant impacts from construction and operation. The section also discusses issues associated with potential emergency operations. Staff's HRA discusses the results of TACs for both construction and operation (readiness testing and maintenance) and cumulative sources.

## Air Quality Impact Analysis for Criteria Pollutants

Staff considers any new AAQS exceedance and substantial contribution to any existing AAQS exceedance caused by the project's emissions to be substantial evidence of potentially significant impacts that would require the evaluation of potential mitigation measures. In this case, the existing background levels of PM10 and PM2.5 already exceed the AAQS.

### *Construction*

*Less Than Significant with Mitigation Incorporated*. Construction emissions of criteria pollutants are shown in **Table 4.3-5** under criterion "b" of the environmental checklist. Emissions during project construction would not exceed significance thresholds for construction activities, as established in the BAAQMD CEQA Guidelines. With the staff recommendation to implement **AQ-1** to control fugitive dust and exhaust emissions, construction emissions would not exceed the BAAQMD significance thresholds. Although project construction emissions would fall below the emissions thresholds, this section of the staff analysis explores the ambient air quality impacts of criteria pollutant emissions during construction to evaluate whether substantial pollutant concentrations could occur.

In response to staff data requests, the applicant provided the modeled ambient air quality concentrations caused by the construction emissions (DayZenLLC 2021t; TN 239390). Staff reviewed the applicant's dispersion modeling files and agreed with the inputs used by the applicant and the outputs from the model for the construction AQIA for pollutants other than PM10 and PM2.5. This discussion presents the results of staff's independent analysis for PM10 and PM2.5.

The applicant's AQIA uses the U.S. EPA preferred and recommended dispersion model, American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD [version 21112]) to estimate ambient air quality impacts. For certain runs that provide a sum of $NO_2$ impacts and $NO_2$ background concentrations, an earlier version of AERMOD (version 19191) was used due to a known bug in the current version of AERMOD (DayZenLLC 2021t, pg. 4). For the 1-hour $NO_2$ modeling analyses, the applicant used the

Plume Volume Molar Ratio Method (PVMRM) in AERMOD, as described in U.S. EPA's *Guideline on Air Quality Models* (U.S. EPA 2017).

**Meteorological Data.** The applicant processed a five-year (2015-2019) record of hourly meteorological data collected at the Norman Y. Mineta San Jose International Airport surface station, approximately two miles east of the project site, and this sufficiently represents the meteorology at the project site for use in AERMOD. The concurrent daily upper air sounding data from the Oakland International Airport station were also included. The applicant's consultant processed the data with AERMET (version 19191), AERMOD's meteorological data preprocessor module, for direct use in AERMOD (DayZenLLC 2021b, pg. 9; TN 237381).

**Modeling Assumptions.** The applicant modeled the construction equipment and vehicle exhaust emissions from the project's on-site off-road equipment, as well as the exhaust emissions from the project's off-site on-road sources up to 2,000 feet from the project boundary (DayZenLLC 2021t, pg. 4). The applicant's dispersion modeling analysis divided the construction emissions into two construction phases. The applicant proposes to complete construction of the CA3DC building shell in its entirety in Phase I (during a 15-month period). Phase II would involve a much more limited scope of activity and emissions than Phase I and would consist of interior buildout and the placement of generators for the second half of the building (CEC 2022a). There would be a limited period (about seven months) in which half of the project operational activities could occur concurrently with Phase II construction activities. The applicant modeled the two separate phases of construction emissions as two different area polygons with an initial release height at five meters, which approximates equipment exhaust sources. Staff confirmed that the maximum impacts of construction would occur during the Phase I activities, because the rates of emissions during the limited duration of Phase II would be a fraction of those during Phase I (approximately one-quarter to less than one-tenth, depending on pollutant). Additionally, since the construction emissions in Phase II would be much less than those for Phase I, staff does not expect the impacts during the limited overlapping period of operational activities to be higher than the worst-case impacts modeled for Phase I construction or operation separately.

The applicant's construction modeling does not include fugitive dust emissions (DayZenLLC 2021t, pg. 4). Accordingly, staff independently evaluated PM10 and PM2.5 to determine the impacts of fugitive dust with the equipment and vehicle exhaust. Staff's analysis for PM10 and PM2.5 uses the same area polygons at an initial release height of one meter to approximate fugitive dust being released near the ground level. The area sources are shaped as polygons to cover the full site for Phase I and the eastern side of the site for Phase II. Applicant's and staff's dispersion modeling of construction activities both assume that exhaust emissions and fugitive dust could be released 11 hours per day, between 7:00 a.m. to 6:00 p.m. (DayZenLLC 2021t, pg. 5).

**Table 4.3-7** shows the impacts of the project during the construction period. The project impact column shows the worst-case impacts of the project from modeling. The background column shows the highest concentrations, or the three-year averages of the

highest concentrations for 24-hour PM2.5 and federal 1-hour $NO_2$ and $SO_2$ standards according to the forms of these standards, from the prior three years (2018-2020) from the Jackson Street station. The background PM10 and PM2.5 concentrations are shown in **bold** because they already exceeded the corresponding limiting standards. The total impact column shows the sum of the existing background condition plus the maximum impact predicted by the modeling analysis for construction. The limiting standard column combines CAAQS and NAAQS, whichever is more stringent.

**TABLE 4.3-7 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING CONSTRUCTION ($\mu g/m^3$)**

| Pollutant | Averaging Time | Project Impact | Background | Total Impact | Limiting Standard | Percent of Standard |
|---|---|---|---|---|---|---|
| PM10 | 24-hour | 1.908 | **137.1** | **139** | 50 | **278%** |
| | Annual | 0.681 | **24.8** | **25** | 20 | **127%** |
| PM2.5 | 24-hour | 0.853 | **73.4** | **74** | 35 | **212%** |
| | Annual | 0.305 | **12.9** | **13** | 12 | **110%** |
| CO | 1-hour | 329 | 2,857 | 3,186 | 23,000 | 14% |
| | 8-hour | 100 | 2,400 | 2,500 | 10,000 | 25% |
| $NO_2$ [a] | State 1-hour | 86.3 | 162 | 248.8 | 339 | 73% |
| | Federal 1-hour | --- | --- | 110.8 | 188 | 59% |
| | Annual | 1.68 | 22.6 | 24 | 57 | 43% |
| $SO_2$ | State 1-hour | 0.570 | 37.9 | 38 | 655 | 6% |
| | Federal 1-hour | 0.570 | 7.8 | 8 | 196 | 4% |
| | 24-hour | 0.055 | 3.9 | 4 | 105 | 4% |

Notes: Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.
[a] 1-hour $NO_2$ impacts are evaluated using the PVMRM setting with a default initial $NO_2$/NOx ratio of 0.5. The state 1-hour $NO_2$ total impacts include the maximum modeled project impact combined with maximum $NO_2$ background value. The federal 1-hour $NO_2$ total impacts include the combined seasonal hour of day 98$^{th}$ percentile daily maximum 1-hour background $NO_2$ with modeled $NO_2$ project impact.
Source: DayZenLLC 2021t (Tables 5-6 and 5-7), CEC 2022a, with independent staff analysis for PM10 and PM2.5.

**Table 4.3-7** shows that the impacts from project construction would be below the limiting standards for CO, $NO_2$, and $SO_2$. **Table 4.3-7** also shows that the existing 24-hour and annual PM10 background concentrations are already above the CAAQS. The project would, therefore, contribute to existing exceedances of the 24-hour and annual PM10 CAAQS. The modeled 24-hour PM10 concentration of 1.908 $\mu g/m^3$ from project construction would not exceed the U.S. EPA PM10 SILs of 5 $\mu g/m^3$ for 24-hour impacts, and the maximum modeled annual PM10 concentration of 0.681 $\mu g/m^3$ would not exceed the PM10 SILs of 1 $\mu g/m^3$ for annual impacts. The results provided in **Table 4.3-7** are maximum impacts predicted to occur primarily due to fugitive dust at the project fence line. The impacts would decrease rapidly with distance from the fence line, and for any location south of the fence line, the 24-hour PM10 concentration would be below the U.S. EPA PM10 SILs of 5 $\mu g/m^3$. The maximum annual PM10 impacts at the nearest residential receptors would be lower than the maximum shown. In addition, construction is considered short term, and the impacts during construction would be reduced with the implementation of **AQ-1**. With mitigation, the PM10 impacts of the project during construction would be less than significant.

Similarly, **Table 4.3-7** also shows that the existing 24-hour and annual PM2.5 background concentrations are already above the limiting standards. The project would therefore contribute to existing exceedances of the 24-hour and annual PM2.5 standards. The maximum 24-hour PM2.5 impacts of 0.853 µg/m$^3$ would not exceed the 24-hour PM2.5 SILs of 1.2 µg/m$^3$. The maximum modeled 24-hour PM2.5 impact would occur at the project fence line and would decrease rapidly with distance from the fence line. At the project fence line, the annual average PM2.5 impact during construction of 0.305 µg/m$^3$ would be greater than the BAAQMD significance threshold of 0.3 µg/m$^3$ and greater than the annual PM2.5 SILs for annual impacts of 0.2 µg/m$^3$ (US EPA 2018a). For all receptors beyond 150 feet of the fence line, concentrations would be less than 0.2 µg/m$^3$ during construction.

Sensitive receptors include residents and a park directly south of the CA3 project site. Two daycare facilities, an elementary school, and a city park are within 1,000 feet of the project fence line (DayZenLLC 2021t, pg. 18; Response to Data Request 22). The nearest sensitive receptor (i.e., the nearest residential areas) is about 175 ft south of the fence line. The maximum modeled annual PM2.5 impacts at all sensitive receptors would be much lower than the BAAQMD CEQA Guidelines significance threshold of 0.3 µg/m$^3$ and U.S. EPA annual PM2.5 SILs level of 0.2 µg/m$^3$. The PM2.5 impacts of the project during construction would be less than significant.

Project construction would not expose sensitive receptors to substantial criteria pollutant concentrations, and this impact would be less than significant.

## *Operation*

*Less Than Significant Impact*. The AQIA for project operation includes emissions from the project's diesel gensets during readiness testing and maintenance use to compare worst-case ground-level impacts with established state and federal AAQS. No other on-site stationary emission sources, such as natural gas combustion devices, are proposed. The applicant's modeling analysis is described in more detail below.

The applicant's AQIA compares worst-case ground-level impacts resulting from the project operation with established state and federal AAQS. Staff reviewed the applicant's dispersion modeling files, and staff agrees with the inputs used by the applicant and the outputs from the model for the AQIA.

**Modeling Assumptions.** Stack parameters (e.g., stack height, exit temperature, stack diameter, and stack exit velocity) were based on the parameters given by the engine manufacturer and the applicant. The 44 gensets include 40 gensets for the data center suites and four house gensets for supporting the administration building. All generators would be located along the northern edge of the data center building. The design includes redundancy so that eight data center generators are redundant, and two of the house generators are redundant (DayZenLLC 2021a, pg. 2-2). Each engine-generator set would emit from a point with a stack height of 10.09 meters and diameter of 0.559 meters (DayZenLLC 2021t, pg. 15).

All engines could be tested or used at any load condition. The applicant's analysis modeled all engines at five different load conditions representing 10, 25, 50, 75, and 100 percent load settings to determine the worst-case concentrations.

In the applicant's analysis, two readiness testing and maintenance scenarios were evaluated. The first scenario represents the applicant's proposed monthly generator testing. During these tests, up to four gensets will be operated concurrently at 0 percent load for up to 15 minutes; this is conservatively characterized with emissions at 10 percent load. The second scenario represents the applicant's proposed annual genset testing. These tests are conducted on individual gensets once per year at a series of stepped loads up to 100 percent load. All discrete load levels for which emissions data is available (i.e., 10 percent, 25 percent, 50 percent, 75 percent, and 100 percent) were analyzed to identify the potential worst-case ambient air quality impacts.

The applicant proposes to accept a permit condition from BAAQMD to limit testing to no more than one generator at a time for annual testing at any load and no more than four generators at a time for monthly testing under 10 percent load (DayZenLLC 2021t, Response to Data Request 8).

Additionally, the modeling also presumes that routine readiness testing would be limited to occur within certain hours of the day. The applicant proposes to accept a permit condition from BAAQMD for limiting readiness testing to only be allowed during a 10-hour period between 7:00 a.m. and 5:00 p.m. daily (DayZenLLC 2021t, Response to Data Request 10).

**Refined Modeling Analyses.** The modeling considers the use of the diesel-fired gensets in all proposed readiness testing and maintenance scenarios. The AQIA for project operation includes generator operating assumptions that vary depending on the averaging period of the applicable CAAQS or NAAQS. Refined modeling for all 1-hour averaging periods considers the possibility of any single generator operating at any of five different load conditions. The 1-hour scenarios also include 11 different four-engine groups for the monthly testing under 10 percent load. The AQIA for readiness testing and maintenance assumes that engines may startup for 1-hour runs; each hour consists of 15 minutes of uncontrolled emissions and 45 minutes of controlled emissions a given load (DayZenLLC 2021t, Table 7-5).

Modeling for comparison to the short-term NAAQS follows the applicable multi-year statistical forms (one-hour $NO_2$ and $SO_2$ and 24-hour PM2.5). Similarly, for the 1-hour $NO_2$ and $SO_2$ CAAQS impacts analyses, the applicant reported the highest 1-hour $NO_2$ and $SO_2$ modeled concentrations in a manner consistent with the forms of the CAAQS.

Modeled 1-hour $NO_2$ concentrations reflect an ambient equilibrium between NO and $NO_2$ computed using PVMRM for single-source runs and the Ozone Limiting Method (OLM) for groups of multiple sources. Both methods represent Tier 3 approaches for $NO_2$ analysis as defined in U.S. EPA's *Guideline on Air Quality Models* (U.S. EPA 2017). The applicant

used an $NO_2$/NOx in-stack ratio of 0.1 (10 percent), which is typical for large diesel engines.

For analysis relative to the state one-hour $NO_2$ standard, the modeled $NO_2$ results from PVMRM or OLM are added to the maximum 1-hour background $NO_2$ value from the Jackson Street monitoring site (2018-2020) to arrive at the total $NO_2$ impact for the 1-hour $NO_2$ CAAQS analysis (DayZenLLC 2021t, pg. 8 and Response to Data Request 18). For the NAAQS analysis, the modeled $NO_2$ results from PVMRM or OLM are added to the three-year average of the second-highest hourly background $NO_2$ value, consistent with U.S. EPA guidance for the $NO_2$ NAAQS (U.S. EPA 2011).

Staff's review for the state 1-hour $NO_2$ standard confirmed the applicant's PVMRM runs (using AERMOD version 19191) as being representative of worst-case $NO_2$ 1-hour results. In confirming this, staff also used the earlier version of PVMRM and the current version of OLM, with staff's seasonal hour-by-day highest single hour background $NO_2$ values to test the sources likely to result in the highest $NO_2$ concentrations.

Modeling for comparison with the 24-hour PM10 and PM2.5 standards assumes that any single genset could operate at the maximum 1-hour rate during any given 24-hour period (DayZenLLC 2021t, Table 7-6).

**Table 4.3-8** shows the maximum impacts from project operation, including readiness testing and maintenance. The project impact column shows the worst-case impacts of the project from modeling. The background column shows the highest (or three-year averages for the 24-hour PM2.5 and federal 1-hour $SO_2$ standards) of the background concentrations from the last three years of representative data (2018-2020) from the Jackson Street station. The background PM10 and PM2.5 concentrations are shown in **bold** because they already exceeded the corresponding limiting standards. Except for the 1-hour $NO_2$ total impacts, the total impact column shows the sum of the existing background condition plus the maximum impact predicted by the modeling analysis for readiness testing and maintenance. The limiting standard column combines CAAQS and NAAQS, whichever is more stringent.

**Table 4.3-8** shows that the project's stationary sources would not cause exceedances of the CO, $NO_2$, or $SO_2$ standards. **Table 4.3-8** also shows that the existing PM10 and PM2.5 background concentrations are already above the limiting standards. The project would, therefore, contribute to existing exceedances of the PM10 and PM2.5 standards.

The modeled PM10 concentrations from the project's operation in **Table 4.3-8** are well below the U.S. EPA PM10 SILs of 5 $\mu g/m^3$ for 24-hour impacts and 1 $\mu g/m^3$ for annual impacts. Similarly, the maximum modeled PM2.5 concentrations from project operation would not exceed the U.S. EPA PM2.5 SILs of 1.2 $\mu g/m^3$ for 24-hour impacts at any location. **Table 4.3-8** also shows that the annual PM2.5 project impacts of 0.054 $\mu g/m^3$ would not exceed the U.S. EPA PM2.5 of 0.2 $\mu g/m^3$ for annual impacts (US EPA 2018a) or the project-level BAAQMD CEQA Guidelines threshold for annual-average PM2.5 of 0.3 $\mu g/m^3$, for risk and hazards.

**TABLE 4.3-8 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING OPERATION (µg/m³)**

| Pollutant | Averaging Time | Project Impact | Background | Total Impact | Limiting Standard | Percent of Standard |
|---|---|---|---|---|---|---|
| PM10 | 24-hour | 0.13 | **137.1** | **137** | 50 | **274%** |
| | Annual | 0.054 | **24.8** | **25** | 20 | **124%** |
| PM2.5 [a] | 24-hour | 0.13 | **73.4** | **74** | 35 | **210%** |
| | Annual | 0.054 | **12.9** | **13** | 12 | **108%** |
| CO | 1-hour | 172 | 2,857 | 3,029 | 23,000 | 13% |
| | 8-hour | 115 | 2,400 | 2,515 | 10,000 | 25% |
| $NO_2$ [b,c] | State 1-hour | --- | --- | 327 | 339 | 96% |
| | Federal 1-hour | --- | --- | 179 | 188 | 95% |
| | Annual | 8.6 | 22.6 | 31 | 57 | 55% |
| $SO_2$ [c] | State 1-hour | 0.84 | 37.9 | 39 | 655 | 6% |
| | Federal 1-hour | 0.84 | 7.8 | 9 | 196 | 4% |
| | 24-hour | 0.76 | 3.9 | 5 | 105 | 4% |

Notes: Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.
[a] To compute the total impacts for the 24-hour PM2.5 NAAQS, staff conservatively combined the maximum modeled 24-hour PM2.5 impacts to the three-year average of 98th percentile PM2.5 background.
[b] The $NO_2$ impacts are evaluated using the U.S. EPA PVMRM for single source scenarios and OLM for multiple-source scenarios, with each source's $NO_2$/NOx in-stack ratio of 0.10.
[c] Impacts for the 1-hour $NO_2$ and $SO_2$ CAAQS are based on the maximum 1-hour modeled concentrations and maximum seasonal hour-of-day backgrounds since these CAAQS are "values that are not to be exceeded." Impacts for the 1-hour statistical-based $NO_2$ NAAQS use seasonal hour-of-day background concentrations adjusted to reflect the form of the standard.
Source: DayZen LLC 2021t (Tables 7-8 through 7-10).

**Table 4.3-8** shows that use of the diesel-fired gensets in all proposed readiness testing and maintenance scenarios would not expose sensitive receptors to substantial pollutant concentrations, and this impact would be less than significant.

**Localized CO Concentrations.** Engine exhaust may elevate localized CO concentrations, resulting in "hot spots." Receptors exposed to these CO hot spots may have a greater likelihood of developing adverse health effects. CO hot spots are typically observed at heavily congested intersections where a substantial number of vehicles idle for prolonged durations throughout the day. BAAQMD screening guidance indicates that a project would not exceed the CO significance threshold if a project's traffic projections indicate traffic levels would not increase at any affected intersection to more than 44,000 vehicles per hour or at any affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (BAAQMD 2017b).

The proposed project would generate a small number of vehicle trips to the site. These trips would include workers and material and equipment deliveries. It is unlikely that the addition of vehicle trips from the project on any roadway in the vicinity of the project site would result in an exceedance of the BAAQMD screening threshold. As a result, the additional vehicle trips associated with the project would result in a negligible effect on CO concentrations in the vicinity of the project site.

**Table 4.3-7** and **Table 4.3-8** show the CO concentrations resulting from the project's construction and operation and modeling results confirm that impacts would be well below the limiting standards and BAAQMD CEQA Guidelines significance thresholds of 20.0 ppm (23,000 µg/$m^3$) for 1-hour average concentrations and 9.0 ppm (10,000 µg/$m^3$) for 8-hour average concentrations.

Localized CO impacts during construction and operation, including readiness testing and maintenance, would not expose sensitive receptors to substantial pollutant concentrations, and this impact would be less than significant.

### *Emergency Operations Impacts for Criteria Pollutants*

This section addresses the potential for emergency situations that could trigger the unplanned operation of the project's diesel-fired gensets. Emergency use of the gensets could occur in the event of a power outage or other disruption, upset, or instability that triggers a need for emergency backup power at CA3DC.

The air quality impacts of genset operation during emergencies are not quantified below because the impacts of emergency operations are typically not evaluated during facility permitting and local air districts do not normally conduct an air quality impact assessment of such impacts. CEC staff assessed the likelihood of emergency events but finds that modeling the air quality impacts of emergency operations would require a host of unvalidated, unverifiable, and speculative assumptions about when and under what circumstances such a hypothetical emergency would occur. Such a speculative analysis is not required under CEQA (CEQA Guidelines, CCR, Tit. 14, § 15064(d)(3) and § 15145), and, most importantly, would not provide meaningful information by which to determine project impacts.

Emissions that occur during the emergency use of the gensets would not occur on a regular or predictable basis (see **Appendix B** for more information). During the permitting process, BAAQMD policy requires facilities to presume that each of their generators will experience 100 hours per year of emergency operation when calculating their PTE for determining the applicability of certain permitting regulations (BAAQMD 2019).

Although normally excluded from ambient air quality impact analysis during permit review, BAAQMD comments on the NOP requested that this air quality analysis include various scenarios of backup power generation operations beyond routine testing and maintenance (BAAQMD 2021b). The comments from BAAQMD provided a review of data centers that initiated operation of diesel engines for "non-testing/non-maintenance" purposes, for the purpose of informing staff's consideration of scenarios of backup power generation operations beyond routine testing and maintenance (BAAQMD 2021b).

Staff reviewed the BAAQMD comments regarding the use of diesel engines for "non-testing/non-maintenance" purposes and confirmed that these types of events are infrequent, irregular, and unlikely and the resulting emissions are not easily predictable or quantifiable. The BAAQMD comments showed that extended durations of standby generator engines use occurred for "non-testing/non-maintenance" purposes, mostly due to extreme events within the 13-month record of the data. The 13-month period of BAAQMD's review (September 1, 2019, to September 30, 2020) included the implementation of Pacific Gas and Electric's Public Safety Power Shutoff (PSPS), severe wildfires, several California Independent System Operator (CAISO)-declared emergencies, and winter storms.

In staff's analysis of BAAQMD's review, without excluding the extreme events, 1,877 engine-hours of diesel engine use occurred at 20 data centers for "non-testing/non-maintenance" purposes (less than half of the 45 facilities included in the review, and less than a third of such facilities under BAAQMD's jurisdiction). BAAQMD's review covered 288 individual diesel engines that operated over a 13-month record. Because the backup generator engines were collectively available for over 2.74 million engine-hours during the 13-month period (288 engines * 9,504 hours in the 13-month record), and they were used for "non-testing/non-maintenance" purposes for 1,877 engine-hours, at those facilities where operation occurred, the engines entered into emergency operations during 0.07 percent of their available time (1,877 / 2.74 million). Staff's analysis of BAAQMD's information found that the average runtime for each diesel backup generator engine per event in BAAQMD's review was approximately 5.0 hours. Based on this data, staff determined that the emergency use of the standby generator engines was infrequent and of short duration.

Due to the number of factors that need to be considered, using an air quality model to evaluate ambient air quality impacts during emergency operations would require unnecessary speculation and would render the results of any such exercise too speculative to be meaningful. This remains especially true when neither the CEC nor any other agency has established or used in practice a threshold of significance by which to interpret air quality modeling results from emergency operations. Emergency operation would be very infrequent, and emergency operations would not occur routinely during the lifetime of the facility. Accordingly, the potential for any adverse impacts to ambient air quality concentrations would be a very-low probability event.

Thus, staff concludes that assessing the impacts of emergency operation of the gensets would be speculative due to the infrequent, irregular, and unplanned nature of emergency events. Emissions and impacts during emergency operation are not easily predictable or quantifiable.

Because of the infrequent nature of emergency conditions and the reliability of the grid as detailed in **Appendix B**, the project's emergency operation would be unlikely to expose sensitive receptors to substantial concentrations of criteria air pollutants.

### *Cumulative Impacts for Criteria Pollutants*

Under environmental checklist criterion "b" above, staff concludes that the project emissions would not exceed the BAAQMD significance thresholds with the implementation of **AQ-1** during construction and NOx offsets for readiness testing and maintenance. Therefore, the project would not result in a cumulatively considerable net increase of any criteria pollutant, and these impacts would be less than significant with mitigation incorporated.

## Health Risk Assessment for Toxic Air Contaminants

The HRA for the project was conducted separately for (1) the period of project's demolition, excavation, and construction, and (2) the period of operation, which consists of readiness testing and maintenance. A separate discussion summarizes the risk and hazards for the project in a cumulative HRA that includes the project's impact with the impacts of existing sources in the area.

The HRA estimated risks of cancer, non-cancer chronic exposure, and non-cancer acute exposure for residential, worker, and sensitive receptors, including the maximally exposed individual resident (MEIR), maximally exposed individual worker (MEIW), maximally exposed school receptor (MESR), maximally exposed daycare receptor (MEDR) and the maximally exposed recreational receptor (MERR) (DayZenLLC 2021b, pg. 16). As required by the 2015 OEHHA Guidance, sensitive receptor (including residential) cancer risks were estimated assuming exposure beginning in the third trimester of pregnancy and worker cancer risk was estimated assuming an 8-hour-per-day, 250 day-per-year exposure, beginning at the age of 16 (OEHHA 2015).

Some exposure assumptions (DayZenLLC 2021b, pg. 11-12):

- For construction, off-site residents were assumed to be present at one location for the entire duration of the construction period. For operation, off-site residents were assumed to be present at one location for a 30-year period, beginning with exposure in the third trimester.
- For off-site school and childcare receptors, the applicant selected exposure parameters using the conservative assumption that a child would be located at the daycare facility starting at age of six weeks until age six, and for the school receptor, a child would be at the school starting at age six until 18 years. For construction and operation, the child was assumed to be present at the location for eight hours a day, for five days a week.
- For off-site recreational receptors, exposure parameters were selected with the conservative assumption that a child would be present at the park starting at age zero for two hours a day and would be present for 30 years, 180 days per year.
- For off-site receptors, including fence line and all other public spaces adjacent sidewalk receptors, the applicant adopted the staff-requested methodology of assigning the exposure parameters of worker to those locations for assessment of health impacts. A 25-year exposure duration for workers is assumed based on the

OEHHA recommended exposure duration period and an exposure frequency of 250 days in a year is used in the analysis.

### *Construction HRA*

*Less Than Significant Impact*. Project construction is expected to occur over two phases, with Phase I construction lasting for about 15 months, and Phase II construction lasting for 7 months (DayZenLLC 2021e, pg. 4-31; CEC 2022a). Emissions from the approximate 22-month construction period were estimated using CalEEMod (DayZenLLC 2021e, pg. 4-25; CEC 2022a). Construction emissions are a result of construction equipment, material movement, paving activities, and on- and off-site vehicle trips, such as material haul trucks, worker commutes, and delivery vehicles (DayZenLLC 2021e, pg. 4-25). Construction health risk impacts are based on the assumption that all construction off-road equipment meets Tier 4 final engine standards and that all exposed areas in the site would undergo watering twice a day. The risks and health impacts reported are for the entire duration of construction period (DayZenLLC 2021e, pg. 4-31). Only DPM emissions from off-road construction equipment and on-road vehicles are analyzed (DayZenLLC 2021e, Table 4.3-10).

Staff reviewed the applicant's modeling files and agrees with the inputs used by the applicant and the outputs from the model for carcinogenic and chronic health risks. There are no acute risks analyzed (DayZenLLC 2021e, Table 4.3-10) for construction HRA. Acute (non-cancer) health risks were not estimated because there is no acute inhalation REL for DPM, indicating that DPM is not known to result in acute health hazards. The results of the construction HRA are presented in **Table 4.3-9**. It shows that the maximum cancer risk impact, chronic HIs, and PM2.5 concentrations at the MEIR, MEIW, MEDR, MESR, and MERR during the construction of the project would be less than BAAQMD's significance thresholds. Therefore, staff concluded that the health risks of the project construction would be a less than significant impact.

Note that the risk values shown in **Table 4.3-9** are the highest of those modeled for each type of sensitive receptors. The risk values at other locations for each type of sensitive receptors would be lower than those shown in **Table 4.3-9**. Health risks at nearby worker/residential/sensitive receptors would all be below the significance thresholds. The health risks from project construction would be less than significant, and no mitigation would be necessary. The health risks from project construction would be less than significant with the implementation of **AQ-1**.

| TABLE 4.3-9 CONSTRUCTION -- MODELED RECEPTOR MAXIMUM HEALTH RISK | | | | |
|---|---|---|---|---|
| **Receptor Type** | **Cancer Risk Impact (in one million)** | **Chronic Non-Cancer Hazard Index (HI) (unitless)** | **Acute Non-Cancer Hazard Index (HI) (unitless)** | **PM2.5 Concentration (µg/m³)** |
| **Residential-MEIR[1]** | 1.5 | 0.0017 | N/A | 0.09 |
| **Worker-MEIW[2]** | 0.45 | 0.005 | N/A | 0.27 |
| **Daycare-MEDR[3]** | 0.8 | 2.6E-04 | N/A | 0.014 |
| **School-MESR [4]** | 0.17 | 3.9E-04 | N/A | 0.021 |
| **Recreational-MERR [5]** | 0.1 | 8.2E-04 | N/A | 0.0044 |
| **BAAQMD Threshold** | 10 | 1 | 1 | 0.3 |

Notes:
[1] Maximally Exposed Individual Resident (MEIR). It is located about 175 ft south the project boundary (just across the street of the project).[2] Maximally Exposed Individual Worker (MEIW). It is located on the southeast of the project boundary. Risks at the worker receptors include a Worker Adjustment Factor of 4.2 (7/5*24/8) to account for the hours a worker is present at a site.
[3] Maximally Exposed Daycare Receptor (MEDR). It is located approximately 1750 ft southeast of the project boundary. Risks at the daycare and school receptors include a modeling adjustment factor of 4.2 (7/5*24/8) to account for the hours when a child is present at the site.
[4] Maximally Exposed School Receptor (MESR). It is the Bracher Elementary, approximately 650 feet south of the Project boundary. Risks at the daycare and school receptors include a modeling adjustment factor of 4.2 (7/5*24/8) to account for the hours when a child is present at the site.
[5] Maximally Exposed Recreational Receptor (MERR). It is the Bracher Park. Locating about 150 ft south of the project boundary (just across the street of the project).
Source: DayZenLLC 2021e, Table 4.3-10, DayZenLLC 2021b, pg. 2, and DayZenLLC 2021t, pg. 18 and Table 20-3.

### *Operation HRA*

*Less Than Significant Impact*. Project operation emissions are a result of diesel fuel combustion from the gensets, off-site vehicle trips for worker commutes and material deliveries, and facility upkeep, such as architectural coatings, consumer product use, landscaping, water use, waste generation, natural gas use for comfort heating, and electricity use. They are categorized into two major sources: (1) stationary sources and (2) miscellaneous operation emissions (DayZenLLC 2021e, pg. 4-26 through 4-28).

(1) Stationary Sources: CA3BGF's 44 diesel gensets. Each of the 44 gensets for the data center suites would be powered by Caterpillar Model 3516E engines equipped with SCR equipment and DPF to comply with Tier 4 emissions standards. The DPFs are expected to control particulate matter by approximately 71 percent. All gensets would be tested routinely to ensure they would function during an emergency. TAC emissions resulting from diesel stationary combustion were assumed equal to PM10 emissions or estimated using speciated emission factors from CARB profile 818[5] (DayZenLLC 2021e, pg. 4-26).

[5] https://ww2.arb.ca.gov/speciation-profiles-used-carb-modeling

CARB's ATCM limits each engine to no more than 50 hours annually for reliability purposes (i.e., testing and maintenance). The applicant's health impacts are based on an annual maximum operating limit of 35 hours per year averaged over all engines for a total of 1,540 hours for readiness testing and maintenance operations (DayZenLLC 2021e, pg. 4-26 and pg. 4-32).

(2) Miscellaneous Operational Emissions: Miscellaneous emissions from operational activities such as worker travel, deliveries, energy and fuel use for facility electrical, heating and cooling needs, periodic use of architectural coatings, landscaping, etc. were evaluated by CalEEMod (DayZenLLC 2021e, pg. 4-28). However, these emissions were not included in the operation HRA. The health impacts are based on an annual maximum operating limit of 35 hours for readiness testing and maintenance operations (DayZenLLC 2021e, pg. 4-32).

All discrete loads levels for which emissions data is available (i.e., 10%, 25%, 50%, 75%, and 100%) were analyzed to identify the potential worst-case PM2.5 annual average concentrations which correspond to the worst-base health risk impacts. The applicant reported the second greatest impact at 25% load, where the greatest impact is at 100% load. Since it is impossible to run the generators at 100% load for the entire maximum run time, the HRA was run at 25% load for all engines for all hours. Even that is an overestimate of the impacts, as much of the run time will be at 0% load, which is characterized by the parameters for 10% load (DayZenLLC 2021t, pg. 16).

**Table 4.3-10** shows that the cancer risks, chronic HIs, acute HIs, and PM2.5 concentrations at the MEIR, MEIW, MEDR, MESR, and MERR during the project's operation would be less than the BAAQMD's significance thresholds. Therefore, staff concluded that the health risks of the project operation would be a less-than-significant impact.

It should be noted that the risk values shown in **Table 4.3-10** are the highest of those modeled for each type of sensitive receptors. The risk values at other locations for each type of sensitive receptors would be lower than those shown in **Table 4.3-10**. Health risks at nearby worker/residential/sensitive receptors would all be below the significance thresholds. The health risks from the project's operation would be less than significant, and no mitigation would be necessary. The health risks from the project's construction would be less than significant with the implementation of **AQ-1**.

In conclusion, staff finds the health risks at sensitive receptor locations would be less than the BAAQMD CEQA Guidelines significance thresholds shown in **Table 4.3-1**. Staff concludes that the health risks from the project's construction and routine operation would be less than significant and would be further reduced with the implementation of **AQ-1**.

| TABLE 4.3-10 OPERATION - MODELED RECEPTOR MAXIMUM HEALTH RISK | | | | |
|---|---|---|---|---|
| **Receptor Type** | **Cancer Risk Impact [6] (in one million)** | **Chronic Non-Cancer Hazard Index (HI) [6] (unitless)** | **Acute Non-Cancer Hazard Index (HI) [7] (unitless)** | **PM2.5 Concentration [6] (µg/m³)** |
| **Residential-MEIR[1]** | 8.73 | 0.0037 | 0.027 | 0.012 |
| **Worker-MEIW[2]** | 8.99 | 0.0108 | 0.053 | 0.035 |
| **Daycare-MEDR[3]** | 4.38 | 0.001 | 0.015 | 0.003 |
| **School-MESR [4]** | 1.35 | 0.0008 | 0.016 | 0.003 |
| **Recreational-MERR [5]** | 0.31 | 0.001 | 0.029 | 0.003 |
| **BAAQMD Threshold** | 10 | 1 | 1 | 0.3 |

Notes:
[1] Maximally Exposed Individual Resident (MEIR). It is located about 175 ft south the project boundary (just across the street of the project).
[2] Maximally Exposed Individual Worker (MEIW). It is located on the southeast of the project boundary. Risks at the worker receptors include a Worker Adjustment Factor of 4.2 (7/5*24/8) to account for the hours a worker is present at a site.
[3] Maximally Exposed Daycare Receptor (MEDR). It is located approximately 1750 ft southeast of the project boundary. Risks at the daycare and school receptors include a modeling adjustment factor of 4.2 (7/5*24/8) to account for the hours when a child is present at the site.
[4] Maximally Exposed School Receptor (MESR). It is the Bracher Elementary, approximately 650 feet south of the Project boundary. Risks at the daycare and school receptors include a modeling adjustment factor of 4.2 (7/5*24/8) to account for the hours when a child is present at the site.
[5] Maximally Exposed Recreational Receptor (MERR). It is the Bracher Park. Locating about 150 ft south of the project boundary (just across the street of the project).
[6] Load scenario: 25%.
[7] Value of the worst-case generator at 25% load.
Source: DayZenLLC 2021e, pg 4-32, and DayZenLLC 2021t, Table 20-2.

### *Emergency Operations HRA*

*Less Than Significant Impact*. As discussed above and in **Appendix B**, any operation of this project for emergency purposes would be infrequent, irregular, and unlikely and the resulting emissions are not easily predictable or quantifiable. Nevertheless, because the Health Risk Assessment thresholds and modeling of TACs are less sensitive to minor adjustments in variable assumptions than is the case for criteria air pollutants, staff can generally extrapolate some of the modeling that is done for testing and routine maintenance to explore what emissions could look like under an emergency operation scenario. This is more true, however, for cancer and chronic impacts than it is for acute HI which, like some criteria pollutant modeling, relies on 1-hour modeling results to determine impact.

For this project, the HRA of acute TAC impacts, shown in **Table 4.3-10**, represents the acute HI of the generator of reasonable worst-case (25% load). In other words, the engines would result in greater impacts at 25% load than at any other load except for 100%. However, data provided about real-world operation of data center backup generating facilities during emergency situations show that they do not run at 100% load. Therefore, it is reasonable to use 25% as a reasonable worst-case scenario for purposes of modeling. Staff also concludes that modeling the project at 25% load results in an overestimation of reasonable worst-case conditions because much of the actual

operation would be at 0% load, which must be reflected in the model as 10% load. In other words, typical backup generating facilities for data centers do not run for an hour when operating during an emergency situation. Nevertheless, to estimate potential impacts for acute HI, the project must be modeled as if it is operating for the full hour. Since the value provided by the applicant is only for one engine, staff summed the acute HIs of all 44 diesel gensets, assuming they operated concurrently for one hour. The acute HIs of each receptor are shown in **Table 4.3-11** and most of them are all still below the significance threshold. As mentioned above, the design includes redundancy so that eight gensets are redundant, and two of the four house gensets are redundant (DayZenLLC 2021a, pg. 2-2). Therefore, it is very conservative to suppose 44 gensets operate concurrently. For some receptors (i.e., MEIR and MEIW) with acute HI higher than one (1), staff recalculated by excluding 10 redundant engines with the lowest HI, which brought the HIs down to less than the threshold of one (1). As discussed above, this represents one of the reasonable worst-case scenarios because the total available gensets exceed what would be operated.

This approach is typical of how air quality modeling is done. Certain worst-case assumptions are made to conduct the initial screening-level modeling. If the results show project impacts would fall below all applicable thresholds, then no further refinement is necessary. If, however, the results show the potential for predicted exceedances, then further refinements are necessary to ensure the model reflects likely real-world operation parameters.

While concurrently operating all gensets could approximate what might occur during an undefined emergency, the analysis of acute non-cancer hazards showed the acute health risks to be below the relevant significance thresholds. Therefore, staff concludes that the project is expected to have less than significant acute health risks from emergency operations.

**TABLE 4.3-11 EMERGENCY OPERATION -- MODELED RECEPTOR MAXIMUM HEALTH RISK**

| Receptor Type | Acute[6] Non-Cancer Hazard Index (HI) (unitless) | Acute[7] Non-Cancer Hazard Index (HI) (unitless) |
|---|---|---|
| **Residential-MEIR[1]** | 0.027 | 0.832 [8] |
| **Worker-MEIW or PMI[2]** | 0.053 | 0.985 [9] |
| **Daycare-MEDR[3]** | 0.015 | 0.504 |
| **School-MESR [4]** | 0.016 | 0.621 |
| **Recreational-MERR [5]** | 0.029 | 0.931 |
| **BAAQMD Threshold** | 1 | 1 |

Notes:
[1] Maximally Exposed Individual Resident (MEIR), Receptor # 2621. It is located about 175 ft south the project boundary (just across the street of the project).
[2] Maximally Exposed Individual Worker (MEIW) and Point of Maximum Impact (PMI), Receptor # 5082. It is located on the southeast of the project boundary. Risks at the worker receptors include a Worker Adjustment Factor of 4.2 (7/5*24/8) to account for the hours a worker is present at a site.
[3] Maximally Exposed Daycare Receptor (MEDR). It is located approximately 1750 ft southeast of the project boundary. Risks at the daycare and school receptors include a modeling adjustment factor of 4.2 (7/5*24/8) to account for the hours when a child is present at the site.
[4] Maximally Exposed School Receptor (MESR). It is the Bracher Elementary, approximately 650 feet south of the Project boundary. Risks at the daycare and school receptors include a modeling adjustment factor of 4.2 (7/5*24/8) to account for the hours when a child is present at the site.
[5] Maximally Exposed Recreational Receptor (MERR). It is the Bracher Park. Locating about 150 ft south of the project boundary (just across the street of the project).
[6] Value of the generator of the worst-case at 25% load.
[7] Assume all 44 generators operate concurrently for one hour.
[8] Receptor # 5080. HI was calculated by excluding 10 redundant engines with lowest HI.
[9] Receptor # 4137. HI was calculated by excluding 10 redundant engines with lowest HI.
Source: DayZenLLC 2021e, pg 4-32, DayZenLLC 2021t, Table 20-2., and CEC staff analysis.

### *Cumulative HRA*

*Less Than Significant Impact*. This discussion addresses the impacts from cumulative sources in comparison to the BAAQMD significance thresholds for risk and hazards from cumulative sources (BAAQMD, 2017b). The cumulative HRA is an assessment of the project's impact summed with the impacts of existing sources within 1,000 feet of the project. The results of this cumulative HRA are compared to the BAAQMD CEQA cumulative thresholds of: no more than 100 cancer cases per million; a chronic HI of no more than 10.0; and PM2.5 concentrations of no more than 0.8 $\mu g/m^3$ annual average PM2.5 concentrations.

Per staff's request in Data Requests 25 and 26, the applicant provided a cumulative HRA and compared results with the BAAQMD threshold of significance for cumulative risk and hazards (DayZenLLC 2021t, pg. 19-20). The BAAQMD CEQA Guidelines for assessing cumulative health risk impacts recommend investigating all sources of TACs within 1,000 feet of a proposed project. The BAAQMD CEQA Guidelines also suggest that a lead agency enlarge this radius "on a case-by-case basis if an unusually large source or sources of risk or hazard emissions that may affect a proposed project is beyond the recommended

radius."[6] However, the BAAQMD CEQA Guidelines do not elaborate on what constitutes "an unusually large source or sources of risk or hazard emissions." The BAAQMD's *Recommended Methods for Screening and Modeling Local Risks and Hazards* potentially provides some insight on the topic wherein it also recommends a 1,000-foot radius for a cumulative analysis but states that for "large, complex sources" a larger radius may be appropriate, but the specifics should be determined on a case-by-case basis. The examples it then provides for complex sources include major ports, railyards, distribution centers and truck-related businesses, airports, oil refineries, power plants, metal melting facilities, and cement plants. Because of the nearby railroad (~~CalTrain~~Caltrain) and surrounding industrial stationary sources that could present elevated existing levels of TACs, staff requested information on TAC sources within 2,000 feet of the project fence-line (DayZenLLC 2021t, pg. 19). After thoroughly searching, there is no unusually large or major source (as explained above) beyond 1,000 feet; therefore, staff conducted the cumulative HRA within 1,000 feet of the project fence-line.

However, the applicant only conducted the cumulative HRA for the MEISR as part of the project (DayZenLLC 2021t, pg. 20), and not other sensitive receptors. It's important to note that the MEISR in the applicant's analysis is the same as the MEIR in the staff's analysis. The applicant's cumulative HRA ~~shows~~ showed that the maximum cumulative cancer risk at the MEISR would be 133 in a million, higher than the threshold of 100 in a million; the maximum cumulative HI would be 0.15, below the threshold of 10; and the maximum cumulative PM2.5 concentration would be 1.3 µg/m$^3$, higher than the threshold of 0.8 µg/m$^3$. ~~This~~ These exceedances ~~is~~were driven largely by the proximity of the MEISR to the nearby railroad (~~CalTrain~~Caltrain). The exceedances ~~is~~ were also impacted by the conservative nature of the cumulative analysis. BAAQMD CEQA Guidelines and tools were developed to analyze the impacts from all stationary sources within 1,000 feet of the project site, rather than the 2,000-foot distance requested by staff. As a result, the distance multipliers ~~do~~did not account for the incrementally decreasing risk and hazard impacts from sources that ~~are~~were ~~further~~farther than 1,000 feet from the MEISR/MEIR and ~~are~~were overestimates of the impact~~. Therefore, the total cumulative risk is overestimated~~ (DayZenLLC 2021t, pg. 20, Table 26-1).

In TN 243305, the applicant provided an updated analysis that included the following refinements:

1. The screening radius in the applicant's analysis of the MEISR was adjusted from 2,000 feet to 1,000 feet to portray the cumulative health risk impacts from stationary sources on that receptor in a manner consistent with the 1,000-foot recommendation of the BAAQMD CEQA Guidelines.
2. The cancer risk and annual DPM/PM2.5 contributions from the nearby railroad were adjusted to account for future electrification and substantially lower emissions of Caltrain passenger rail locomotives under the CalMod Program as a foreseeable future project that is under construction.

[6] BAAQMD CEQA Guidelines, p. 2-5.

3. The DPM/PM2.5 exposure assumptions for the staff's analysis of the MEIW were adjusted to reflect that a worker would only be exposed to the adjacent railroad/highways/major roadways for a fraction of the year because a worker would only be present at the location during working hours.

With the applicant's adjustments to the cumulative source radius of the MEISR/MEIR from 2,000 feet to 1,000 feet and other refinements above, the cumulative health risk impacts are substantially below the cumulative thresholds outlined in the BAAQMD CEQA Guidelines.

Staff also conducted an independent revised cumulative HRA, assessing the proposed project's impact summed with the impacts of existing sources within 1,000 feet[7] of the maximally exposed sensitive receptors, including MEIR, MEIW, MEDR, MESR, and MERR. Staff also considered the refinement of number 2 and number 3 proposed by the applicant. Staff used an 87 percent reduction to refine the risk of the railroad (explained in detail in a later paragraph) and 0.24 as the Worker Adjustment Factor (WAF)[8]. The results of staff's cumulative HRA are compared to the BAAQMD significance thresholds (BAAQMD 2017b) in **Table 4.3-12, Table 4.3-13**, and **Table 4.3-14**. Staff's cumulative HRA includes ~~four major~~ three categories of sources ~~of impacts~~: (1) existing stationary sources; (2) surrounding highways, main streets, and railways; and (3) the project. Staff has included the updated results from staff's revised analysis, and also the updated ones prepared by the applicant. The project would not cause a cumulatively considerable contribution along with existing and foreseeable projects to cancer risk, non-cancer HI, and PM2.5 concentrations. The updated analysis demonstrates that the cumulative impacts would be below the BAAQMD CEQA Guidelines cumulative thresholds.

*1. Existing Stationary Sources*

The cumulative cancer risk, non-cancer HI, and PM2.5 concentrations of existing stationary sources were first retrieved from BAAQMD'S Permitted Sources Risk and Hazards Map[9]. Then the risks were calculated using BAAQMD's Health Risk Calculator[10] to refine screen-level cancer risk, non-cancer health hazard index, and PM2.5 concentrations. The Health Risk Calculator incorporates factors such as risk associated with individual TACs emitted from an existing stationary source and how far a stationary

7 Per the BAAQMD CEQA Guidelines, the zone of influence for the cumulative threshold is 1,000 feet from the source or receptor.

8 The Worker Adjustment factor (WAF) = (5/7)X(8X24), accounting that off-site workers usually work 8 hours per day and 5 days per week.

9 The BAAQMD'S Permitted Sources Risk and Hazards Map can be accessed here: https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65

10The BAAQMD Health Risk Calculator Beta 4.0 can be downloaded here: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/tools/baaqmd-health-risk-calculator-beta-4-0-xlsx.xlsx?la=en

source is from the project's maximally exposed sensitive receptor locations to calculate overall cancer risk, hazard index, and PM2.5 concentration from a stationary source.

Stationary sources contributing health risks and hazard impacts within a ~~2~~1,000-foot radius of the project site were determined using BAAQMD's updated CEQA Tool Permitted Stationary Sources Risk and Hazards Map, a GIS map that provides the locations of stationary sources permitted by BAAQMD. The applicant also submitted a subsequent stationary source data request to BAAQMD to ensure the most recent health risk and hazard data had been identified. ~~Appropriate d~~Distance multipliers provided by the BAAQMD CEQA Tool Health Risk Calculator with Distance Multipliers were applied to represent adjusted risk and hazard impacts that can be expected with farther distances from the sources of emissions (DayZenLLC 2021t, pg. 19).

Staff searched the risk data for existing stationary sources within 1,000 feet of MEIR, MEIW, MEDR, MESR, and MERR. There is no stationary source found within 1,000 feet of MESR.

*2. Surrounding Highways, Main Streets, and Railways*

Mobile impacts were determined using BAAQMD's raster tools, which provide impacts from major streets, highways, and railroads[11]. The tools developed by BAAQMD incorporate risk assessment procedures from the 2015 OEHHA Air Toxics Hot Spots Program Guidance (DayZenLLC 2021t, pg. 19). The cancer risk and PM2.5 concentration from surrounding highways, major streets and railways were determined using BAAQMD raster files that incorporate annual average daily traffic (AADT) per EMFAC 2014 data for fleet mix and includes OEHHA's 2015 Guidance Methods. The raster files encompass highways, major streets, and rails with greater than 30,000 AADT. Staff received the raster files directly from BAAQMD, and then extracted the risk numbers by ArcGIS for the surrounding highways, main streets, and railways.

Caltrain is in the process of electrifying a large portion of its fleet, with electric engines currently undergoing testing and rollout expected to be substantially completed by 2024. This project is reasonably foreseeable ~~and~~ ,therefore, it is reasonable to include the anticipated emissions reductions in an analysis of cumulative impacts for this project. The Caltrain project involves replacing the majority of diesel engines in the fleet with electric engines; these engines travel on tracks close to the CA3 project site and are currently a significant source of cumulative emissions in the vicinity of the CA3 proposed location. Taking the Caltrain electrification into account, the emissions from the railways would be substantially reduced. To reflect this quantitatively, staff conducted a refined cumulative HRA. The cancer risks and annual DPM/PM2.5 contributions from the nearby railroad were adjusted to account for future electrification and substantially lower emissions under the CalMod Program as a foreseeable future project that is under construction.

[11] https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/tools/2020_02_20-methodology-risk-and-hazards-screening-tool-pdf.pdf?la=en

In the Caltrain 2017 Sustainability Report, it is said that "the improved system will reduce criteria air pollutant emissions by up to 97 percent[12] (TN 243442)." In the Peninsula Corridor Electrification Project (PCEP) FEIR 2014[13] for the Caltrain electrification project, it says annual DPM emissions would be reduced by 87 percent in 2020[14] and 100 percent in 2040 (assuming 100 percent electrified service between San Jose and San Francisco). Because the two numbers differ, staff chose to use the 87 percent reduction as a more conservative approach to refine the health risks of railroad.

*3. The Project*

For the project, please see the result of the applicant's HRA for facility-wide operation of CA3 presented in **Table 4.3-10**.

**Table 4.3-12, Table 4.3-13**, and **Table 4.3-14** summarize the results of the staff cumulative HRA and compares them to the BAAQMD significance thresholds for cumulative risk and hazards. The cumulative cancer risk, HI, and PM2.5 concentration were conservatively calculated using the maximum value in relation to the maximally exposed sensitive receptors as well as at the nearest residences. **Table 4.3-12, Table 4.3-13**, and **Table 4.3-14** show that ~~most~~none of the project's health risks would ~~not~~ exceed the cumulative health risk thresholds when summed with the health risks of cumulative sources within 1,000 feet ~~(or 2,000 feet)~~ of each receptor.

~~**Table 4.3-12** shows that the proposed project's health risks (i.e., cancer risks) would exceed the cumulative health risk thresholds when summed with the health risks of cumulative sources within 2,000 feet of MEISR and 1,000 feet of MEIR. Also, **Table 4.3-14** shows that the proposed project's health risks (i.e., PM2.5 concentration) would exceed the cumulative health risk thresholds when summed with the health risks of cumulative sources within 2,000 feet of MEISR and 1,000 feet of MEIW.~~

~~However, as mentioned above, the cumulative impacts are the summation of each category (cancer risks, PM2.5 concentrations) from all the sources to each receptor, and the exceedances in cancer risk (**Table 4.3-12**) and PM2.5 concentration (**Table 4.3-14**) are because the background values (i.e., sources of surrounding highways, major streets, and railways) are already very high or even have already exceeded the thresholds. In other words, the exceedance is not due to the project itself.~~

[12] Caltrain 2017 Sustainability Report, https://www.caltrain.com/media/1625/download

[13] Peninsula Corridor Electrification Project (PCEP) Final Environmental Impact Report (FEIR), January 2015, 3.2 Air Quality. https://www.caltrain.com/projects/caltrain-modernization/calmod-document-library/pcep-feir-2014?fbclid=IwAR2HkVLQSjvIHQd1mT_6DUayCWy0-4fLDzeoshlKRx0k_l13b7RSxgeV9fM

[14] The project's timeline appears to have slipped somewhat since issuance of the FEIR and the 2020 reductions are now expected by 2024 (https://www.caltrain.com/news/caltrain-electrification-delayed-2024).

~~As set forth in **Table 4.3-12**, the modeled cancer risk at the receptor of MEISR is 9.9 in one million, meaning the project contributes 9.9 in one million to this total number of 133 in one million. Comparing 9.9 in one million to 133 in one million, the project contributes seven percent to the existing exceedances. Note the risk numbers for MEISR were overestimated because it is the summation of all sources within 2,000 feet. Also, the cumulative cancer risks are over the BAAQMD threshold primarily because of the proximity of receptors to the nearby railroad, which contributes a cancer risk of 72 in a million at the MEISR (DayZenLLC 2021t, Table 26-1). Potentially beneficial effects of the ongoing and probable future Caltrain Electrification Program were not considered. As for MEIR, its modeled incremental cancer risk is 8.73 in one million, meaning the project contributes 8.73 in one million to this total number of 111.73 in one million. Comparing 8.73 in one million to 111.73 in one million, the project contributes 7.8 percent to the existing exceedances. Also, the cumulative cancer risk total (111.73 in one million) for MEIR are over the BAAQMD threshold primarily because of the proximity of receptors to the surrounding highways, major streets, and railways, which contributes a cancer risk of 102.31 in one million at the MEIR. The cancer risk from the surrounding highways, major streets, and railways at MEIR is already above the threshold. Staff identifies the health risks from cumulative sources and the potential for a significant cumulative impact in the project area, primarily due to nearby highways, major streets, and railways, and other stationary sources. When the effects of the project are considered in this context, staff determined that the project's contribution to the cumulative impact is less than cumulatively considerable and, thus, is not significant. Therefore, staff concluded the project's contribution is not cumulatively considerable and the project does not cause cumulatively considerable impacts.~~

~~As set forth in **Table 4.3-14**, the modeled total PM 2.5 concentration at the receptor of MEISR is only 0.013 µg/m$^3$, meaning the project only contributes 0.013 µg/m$^3$ to this total number of 1.3 µg/m$^3$. Comparing 0.013 µg/m$^3$ to 1.3 µg/m$^3$, the project only contributes one percent to the existing exceedances and the contribution is, therefore, not cumulatively considerable. Also, the modeled cancer risk at the receptor of MEIW is only 0.035 µg/m$^3$, meaning the project only contributes 0.035 µg/m$^3$ to this total number of 1.3 µg/m$^3$. Comparing 0.035 µg/m$^3$ to 1.3 µg/m$^3$, the project only contributes two percent to the existing exceedances and the contribution is, therefore, not cumulatively considerable. Therefore, staff concluded the project's contribution is not cumulatively considerable and the project does not cause cumulatively considerable impacts.~~

In conclusion, staff finds that cumulative health risks at ~~most~~ all sensitive receptor locations would be less than the BAAQMD CEQA Guidelines significance thresholds shown in **Table 4.3-1**. Staff concludes that the project's contribution to the cumulative impact ~~effect~~ of ~~cumulative~~ TAC emissions would be less than significant.

**TABLE 4.3-12 CANCER RISKS (PER MILLION) FROM CUMULATIVE SOURCES**

| Sources of Cumulative Impacts | Cancer Risk at MEISR[a] | Cancer Risk at MEIR[b] | Cancer Risk at MEIW[c] | Cancer Risk at MEDR[d] | Cancer Risk at MESR[e] | Cancer Risk at MERR[f] |
|---|---|---|---|---|---|---|
| **Existing Stationary Sources** | ~~32~~ 0.69 | 0.69 | 3.92 | 0.05 | 0 | 0.46 |
| **Surrounding Highways, Major Streets, and Railways[g]** | ~~91~~ 20.79 | ~~102.31~~ 29.5 | ~~81.95~~ 6.57 | ~~52.11~~ 24.6 | ~~43.71~~ 21.16 | ~~90.04~~ 27.71 |
| **• Railways[g]** | | 10.88 | 1.96 | 4.11 | 3.37 | 9.31 |
| **• Major Streets** | | 13.45 | 3.35 | 15.38 | 13.03 | 13.34 |
| **• Highways** | | 5.17 | 1.26 | 5.11 | 4.75 | 5.05 |
| **CA3** | 9.9~~hg~~ | 8.73 | 8.99 | 4.38 | 1.35 | 0.31 |
| **Total - Cumulative Sources** | ~~**133**~~ 31.38 | ~~**111.73**~~ 38.91 | ~~94.86~~ 19.48 | ~~56.54~~ 29.03 | ~~45.06~~ 22.51 | ~~90.80~~ 28.47 |
| **Significance Threshold** | 100 | 100 | 100 | 100 | 100 | 100 |
| **Potential Significant Impact?** | ~~**Yes**~~No | ~~**Yes**~~No | No | No | No | No |

Notes:

[a] Maximally Exposed Individual Sensitive Receptor (MEISR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within ~~2~~1,000 ft of the project boundary. Staff used the data provided by the applicant in TN243305.

[b] Maximally Exposed Individual Resident (MEIR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.

[c] Maximally Exposed Individual Worker (MEIW). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD~~.~~, and refined the mobile source impacts by using the Worker Adjustment Factor (WAF) of 0.24 to reflect that the worker receptor would only be present at the location for a portion of the day/week.

[d] Maximally Exposed Daycare Receptor (MEDR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.

[e] Maximally Exposed School Receptor (MESR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.

[f] Maximally Exposed Recreational Receptor (MERR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.

[g] Staff assumed railway impacts would be reduced by 87% to reflect the effects of Caltrain Modernization Program (The applicant used 97% off for MEISR).

~~g~~ [h] Load scenario: 100% load.

Sources: CEC staff analysis of data from BAAQMD, and DayZenLLC 2021t, pg. 19-20, Table 26-1

**TABLE 4.3-13 CHRONIC HAZARD INDICES FROM CUMULATIVE SOURCES**

| | Chronic Hazard Index | | | | | |
|---|---|---|---|---|---|---|
| **Sources of Cumulative Impacts** | **MEISR[a]** | **MEIR[b]** | **MEIW[c]** | **MEDR[d]** | **MESR[e]** | **MERR[f]** |
| **Existing Stationary Sources** | ~~0.15~~ 0 | 0 | 0 | 0.0015 | 0 | 0.0004 |
| **Surrounding Highways, Major Streets, and Railways** | No Data Available[g] | No Data Available[g] | No Data Available[g] | No Data Available[g] | No Data Available[g] | No Data Available[g] |
| **CA3** | 0.0037[h] | 0.0037 | 0.0108 | 0.001 | 0.0008 | 0.001 |
| **Total - Cumulative Sources** | ~~0.1537~~ 0.0037 | 0.0037 | 0.0108 | 0.0025 | 0.0008 | 0.0014 |
| **Significance Threshold** | 10 | 10 | 10 | 10 | 10 | 10 |
| **Potential Significant Impact?** | No | No | No | No | No | No |

Notes:
[a] Maximally Exposed Individual Sensitive Receptor (MEISR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within ~~2~~1,000 ft of the project boundary. Staff used the data provided by the applicant.
[b] Maximally Exposed Individual Resident (MEIR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.
[c] Maximally Exposed Individual Worker (MEIW). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.
[d] Maximally Exposed Daycare Receptor (MEDR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.
[e] Maximally Exposed School Receptor (MESR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.
[f] Maximally Exposed Recreational Receptor (MERR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.
[g] No data available — BAAQMD staff did not provide data for these sources.
[h] Load scenario: 100% load.
Sources: CEC staff analysis of data from BAAQMD, and DayZenLLC 2021t, pg. 19-20, Table 26-1

**TABLE 4.3-14 ANNUAL PARTICULATE MATTER (PM2.5) CONCENTRATIONS (µg/m³) FROM CUMULATIVE SOURCES**

| | Annual DPM/PM2.5 Concentration | | | | | |
|---|---|---|---|---|---|---|
| **Sources of Cumulative Impacts** | **MEISR[a]** | **MEIR[b]** | **MEIW[c]** | **MEDR[d]** | **MESR[e]** | **MERR[f]** |
| **Existing Stationary Sources** | ~~0.73~~ 0 | 0 | 0.433 | 0.004 | 0 | 0 |
| **Surrounding Highways, Major Streets, and Railways[g]** | ~~0.57~~ 0.414 | ~~0.569~~ 0.43 | ~~0.542~~ 0.105 | ~~0.207~~ [i] 0.455 | ~~0.139~~ [i] 0.396 | ~~0.541~~ 0.422 |
| **• Railways[g]** | | 0.021 | 0.004 | 0.008 | 0.006 | 0.018 |
| **• Major Streets** | | 0.289 | 0.072 | 0.331 | 0.28 | 0.287 |
| **• Highways** | | 0.12 | 0.029 | 0.117 | 0.109 | 0.117 |
| **CA3** | 0.013[hg] | 0.012 | 0.035 | 0.003 | 0.003 | 0.003 |
| **Total - Cumulative Sources** | ~~**1.3**~~ 0.427 | ~~0.581~~ 0.442 | ~~**1.010**~~ 0.573 | ~~0.214~~ [i] 0.462 | ~~0.142~~ [i] 0.399 | ~~0.544~~ 0.425 |
| **Significance Threshold** | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| **Potential Significant Impact?** | ~~**Yes**~~No | No | ~~**Yes**~~No | No | No | No |

Notes:

[a] Maximally Exposed Individual Sensitive Receptor (MEISR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within ~~2~~1,000 ft of the project boundary. Staff used the data provided by the applicant in TN243305.

[b] Maximally Exposed Individual Resident (MEIR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.

[c] Maximally Exposed Individual Worker (MEIW). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD, and refined the mobile source impacts by using the Worker Adjustment Factor (WAF) of 0.24 to reflect that the worker receptor would only be present at the location for a portion of the day/week.

[d] Maximally Exposed Daycare Receptor (MEDR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.

[e] Maximally Exposed School Receptor (MESR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.

[f] Maximally Exposed Recreational Receptor (MERR). The cumulative health risk impact of the proposed project was calculated including the stationary and mobile sources within 1,000 ft of this receptor. Staff used the data provided by BAAQMD.

[g] Staff assumed railway impacts would be reduced by 87% to reflect the effects of Caltrain Modernization Program (The applicant used 97% off for MEISR).

[gh] Load scenario: 100% load.

[i] Staff noticed some typographical errors in the FEIR. The PM2.5 concentrations at MEDR and MESR for surrounding highways, major streets, and railways should be 0.507 µg/m³ and 0.439 µg/m³ respectively, instead of 0.207 µg/m³ and 0.139 µg/m³. The cumulative PM2.5 concentrations at MEDR and MESR should be 0.514 µg/m³ and 0.442 µg/m³ respectively, instead of 0.214 µg/m³ and 0.142 µg/m³. In staff's revised cumulative HRA, staff made refinements based on the corrected values.

Sources: CEC staff analysis of data from BAAQMD, and DayZenLLC 2021t, pg. 19-20, Table 26-1

### d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

This section considers impacts that may arise from emissions other than criteria air pollutants and TACs, such as emissions that may lead to odors.

BAAQMD states that, while offensive odors rarely cause direct health impacts or any physical harm, they still can be very unpleasant and lead to considerable distress among the public, often generating citizen complaints to local governments and BAAQMD (BAAQMD 2017b). Any project with the potential to frequently expose members of the public to objectionable odors would be deemed to have a significant impact. Odor impacts on residential areas and other sensitive receptors warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, worksites, and commercial areas.

BAAQMD CEQA Guidelines recommend a two-step process for determining the significance of potential odor impacts. First, determine whether the project would result in an odor source affecting receptors within the distances indicated in **Table 4.3-15**. Second, if the proposed project would result in an odor source and receptors within the screening level distances indicated in **Table 4.3-15**, a more detailed analysis should be conducted (BAAQMD 2017b).

**TABLE 4.3-15 PROJECT SCREENING TRIGGER LEVELS FOR POTENTIAL ODOR SOURCES**

| Land Use/Type of Operation | Project Screening Distance |
|---|---|
| Wastewater Treatment Plant | 2 miles |
| Wastewater Pumping Facilities | 1 mile |
| Sanitary Landfill | 2 miles |
| Transfer Station | 1 mile |
| Composting Facility | 1 mile |
| Petroleum Refinery | 2 miles |
| Asphalt Batch Plant | 2 miles |
| Chemical Manufacturing | 2 miles |
| Fiberglass Manufacturing | 1 mile |
| Painting/Coating Operations | 1 mile |
| Rendering Plant | 2 miles |
| Coffee Roaster | 1 mile |
| Food Processing Facility | 1 mile |
| Confined Animal Facility/Feed Lot/Dairy | 1 mile |
| Green Waste and Recycling Operations | 1 mile |
| Metal Smelting Plants | 2 miles |

Source: BAAQMD 2017b, Table 3-3.

The project is not a type of operation that is classified as a typical odor source by BAAQMD, as shown in **Table 4.3-15**. The diesel engine generators would not be stationary sources of a type that are typically known to cause significant odor impacts.

### *Construction*

*Less Than Significant Impact.* Minor odor sources during construction activities include diesel exhaust from heavy-duty equipment. Odors from construction activities near existing receptors would be temporary in nature and dissipate as a function of distance. Accordingly, the construction of the project is not expected to result in substantial emissions that may lead to odor impacts or impacts of emissions other than those of criteria pollutants and TACs identified elsewhere in this analysis.

Fugitive dust emissions can also create a nuisance that can cause adverse effects. The project is proposing to comply with the BAAQMD construction fugitive dust control BMPs and so should not have substantial fugitive dust emissions during construction that could adversely affect a substantial number of people.

Therefore, the construction of the project would not result in other emissions, such as those leading to odors, that could adversely affect a substantial number of people and would have less than significant impacts.

### *Operation*

*Less Than Significant Impact.* Potential odor sources from the project's readiness testing and maintenance along with emergency operation would include diesel exhaust from genset readiness testing and maintenance, trash pick-up and other heavy-duty delivery vehicles, and the occasional use of architectural coatings during routine maintenance. When compared to existing odor sources near the project site, which include heavy and light industrial uses, odor impacts from project readiness testing and maintenance along with emergency operations would be similar.

Once built and operating, the project would have no notable emissions other than those of criteria pollutants and TACs identified elsewhere in this analysis. Therefore, nuisance impacts would not be likely to occur during operation, including readiness testing and maintenance or emergency operation. During readiness testing and maintenance and during emergency operation, the project would not result in odors or other emissions that could adversely affect a substantial number of people and would have a less than significant impact related to odors. In conclusion, staff finds that the project would not likely create objectionable odors affecting a substantial number of people.

## 4.3.4 Mitigation Measures

To ensure that fugitive dust impacts are less than significant, the project will implement BAAQMD's recommended BMPs during the construction phase. On September 13, 2021, the applicant provided a revised mitigation measure **AQ-1**, as shown below, to ensure it reflects the assumptions used as the bases for construction equipment emissions estimates and modeling (DayZenLLC 2021w).

**AQ-1**: To ensure that fugitive dust impacts are less than significant, the project will implement the Bay Area Air Quality Management District (BAAQMD) recommended Best Management Practices (BMPs) during the construction phase, the project owner shall implement a construction emissions control plan that has been reviewed and approved by the Director or Director's designee of the City of Santa Clara Community Development Department prior to the issuance of any grading or building permits, whichever occurs earliest. These BMPs are incorporated into the design of the project and will include:

- Water all exposed areas (e.g., parking areas, graded areas, unpaved access roads) twice a day.
- Maintain a minimum soil moisture of 12% in exposed areas by maintaining proper watering frequency.
- Cover all haul trucks carrying sand, soil, or other loose material.
- Suspend excavation, grading, and/or demolition activities when average wind speed exceeds 20 miles per hour.
- Pave all roadways, driveways, and sidewalks as soon as possible. Lay building pads as soon as grading is completed, unless seeding or soil binders are used.
- Install wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed areas of construction with a maximum 50 percent air porosity.
- Use a power vacuum to sweep and remove any mud or dirt-track next to public streets if visible soil material is carried onto the streets.
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
- Minimize idling time for all engines by shutting engines when not in use or limiting idling time to a maximum of five minutes. Provide clear signage for construction workers at all access points.
- Properly tune and maintain construction equipment in accordance with manufacturer's specifications. Check all equipment against a certified visible emissions calculator.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency and the on-site job superintendent regarding dust complaints.
- Install vegetative ground cover in disturbed areas as soon as possible and water appropriately until vegetation is established.
- Limit simultaneous occurrence of excavation, grading, and ground-disturbing construction activities.
- Install water washers to wash all trucks and equipment prior to leaving site.
- Treat site access to a distance of 100 feet from the paved road with a 6- to 12-inch compacted layer of wood chip, mulch, or gravel.
- Install sandbag or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.

- Minimize idling time of diesel-powered construction vehicles to two minutes.
- All off-road equipment greater than 25 horsepower (hp) shall have engines that meet or exceed Tier 4 final off-road emission standards. Use of zero-emission and hybrid-powered equipment is encouraged.
- All on-road trucks used for material delivery or hauling shall have engines that meet or exceed 2014 CARB emissions standards.
- Where grid power is available, portable diesel engines should be prohibited.
- Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).
- All construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM.
- All contractors use equipment that meets CARB's most recent certification standard for off-road heavy-duty diesel engines.

## 4.3.5 References

BAAQMD 2016 – Bay Area Air Quality Management District (BAAQMD). Regulation 2 Rule 5: New Source Review of Toxic Air Contaminants. Dated December 7, 2016. Accessed September 2021. Available online at: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-rule-5-new-source-review-of-toxic-air-contaminants/documents/rg0205_120716-pdf.pdf?la=en

BAAQMD 2017a – Bay Area Air Quality Management District (BAAQMD). Final 2017 Clean Air Plan, Adopted April 19, 2017. Accessed September 2021. Available online at: http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf

BAAQMD 2017b – Bay Area Air Quality Management District (BAAQMD). California Environmental Quality Act, Air Quality Guidelines. Updated May 2017. Accessed September 2021. Available online at: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

BAAQMD 2019 – Bay Area Air Quality Management District (BAAQMD). Calculating Potential to Emit for Emergency Backup Power Generators. Dated June 3, 2019. Accessed September 2021. Available online at: http://www.baaqmd.gov/~/media/files/engineering/policy_and_procedures/banking-and-offsets/calculating-pte-for-emergency-generators-06032019-pdf

BAAQMD 2020 – Bay Area Air Quality Management District (BAAQMD). BAAQMD Letter Re: BACT Determination for Diesel Back-up Engines Greater Than or Equal to 1,000 Brake Horsepower: Great Oaks South Backup Generating Facility (TN 236091), December 2020. Accessed September 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=20-SPPE-01

BAAQMD 2021a – Bay Area Air Quality Management District (BAAQMD). Air Quality Standards and Attainment Status. Accessed August 2021. Available online at: https://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status

BAAQMD 2021b – Bay Area Air Quality Management District Comments (BAAQMD). (TN 239805). Letter for CA3 Data Center NOP, dated September 21, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

CARB 1998 – California Air Resources Board (CARB). Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant. Appendix III, Part A, Exposure Assessment. April 1998. Accessed September 2021. Available online at: https://ww3.arb.ca.gov/toxics/dieseltac/part_a.pdf

CARB 2013 – California Air Resources Board (CARB). The California Almanac of Emissions and Air Quality – 2013 Edition. Accessed August 2021. Available online at: https://www.arb.ca.gov/aqd/almanac/almanac13/almanac13.htm

CARB 2021a – California Air Resources Board (CARB). Maps of State and Federal Area Designations. Accessed August 2021. Available online at: https://www.arb.ca.gov/desig/adm/adm.htm

CARB 2021b – California Air Resources Board (CARB). Air Quality Data Statistics Top 4 Summary. Accessed September 2021. Available online at: https://www.arb.ca.gov/adam/topfour/topfour1.php

CARB 2021c – California Air Resources Board (CARB). California Ambient Air Quality Standards. Accessed September 2021. Available online at: https://ww2.arb.ca.gov/resources/california-ambient-air-quality-standards

CARB 2021d – California Air Resources Board (CARB). Accessed September 2021. Overview: Diesel Exhaust & Health. Available online at: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health

CEC 2022a – California Energy Commission (CEC). (TN 241160). Report of Conversation – Modifications to Project Construction Phasing, dated January 4-12, 2022. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

CEC 2022oo – California Energy Commission (CEC). (TN 243635-636). Peninsula Corridor Electrification Project (PCEP) Final Environmental Impact Report (FEIR), dated January 2015. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2021a – DayZenLLC (DayZenLLC). (TN 237380). VDC CA3BGF SPPE Application Part I, dated April 5, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2021b – DayZenLLC (DayZenLLC). (TN 237381). VDC CA3BGF SPPE Application Part III, dated April 5, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2021e – DayZenLLC (DayZenLLC). (TN 237423). VDC CA3BGF SPPE Application Part II, dated April 12, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2021t – DayZenLLC (DayZenLLC). (TN 239390). VDC Supplemental Responses to CEC Data Request Set 2 Air Quality – CA3BGF, dated August 19, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2021w – DayZenLLC (DayZenLLC). (TN 239678). Updated Ammonia Slip Emission Calculations, dated September 13, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2022h– DayZenLLC (DayZenLLC). (TN 242753). CalTrain Electrification Segment 3 Construction Schedule- CA3BGF, dated April 22, 2022. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2022i – DayZenLLC (DayZenLLC). (TN 242754). CalTrain Electrification Santa Clara and San Jose- CA3BGF, dated April 22, 2022. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2022o – DayZenLLC (DayZenLLC). (TN 243442). CalTrain Sustainability Report- CA3BGF, dated June 6, 2022. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01 T

NOAA 2019 – National Oceanic and Atmospheric Administration (NOAA). The Impact of Wildfires on Climate and Air Quality, An emerging focus of the NOAA ESRL Chemical Sciences Division. Accessed September 2021. Available online at: https://www.esrl.noaa.gov/csd/factsheets/csdWildfiresFIREX.pdf

OEHHA 2015 – Office of Environmental Health Hazard Assessment (OEHHA). Air Toxics Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments, March 6, 2015. Accessed September 2021. Available online at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf

OEHHA 2021 – Office of Environmental Health Hazard Assessment (OEHHA). Toxic Air Contaminants. Accessed September 2021. Available online at: https://oehha.ca.gov/air/toxic-air-contaminants

U.S. EPA 2002 – United States Environmental Protection Agency (U.S. EPA). Health Assessment Document For Diesel Engine Exhaust. May 2002. Accessed September 2021. Available online at: https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=36319&Lab=NCEA

U.S. EPA 2011 – United States Environmental Protection Agency (U.S. EPA). Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour $NO_2$ National Ambient Air Quality Standard. March 2011. Accessed January 2022. Available online at: https://www.epa.gov/sites/default/files/2015-07/documents/appwno2_2.pdf

U.S. EPA 2013 – United States Environmental Protection Agency (U.S. EPA). Determination of Attainment for the San Francisco Bay Area Nonattainment Area for the 2006 Fine Particle Standard; California; Determination Regarding Applicability of Clean Air Act Requirements. Accessed August 2021. Available online at: https://www.federalregister.gov/documents/2013/01/09/2013-00170/determination-of-attainment-for-the-san-francisco-bay-area-nonattainment-area-for-the-2006-fine

U.S. EPA 2014 – United States Environmental Protection Agency (U.S. EPA). EPA Finalizes Initial Area Designations for the 2012 National Air Quality Standard for Fine Particles - Dec 2014. Accessed August 2021. Available online at: https://www.epa.gov/particle-pollution-designations/epa-finalizes-initial-area-designations-2012-national-air-quality

U.S. EPA 2017 – United States Environmental Protection Agency (U.S. EPA). 2017. Guideline on Air Quality Models. 40 Code of Federal Regulations (CFR) Part 51, Appendix W. January. Accessed December 2021. Available online at: https://www.epa.gov/sites/default/files/2020-09/documents/appw_17.pdf

U.S. EPA 2018a – United States Environmental Protection Agency (U.S. EPA). Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program. Accessed September 2021. Available online at: https://www.epa.gov/sites/production/files/2018-04/documents/sils_policy_guidance_document_final_signed_4-17-18.pdf

U.S. EPA 2018b – United States Environmental Protection Agency (U.S. EPA). Air Quality Designations for the 2010 Sulfur Dioxide ($SO_2$) Primary National Ambient Air Quality Standard—Round 3. Accessed August 2021. Available online at: https://www.govinfo.gov/content/pkg/FR-2018-01-09/pdf/2017-28423.pdf

U.S. EPA 2021a – United States Environmental Protection Agency (U.S. EPA). NAAQS Table. Accessed August 2021. Available online at: https://www.epa.gov/criteria-air-pollutants/naaqs-table

U.S. EPA 2021b – United States Environmental Protection Agency (U.S. EPA). Outdoor Air Quality Data, Monitor Values Report. Accessed September 2021. Available online at: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

Van Gosen and Clinkenbeard 2011 – Van Gosen, B.S., and Clinkenbeard, J.P. (Van Gosen and Clinkenbeard). Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California: U.S. Geological Survey Open-File Report 2011-1188. Accessed September 2021. Available online at: http://pubs.usgs.gov/of/2011/1188/

# APPENDIX C

July 25, 2022

CULTURAL AND TRIBAL CULTURAL RESOURCES UPDATE TO THE FINAL EIR

# 4.5 Cultural and Tribal Cultural Resources

This section describes the environmental setting and regulatory background and discusses the impacts associated with the construction and operation of the project with respect to cultural and tribal cultural resources.

| **CULTURAL RESOURCES**<br>**Would the project:** | **Potentially Significant Impact** | **Less Than Significant with Mitigation Incorporated** | **Less Than Significant Impact** | **No Impact** |
|---|---|---|---|---|
| a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5? | ☐ | ☒ | ☐ | ☐ |
| b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5? | ☐ | ☒ | ☐ | ☐ |
| c. Disturb any human remains, including those interred outside of dedicated cemeteries? | ☐ | ☒ | ☐ | ☐ |

| **TRIBAL CULTURAL RESOURCES**<br>Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: | **Potentially Significant Impact** | **Less Than Significant with Mitigation Incorporated** | **Less Than Significant Impact** | **No Impact** |
|---|---|---|---|---|
| a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or | ☐ | ☐ | ☐ | ☒ |
| b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | ☐ | ☒ | ☐ | ☐ |

Environmental checklist established by CEQA Guidelines, Appendix G.

## 4.5.1 Environmental Setting

This section considers four broad classes of cultural resources: prehistoric, ethnographic, historic-period, and tribal cultural resources. The next four paragraphs briefly describe these classes of resources. Afterward, the Cultural and Tribal Cultural Resources section presents the environmental setting pertinent to these resources:

- *Prehistoric, ethnographic, and historic contexts*—generally describes who lived in the project vicinity, the timing of their occupation, and what uses they made of the area
- *Methods of analysis*—establishes what kinds of physical traces (cultural and tribal cultural resources) past peoples might have left in the project area, given the project vicinity's prehistoric, ethnographic, and historic contexts
- *Results* ensuing from those methods—identifies the specific resources present or expectable in the project area
- *Regulatory setting*—presents the criteria for identifying *significant* cultural and tribal cultural resources under the California Environmental Quality Act (CEQA) and other applicable authorities, as well as the criteria for identifying significant impacts on these resources
- *Impacts*—identifies any impacts on cultural and tribal cultural resources, along with the severity of any such impacts
- *Mitigation measures*—proposes measures to avoid, minimize, rectify, reduce, or eliminate, or compensate for, any identified, significant impacts

Prehistoric archaeological resources are those materials relating to Native American occupation and the use of a particular environment. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American activity. In California, the prehistoric period began more than 12,000 years ago and extended through the 18th century until A.D. 1769, when Europeans first settled in California.

Ethnographic resources are those materials important to the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, topographic features, value-imbued landscapes, cemeteries, shrines, or neighborhoods and structures. Ethnographic resources are variations of natural resources and standard cultural resources types. They are subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users. The decision to call resources "ethnographic" depends on whether associated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their lifeways.

Historic-period resources are those materials, archaeological and architectural, usually but not necessarily associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, trail and road corridors, artifacts, or other evidence of historic human activity. Under federal and state requirements, historic period cultural resources must be 50 years or older to be considered of potential historic importance. A resource less than 50 years of age may be historically significant if the resource is of exceptional importance. The Office of Historic Preservation (OHP 1995, page 2) endorses recording

and evaluating resources 45 years or older to accommodate a five-year lag in the planning process.

Tribal cultural resources are a category of historical resources recently introduced into CEQA by Assembly Bill 52 (Chapter 532, Stats. 2014). Tribal cultural resources are resources that are any of the following: sites, features, places, cultural landscapes, sacred places, or objects that are included in or determined eligible to the California Register of Historical Resources (CRHR) or are included on a local register of historical resources, as defined in Public Resources Code, section 5020.1(k). Tribal cultural resources can be prehistoric, ethnographic, or historic.

## Prehistoric Context

The archaeological record in the Santa Clara Valley began about 9,000 years before present (B.P., or before 1950) with the Metcalf Creek Aspect, the local expression of the Millingstone cultural pattern. Archaeological deposits dating to this time contain milling slabs and handstones, and large wide-stemmed and leaf-shaped projectile points. Native people during this period were mobile foragers and burials were typically flexed and placed beneath millingstone cairns. (Milliken et al. 2007, page 114.)

This Early Holocene culture extended until the beginning of the Early Period (circa 5500 B.P.), which exhibits developments in groundstone technology (i.e., replacing millingstones with the mortar and pestle), less movement of entire communities, regional symbolic integration between cultural groups, and increased trade. Also referred to locally as the Sandhill Bluff Aspect, this cultural pattern lasted until circa (ca.) 2500 B.P., when the Lower Middle Period began with a "major disruption in symbolic integration systems." (Milliken et al. 2007, page 115.) Archaeological assemblages from the Lower Middle Period include more olive snail-shell saucer beads and circular abalone-shell ornaments (and the disappearance of the rectangular shell beads), as well as bone tools and whistles.

The Upper Middle Period began ca. 1520 B.P. with a disruption of the olive snail-shell bead trade network, abandonment of some village sites, and changes in shell bead manufacture. Some South Bay burials from this period were extended rather than flexed burials, and grave goods were lacking. (Milliken et al. 2007, page 116.)

The Late Period began ca. 900 B.P. with groups increasingly intensifying the creation of wealth objects, as seen in burials. Smaller projectile points for use in the bow and arrow emerged during this period and some of the mortuary evidence suggests the introduction of cremation, at least among the wealthiest of individuals. (Milliken et al. 2007, page 117.)

Archaeological research in the project vicinity reveals a rich and lengthy archaeological record. Archaeologists have found numerous buried Native American sites throughout the lower Santa Clara Valley. Rapid development of the valley covered numerous archaeological sites in pavement or with structures (Busby et al. 1996a, pages 2–4; Hylkema 1994, page 252; Parsons and KEMCO 1983, pages 18 and 35). Below even the

archaeological sites capped by the veneer of recent building, the Guadalupe River and smaller streams (Saratoga and San Tomas Aquino creeks) buried generations of Native American sites under layers of silt and clay. As a result, the surface archaeological record of Santa Clara Valley represents only the last 2,000 years of human occupation. The remaining 7,000 years of native history lay anywhere from near surface up to 30 feet below the modern ground surface. (Busby et al. 1996a, pages 2–4; Busby et al. 1996b, page 2; Jones et al. 2007, page 130; Parsons and KEMCO 1983, pages 16, 25–26, 33; Ruby et al. 1992:9, 12, 17–19.)

## Ethnographic Context

The Costanoans are the Native Americans who inhabited the Bay Area since time immemorial. The Costanoan designation refers to those who spoke one of eight separate but related languages (Shipley 1978, pages 84, 89). The Costanoan languages are similar to Miwok and are part of the Yok-Utian language family of the Penutian stock (Golla 2007, pages 75–76). Tamyen (Santa Clara Costanoan) was spoken around the southern end of San Francisco Bay and the lower Santa Clara Valley (and was spoken by Costanoans in the project vicinity). (Milliken et al. 2007, Figure 8.1; Shipley 1978, pages 84 and 89.)

Each village was a separate and politically autonomous tribelet, with about 200 people living within each. Tribelets were the basic unit of political organization, with chiefs, either women or men, descended from their patrilineal relative. In the late 1700s, there were two tribelets near the proposed project (project site), San José Cupertino and Santa Clara; both are presumably Tamyen speakers. (Levy 1978, Figure 1.) Kroeber (1976, Figure 42) indicates that two settlements were located within a few miles of the project site on the Guadalupe River, Tamie-n near Santa Clara, and Ulis-tak farther north near the San Francisco Bay.

Like most other Native Americans in California, acorns were the staple food of the Costanoan people in the Santa Clara region. Other nuts, such as buckeye, California laurel, and hazelnuts, were also eaten. The Costanoans set controlled fires to promote the growth of the nuts and seeds upon which they relied. The primary mammals taken by the Costanoan included the black-tailed deer, elk, antelope, grizzly bear, mountain lion, sea lion, and whale. Waterfowl, salmon, steelhead, and lampreys were also important components of the Costanoan diet. (Levy 1978, page 491.)

Thatched, domed houses were the most common type of structure for the Costanoans. Sweathouses along the banks of rivers were also constructed, in addition to dance enclosures and assembly houses. (Levy 1978, page 492.)

Bodies were either buried or cremated on the day of death. The community either buried the deceased's property with the body or destroyed their property. (Kroeber 1976, page 469; Levy 1978, page 490.)

Trade was important for the Costanoan groups, and their primary partners in trade were the Plains Miwok, Sierra Miwok, and Yokuts. The Costanoan provided coastal resources, such as mussels, abalone shell, dried abalone, and salt, to the Yokuts in exchange for piñon pine nuts. The Miwok obtained olive snail shells from the Costanoans. Warfare occurred between Costanoan tribelets as well as the Esselen, Salinan, and Northern Valley Yokuts. (Davis 1961, page 19; Levy 1978, page 488.)

A common archaeological manifestation of a Costanoan village site is the shellmound deposit (Kroeber 1976, page 466). Mussels are the primary shells that constitute these mounds, in addition to other household wastes.

The Spanish established seven missions in Costanoan territory between 1770 and 1797. By 1810, the mission system subsumed the last Costanoan village. Missions in the Bay Area mixed together various language and cultural groups, including the Esselen, Foothill Yokuts, Plains Miwok, Saclan Miwok, Lake Miwok, Coast Miwok, and Patwin. The mission closest to the proposed project area was Santa Clara de Asís, built in 1777. The mission is no longer extant, but the area is still rich in archaeological manifestations from the mission period and before. (Levy 1978, page 486.)

**Historic Context**

To inform an understanding of the potential significance of built environment resources near the project, a review of the major historical timeline markers for the project area provides context. This subsection offers a brief look at those events and trends in the history of the Santa Clara Valley region that provide that context, especially for the project site:

- Spanish Mission Period
- Mexican Period
- American Period
    - Transportation and Railroads
    - Agriculture and Fruit Industry
    - Post-World War II (WWII) and Silicon Valley
    - San Tomas Aquino Creek
    - Project Site History

## *Spanish/Mission Period (1769 to 1821)*

The Spanish Period hosted several important developments, such as the establishment of Spanish colonial military outposts (presidios), pueblos, and 21 missions throughout Alta California. Nearest to the location of the proposed project were the Santa Clara de Asís Mission (1777), El Pueblo de San José de Guadalupe (1777) and associated Mission (1797), and Santa Cruz Mission (1791). The Spanish government also awarded land grants to soldiers and others and thus began the tradition of large land grants used for

agriculture and livestock. Little remains of the cultural landscape that existed during this time aside from some roads that follow the same early transportation routes (Santa Clara County 2012, pages 22–26).

### *Mexican Period (1821 to 1848)*

Following Mexican independence from Spain in 1821, Mexican Governor Pío Pico granted lands to Mexican settlers, including the former mission lands, whose connection to the government was lost in the Decree of Secularization in 1834. The Mexican governor granted 43 ranchos in the Santa Clara Valley between 1802 and 1845. Local planning agencies lack detailed information on the location and integrity of these early California sites (Santa Clara County 2012, pages 30–32). The project site appears to be within the boundaries of the Rancho Ulistác (USGS 1899). Governor Pío Pico granted the land in 1845 to two Santa Clara Mission Indians: Marcelo Pio and Cristóbal. After the Mexican War (1846–1848), Jacob D. Hoppe obtained title to the rancho. Following Hoppe's death, his heirs divided and sold the land (Oosterhous et al. 2002, page 6). Santa Clara's historic context statement laments that most traces of original haciendas, adobes, and other rancho structures are not discernible in the landscape today and few records exist (Santa Clara County 2012, page 32).

### *American Period (1848 to Present)*

California became the thirty-first state in the Union in 1850. In 1851, Santa Clara College, now Santa Clara University, was founded on the site of the Santa Clara de Asís Mission. The incorporation of the city of Santa Clara followed in 1852. In 1866, the city officially established a gridded street system to accommodate anticipated growth. Today, this area is known as the Old Quad neighborhood. Early industries in the city included wheat production and flour milling, seed and fruit packing, and manufacturing. Leather tanning and wood products were two key industries of the city well into the 20th century. Similarly, seed growing and fruit farming and packing (especially pears, cherries, apricots, and prunes) were mainstays, contributing to the city's exports. (Santa Clara 2010, page 3-2.)

#### Transportation and Railroads

Railroads played a significant part in the development of the Santa Clara Valley. In 1869, the Western Pacific Railroad completed a rail line from Niles, California, to San Jose, California, effectively connecting San Jose with the Transcontinental Railroad. This opened new markets for the agricultural and manufactured products of the entire Santa Clara Valley. Senator James Fair, a multi-millionaire, envisioned a route from the east side of the San Francisco Bay, south to San Jose, then on to Los Gatos and through the mountains to Felton, ultimately connecting to Santa Cruz. Senator Fair incorporated the South Pacific Coast Railroad in 1876 and immediately began building the segment from Dumbarton in the East Bay to Los Gatos, by way of Santa Clara and San Jose. Following that segment, the rail line passed through the Santa Cruz Mountains to connect with the narrow-gauge railroad at Felton. The Southern Pacific Railroad (SPRR) acquired these rail

lines in 1887 and eventually converted the narrow-gauge lines to standard gauge (Lehmann 2000, pages 31–33).

The SPRR Monterey Division segment from San Francisco to San Jose was originally constructed in 1864 by the San Francisco and San Jose Railroad Company (SFSJRR) and purchased by SPRR in 1869. The SPRR extended the tracks to Gilroy in 1869, then to Hollister in 1871 and Tres Pinos in 1873 (JRP 2002, pages 10–12). This railroad line provided freight and passenger access from San Francisco to the South Bay, San Jose, South County regions and beyond. A 1915 U.S. Geological Survey (USGS) topographic map shows the entire route of the SPRR Santa Cruz and Monterey Divisions from central San Jose through the Santa Cruz Mountains to Santa Cruz and Monterey, respectively, and indicating an ultimate connection to Los Angeles (USGS 1915). The Monterey Division passed adjacent to the project site where the alignment is currently used by Caltrain. The California Department of Transportation (Caltrans) assumed operation of the railroad right-of-way (ROW) from SPRR in 1979, and hence the name "Caltrain" in use today. The Peninsula Corridor Joint Powers Board purchased the ROW from San Francisco to San Jose and obtained trackage rights in the southern section in 1991 (JRP 2002, page 34).

### Santa Clara Valley Agriculture and Fruit Industry

Fruit orchards and vegetable farms dominated the Santa Clara Valley from the 1890s to the 1940s. Wheat and flour milling were the first major agricultural activities. In support of the fruit and vegetable industry, canning operations flourished in the northeastern portion of the county. Fruit packing companies were common in the Santa Clara Valley in the first third of the 20$^{th}$ century. Nearly half of the world's supply of fresh, dried, and canned fruit through the end of WWII originated from the valley. The agricultural-based economy and its support operations were gradually displaced by expanding suburban development, light industrial, and high-tech research and development operations by the 1970s (Fike 2016, page 2).

### Post WWII and Silicon Valley

The Santa Clara Valley's current commercial and industrial operations are indicative of the shift that took place after WWII from agricultural-based businesses to light industrial and ultimately high-tech research and development facilities. The Owens-Corning plant was one of the first new industrial businesses in the Santa Clara Valley and represents the shift toward industrial business in the valley after WWII. A 1949 aerial photograph shows the brand-new plant along Lafayette Street with agricultural uses surrounding it (Draper 1949). The plant remains in that location today. Throughout the valley, residential home developments slowly replaced orchards and agricultural fields. Due to the increased pressure from housing, the city of Santa Clara grew from 6,500 residents in 1940 to 86,000 by 1970 (Fike 2016, page 2). The landscape was forever transformed.

From 1960 to 1980, much of the industrial growth was in the electronics research and manufacturing sectors. The city of Santa Clara is home to Intel, Applied Materials, Sun Microsystems, Nvidia, National Semiconductor, and other high technology companies (Santa Clara 2010, pages 3-3 through 3-6). More recently, Santa Clara has become home to numerous data centers supporting the operations of the high technology companies of the Silicon Valley. This represents yet another contextual shift in the history of the Santa Clara/Silicon Valley.

## Project Site

The project site is in the city of Santa Clara, Santa Clara County, California. The site encompasses approximately 6.69 acres and is located at 2590 Walsh Avenue in Santa Clara, California, Assessor's Parcel Number (APN) 216-28-112. The project site is located within Township 6S, Range 1W, Section 33 of the *San Jose West*, *California* USGS 7.5-minute Topographic Quadrangle Map (Ngo and DePietro 2021, page 3). It is located 3.54 miles south of the San Francisco Bay (TRC 2020, page 5).

The parcel is irregularly shaped and is generally bound to the northwest by a microelectronics testing facility, to the northeast by a software research and development facility, to the south by a railroad line operated by Caltrain, to the east by Walsh Avenue, and to the west by a Silicon Valley Power (SVP) substation. The Vantage Santa Clara Data Center Campus CA1 is located to the east of the site across Walsh Avenue. The closest residential uses are to the south across the railroad ROW (Ngo and DePietro 2021, page 3). The current building on site dates to ca. 1980 to 1982 (Smart Permit 2021; TRC 2020, page 4).

The project site served as farmland from at least 1897 to the 1970s (Ngo and DePietro 2021, pages 17–18). Maps and aerial images indicate that from 1939 to 1968 there existed private residences, agricultural structures, and orchards. A creek historically bisected the project site. The 1953 USGS topographic map labels the creek bisecting the property as Saratoga Creek. Saratoga Creek has had a few names over the years: Campbell's Creek, Sanjon Creek, and Quito Creek. The name was changed to Saratoga Creek sometime after the conclusion of WWII and by 1951 (Hickman 1974, page 11). South of the project site, the creek may have been diverted to join the San Tomas Aquino Creek to the east in the 1950s (Hickman 1974, page 12). Historical aerial images show remnants of the creek still bisecting the project property sometime between 1974 and 1982 (TRC 2020). Both creeks' origins are in the foothills of the South Coast Ranges. Throughout the early 19th century, most creeks originating in the foothills did not maintain a defined channel from the hills to the San Francisco Bay, including San Tomas Aquino Creek and Saratoga Creek (SFEI 2010, pages 13–14). Portions of Saratoga Creek were straightened as early as 1897, especially in the project site area. San Tomas Aquino Creek also appears to have been straightened by 1897 (USGS 1897). Today, a bicycle trail traverses the west side of the channel on a levee. The San Tomas Aquino Creek and bicycle trail are approximately 0.25 mile east of the project site.

Suburban residential development appears southwest of the project site as early as the 1950s. That development continued in the 1960s and 1970s (TRC 2020). By 1974, the property had been cleared of all residences and agricultural uses. The parcel was developed as an industrial property in 1982. Maps and aerial images indicate similar histories on some of the adjacent properties. The existing Caltrain rail alignment to the south dates to 1864 (JRP 2002, page 10), and is identified as the SPRR Monterey Line on topographic maps (TRC 2020, pages 13–16, and 1130 of 1213).

The adjacent parcels are listed in Table 4.5-1 below.

## Table 4.5-1 Parcels Adjacent to the Project Site

| Address | APN | Description | Year Constructed |
|---|---|---|---|
| 2590 Walsh Ave | 216-28-112 | Project Site, Industrial | ca. 1980–1982 |
| 2550 Walsh Ave | 216-28-113 | Commercial/Office | 1980 |
| 2565 Walsh Ave/2820 Northwestern Parkway | 216-28-132 | Commercial/Industrial | unknown |
| 2630 Walsh Ave | 216-28-106 | Commercial/Office | 1977 |
| 2705 Bowers Ave | 216-28-062 | Uranium Substation | 1976 |
| N/A | 216-28-121 | Railroad tracks (SPRR, Caltrain) | 1864 |

Abbreviations: APN = Assessor's Parcel Number; Ave = Avenue; N/A = not applicable; SPRR = Southern Pacific Railroad

The pedestrian survey completed on March 18, 2021, by the applicant's consultants (First Carbon Solutions) did not identify any adjacent properties 45 years or older (DayZenLLC 2021e, page 4-46). However, city of Santa Clara building permit records indicate that the Uranium Substation was issued a permit to construct in 1974 and was finished in 1976, making it at least 45 years old (Smart Permit 2021). The route of the SPRR Monterey Line dates to 1864, when it was initially constructed as the San Francisco & San Jose Railroad. The applicant's consultant prepared a supplemental report at CEC staff's request to investigate properties within one parcel distance from the project site. Both the Uranium Substation and the railroad tracks were determined to be 45 years or older and were evaluated for their eligibility for the National Register of Historic Places (NRHP), CRHR, and the local city of Santa Clara register (Murray 2021). Methods and results are below.

### Methods

#### *Project Area of Analysis*

The project area of analysis (PAA) defines the geographic area in which the proposed project has the potential to affect cultural or tribal cultural resources. Effects may be immediate, further removed in time, or cumulative. They may be physical, visual, audible, or olfactory in character. The PAA may or may not be one uninterrupted expanse. It could include the site of the project site, the routes of requisite transmission lines and water and natural gas pipelines, and other offsite ancillary facilities, in addition to one or several discontiguous areas where the project could arguably affect cultural or tribal cultural resources.

CEC staff defines the PAA as comprising the proposed project site, immediately adjacent parcels, and all appurtenant, proposed improvements. The PAA has archaeological, ethnographic, and historic built environment components, as described in the following paragraphs.

CEC staff defines the archaeological component of the PAA as all areas in which the applicant proposes ground disturbance to construct, operate, and decommission the proposed project. This includes building demolition, the proposed building sites, areas slated for concrete and hardscape removal, areas to be filled and graded, staging and laydown areas, installation of underground utilities, subsurface drainage, and installation of two transmission line poles. The applicant proposes demolition and excavation to variable depths. Trench excavations would extend up to 15-feet below grade. Foundation piles for the data center buildings would be augered to depths more than 30-feet below grade. (DayZenLLC 2021e, page 4-67.) Transmission line poles would be installed via truck-mounted auger to a depth of 20–30 feet.

For ethnographic resources, the PAA considers sacred sites, tribal cultural resources, traditional cultural properties (places), and larger areas, such as ethnographic landscapes that can be vast and encompassing, including view sheds that contribute to the historical significance of such resources. The Native American Heritage Commission (NAHC) assists project-specific cultural resources consultants and agency staff in identifying these resources, and consultation with Native Americans and other ethnic or community groups may contribute to defining the PAA. In the case of the proposed project, the immediate environs consist largely of commercial and light industrial buildings, offices, a park, residential areas, and an electrical substation. Staff, therefore, treats the ethnographic component of the PAA as coterminous with the archaeological component.

The project site consists primarily of a pre-existing industrial one-story building, pavement, hardscape, and modest landscape elements, much of which dates to 1980 to 1982. The historic built environment PAA for this project includes the project site and properties within a one-parcel boundary of the project site. This includes all properties directly across Walsh Avenue from the project site.

### *Literature Review*

The literature review for this analysis consisted of a records search at the California Historical Resources Information System (CHRIS), a review of the application for small power plant exemption (SPPE), and an examination of pertinent literature concerning cultural resources in the northern Santa Clara Valley.

The applicant conducted the records search at the Northwest Information Center (NWIC) of the CHRIS on May 5, 2021 (Ngo and DePietro 2021, page 1). The NWIC is the State of California's official repository of cultural resources records, previous cultural resources studies, and historical information concerning cultural resources for 16 counties, including Santa Clara County. The records search area included the project site and a 0.5-mile buffer around it (Ngo and DePietro 2021, page 1).

CEC staff also examined historic maps and aerial photographs of the PAA and vicinity to identify cultural resources (EDR 2017a, 2017b; Edward Denny & Co. 1913; GLO 1866; TRC 2020; USGS 1897, 1899). These sources depict the historic appearance of the PAA each decade from 1857 through 1980 (excepting the 1870s, 1880s, 1900s, and 1920s). The historic maps studied date to 1897, 1899, 1953, 1961, 1968 1973, 1980, and 2012, and include the following USGS quadrangles: Palo Alto, San Jose (15-minute series), Cupertino, Milpitas, Mountain View, and San Jose West (7.5-minute series). The historic aerial images studied are: 1939, 1948, 1950, 1956, 1963, 1968, 1974, 1982, 1993, 1998, 2006, 2009, 2012, and 2016.

In addition, CEC staff consulted:

- City of Santa Clara's General Plan 2010–2035 (General Plan), including its Historic Preservation and Resource Inventory (Santa Clara 2010)
- County of Santa Clara Historic Context Statement (Santa Clara County 2012)
- City of Santa Clara's Map Santa Clara tool (Santa Clara 2021).

CEC staff also consulted the NRHP, CRHR, Historic American Building Survey, Historic American Engineering Record, Historic American Landscape Survey, and other repositories of documentation of historical resources.

## *Tribal Consultation*

### Applicant's Correspondence

The applicant contacted the NAHC on February 23, and May 5, 2021, to request a list of tribes that might be interested in the project and a search of the Sacred Lands File. The NAHC responded on March 9, and May 21, 2021, providing contact information for 10 representatives of California Native American tribes. These individuals represent:

1. Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
2. North Valley Yokuts Tribe
3. The Ohlone Indian Tribe
4. Amah Mutsun Tribal Band
5. Indian Canyon Mutsun Band of Costanoan
6. Amah Mutsun Tribal Band of Mission San Juan Bautista
7. Wuksache Indian Tribe/Eshom Valley Band
8. Rumsen Am:a Tur:ataj Ohlone
9. Tamien Nation

The applicant sent letters to these tribes on March 10, and May 21, 2021. (Ngo and DePietro 2021, page 21; DayZenLLC 2021e, page 4-46.)

## CEC Consultation

CEQA requires lead agencies to consult with all California Native American tribes that have traditional and cultural affiliation with the geographic area of a project and that have previously requested consultation. To invoke an agency's requirement to consult under CEQA, a tribe must first send the lead agency a written request for formal notification of any projects within the geographic area with which they traditionally and culturally affiliate. (Pub. Resources Code, § 21080.3.1(b).) The CEC has a request for formal notification on file from the Wuksache Indian Tribe/Eshom Valley Band, a California Native American tribe that has traditional and cultural affiliation with the geographic area of the proposed project (Woodrow 2016). Accordingly, the CEC's Tribal Liaison mailed a letter (dated July 1, 2021) to the Wuksache Indian Tribe/Eshom Valley Band's chairperson inviting consultation pursuant to Public Resources Code, section 21080.3.1, and providing general information concerning the proposed project. The letter included four figures illustrating the proposed project and its location. (CEC and NAHC 2021, PDF pages 48–55.)

Consistent with the CEC's tribal consultation policy (CEC 2017), CEC staff contacted the NAHC on April 14, 2021, to request a search of the Sacred Lands File and a list of California Native American tribes that might be interested in the proposed project. The NAHC responded on April 28, 2021, and provided a list of nine California Native American tribes to contact (CEC and NAHC 2021, PDF pages 2–3); the listed tribes were the same tribes that the applicant's consultant contacted in March 2021. CEC staff mailed initial consultation letters to these tribes on July 1, 2021 (See CEC and NAHC 2021, PDF pages 4–47). See the following subsection, "Results," for tribal responses and lead agency follow-up.

The CEC also initiated consultation under Public Resources Code, section 21080.3.1, with the Tamien Nation after receiving the tribe's request for formal consultation on September 17, 2021 (see the discussion under "Results").

### *Archaeological Survey*

An archaeologist and a historian from FirstCarbon Solutions conducted an archaeological survey of the project site on March 18, 2021. Where obstructions did not hinder traversing the project site, FirstCarbon Solutions surveyed by walking transects at 5-meter (16-foot) intervals and making observations concerning the ground surface. The surveyors examined all available soil exposures in the project site. (DayZenLLC 2021e, page 4-45.)

### *Historic Architectural Survey*

CEC cultural resources staff conducted an architectural investigation inclusive of the project site and a one-parcel buffer from the proposed project boundaries. Buildings or structures 45 years or older, or considered significant, were identified as part of this effort. Any building or facility constructed in 1976 or earlier, or potentially eligible for the CRHR or local register, was surveyed and evaluated by the applicant's consultant for potential significance (Murray 2021).

## Results

### *Literature Review Results*

The NWIC records search identified six previous cultural resources studies conducted within the project site (BioSystems 1989; Carrico et al. 2000; Holson et al. 2002; Jurich and Grady 2011; Nelson et al. 2000; SWCA 2006). Eleven previous cultural resources studies have been conducted within 0.5 mile of the proposed project (Anastasio and Garaventa 1988; Baker 1998; Basin 2009a, 2009b; Busby 1999; Flynn 1979; Hammerle 2015; Hickman 1974; Jones & Stokes 2001; JRP 2002; Nelson et al. 2002). The city of Santa Clara's Planning website documents additional cultural resources impact analyses within 0.5 mile of the proposed project (Akmenkalns 2020; Guldenbrein 2017; Psota 2016).

The NWIC has no records of previously recorded cultural resources within 0.5 mile of the project site (Ngo and DePietro 2021, page 19). However, the adjacent railroad line (P-43-000928) has been surveyed for infrastructure for the entire Caltrain corridor on the San Francisco Peninsula (Murray 2021, page 9). Staff identified one additional cultural resource that has been previously investigated, the San Tomas Aquino Creek, located approximately 0.25 mile from the project site (Baker 1998). These cultural resources are listed in **Table 4.5-2**.

**TABLE 4.5-2. CULTURAL RESOURCES IDENTIFIED IN THE LITERATURE REVIEW**

| No. | Resource Name | APN | Description, Year Built | Eligibility Status |
|---|---|---|---|---|
| 1. | San Tomas Aquino Creek | | Channelized water conveyance structure, 1897 | Ineligible |
| 2. | Caltrain/SPRR Tracks (P-43-000928) | 216-28-121 | 1864 | Ineligible |

Notes: APN = Assessor's Parcel Number; SPRR = Southern Pacific Railroad

### *Tribal Consultation Results*

The April 28, 2021, search of the Sacred Lands File did not identify Native American cultural resources in the search area (CEC and NAHC 2021, PDF pages 2–3). The applicant did not receive any responses to letters sent to these tribes.

The Wuksache Indian Tribe/Eshom Valley Band has not responded to the CEC's invitation to consult under Public Resources Code, Section 21080.3.1.

In response to the CEC Tribal Liaison's letters inviting consultation with California Native American tribes, the Tamien Nation responded by letter on August 6, 2021, specifically requesting consultation about the following topics.

- Recommended mitigation measures
- Significant effects of the project

- Type of environmental review necessary
- Significance of tribal cultural resources, including any regulations, policies, or standards used by the CEC to determine significance of tribal cultural resources
- Significance of the project's impacts on tribal cultural resources
- Project alternatives and/or appropriate measures for preservation or mitigation that we may recommend, including, but not limited to:
    - Avoidance and preservation of the resources in place, pursuant to Public Resources Code section 21084.3, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria;
    - Treating the resources with culturally appropriate dignity considering the tribal cultural values and meaning of the resources, including, but not limited to, the following:
        - Protecting the cultural character and integrity of the resource;
        - Protecting the traditional use of the resource; and
        - Protecting the confidentiality of the resource.
    - Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    - Protecting the resource.

Tamien Nation also requested any cultural resources assessments or other assessments that have been completed on all or part of the PAA. ~~Consultation between the CEC and Tamien Nation is ongoing as of the time of this writing; CEC staff will update this results discussion in the final environmental impact report after the consultation concludes~~During the consultation, CEC staff provided Tamien Nation with a Word version of the DEIR's Cultural and Tribal Cultural Resources section. On December 27, 2021, Tamien Nation provided comments and suggested edits to the DEIR section to CEC staff. Tamien Nation's comments solely concerned Mitigation Measure CUL-1. Tamien Nation's comments concerned:

- Identifying Tamien Nation as the Native American monitor for ground-disturbing activities
- Clarifying the scope of monitoring by archaeological and Native American monitors
- Requiring a letter of commitment from the project applicant to deploy archaeological and Native American monitors during construction
- Terminological preferences, such as "Aboriginal ties" instead of "Traditional ties"

- Clarifying and expanding the Native American monitor(s)' role in construction monitoring (to include collaboration on the treatment plan, choice of analytical methods, and determining the disposition of archaeological materials found during construction)
- Protecting confidential cultural resources information provided to the City of Santa Clara
- Requiring Tribal Cultural Resources Sensitivity Training to construction personnel in conjunction with the Workers Environmental Awareness Program.

CEC staff incorporated Tamien Nation's input into Mitigation Measure CUL-1, with the exception of identifying Tamien Nation as the Native American monitor. The CEC is considering whether to exempt the proposed CA3 project from its jurisdiction. Since the City of Santa Clara would ultimately issue the permit for CA3, CEC staff concludes that the choice of monitors should reside with Santa Clara. CEC staff has not successfully solicited further input from Tamien Nation and considers consultation to be concluded.

### *Archaeological Survey Results*

FirstCarbon Solutions found the archaeological PAA to be almost completely covered in pavement, hardscape, buildings, and landscaping. Landscaping offered minimal opportunity to see the ground surface in the archaeological PAA. The surveyors did not identify any archaeological resources in the archaeological PAA.

### *Historic Architectural Survey Results*

The built environment PAA used for this project includes properties within a one-parcel boundary of the project site. The study area was established to analyze the project's potential for impacts to built-environment historical resources. The initial built environment survey and archival search conducted by the applicant did not identify any properties containing buildings or structures 45 years or older within the PAA. CEC staff identified two historic-era resources 45 years or older within the PAA. A subsequent investigation by the applicant's consultant concurred with staff's conclusion (Murray 2021). The two resources 45 years or older are the Caltrain Railroad Tracks (historic SPRR Monterey Line) and the SVP Uranium Substation. Both resources have been surveyed and evaluated by the applicant's consultant (Murray 2021).

#### Caltrain Railroad Tracks (Historic SPRR Monterey Line, P-43-000928)

The railroad predates the commercial and industrial operations in the area. The Caltrain electrification project has produced numerous studies over time of the Caltrain rail corridor and associated infrastructure. Most of these studies have been prepared by JRP Historical Consulting (JRP) (for example, JRP 2002). Generally, JRP and others have found modern railroad segments do not retain their integrity to the period of significance. Integrity has seven aspects: design, setting, materials, workmanship, feeling, association, and location. While the location of the railroad line has not changed, most railroads undergo maintenance and upgrades of facilities that generally change the design,

materials, and workmanship over time. This railroad does not appear to retain sufficient integrity to its setting, feeling, and association during the period of significance, 1860 to 1873, when SFSJRR and SPRR first operated the passenger and freight line. For the segment adjacent to the project site, the addition of a second track in the early 1900s, replacement of the original rails in the late 1950s, the grade separation at Bowers Avenue, and the addition of electrification equipment in the last decade (Murray 2021, Attachment A) degrade the integrity of the resource. The railroad has changed from its initial use as a passenger and freight line from San Francisco to Monterey and Los Angeles to strictly passenger commuter service on the San Francisco Peninsula, from San Francisco to Gilroy. The lack of integrity to the period of significance makes it ineligible for listing under the NRHP, CRHR, or city of Santa Clara's significance criteria. Thus, the resource does not qualify as a historical resource under CEQA.

### Uranium Substation

The SVP Uranium Substation was constructed between 1974 and 1976. Like the neighboring properties, the substation is located on what was farmland until the 1970s. Sited on an irregularly shaped parcel at 2705 Bowers Avenue in the city of Santa Clara, the substation is comprised of utilitarian buildings and structures typical of these kinds of facilities. Clues to its origins in the mid-1970s include the concrete-block utility building with a shed roof and wood-panel fascia evoking the shed style popular in the 1970s, and the north concrete-block entry wall bearing the substation's name in metal lettering. The substation was constructed to support ongoing population and industry growth within the context of a larger electrical system (Murray 2021, Attachment A). While it is associated with the rapid growth of the Santa Clara Valley and the rise of the tech industry in Santa Clara, it is not directly associated with any significant events in the development of the SVP electrical infrastructure (Murray 2021, Attachment A). The Uranium Substation has no significant historical or architectural associations (Murray 2021, page 11). This lack of historical or architectural significance makes it ineligible for listing under the NRHP, CRHR, or city of Santa Clara's significance criteria. Thus, the resource does not qualify as a historical resource under CEQA.

### 2590 Walsh Avenue

The building located at 2590 Walsh Avenue dates to the early 1980s. It is best described as a single-story office and warehouse structure, designed with a nod to the Spanish Eclectic style of architecture. This is found in the clay tile roof and the predominant arched windows. There is a nearly identical building next door at 2630 Walsh Avenue. The project site is completely developed, consisting of the large office warehouse building bordering Walsh Avenue to the north and parking lots, associated infrastructure, and landscape elements. None of the structures or elements on the project site are 45 years or older in age, and thus, are ineligible for inclusion on the CRHR or the city of Santa Clara's register and do not warrant further consideration as potential historic resources under CEQA.

### *Archaeological Sensitivity*

The application and staff's literature review indicate that the potential for buried archaeological resources to occur in the project vicinity mirrors the high frequency of buried archaeological deposits throughout the Santa Clara Valley (Byrd et al. 2017, page 4-2; Mission College 2019, pages 92–93; Hylkema 1998, page 20). Researchers have identified at least 16 buried prehistoric archaeological sites in the Santa Clara Valley (Rehor and Kubal 2014, page 4-1, Table 4-1). Archaeologists working independently of the present analysis have estimated the PAA's likelihood to contain buried, prehistoric, archaeological resources as moderate (Byrd et al. 2017, Figure 27). The PAA is situated in an area that historically lay near J. Kiefer's barn and house, orchards, natural and channelized forms of present-day Saratoga Creek, roads, and encompassed a residence and part of an adjoining orchard since the middle of the 1800s to about 1968 or 1974. Therefore, buried historic archaeological resources are also expectable in the PAA, below modern construction. (DayZenLLC 2021c; GLO 1866; USGS 1899.)

## Regulatory Background

### *Federal*

No federal regulations related to cultural or tribal cultural resources apply to the project.

## State

**California Environmental Quality Act.** Various laws apply to the evaluation and treatment of cultural resources. CEQA requires lead agencies to evaluate cultural resources by determining whether they meet several sets of specified criteria that make such resources eligible to the CRHR. Those cultural resources eligible to the CRHR are historical resources. The evaluation then influences the analysis of potential impacts to such historical resources and the mitigation that may be required to ameliorate any such impacts.

CEQA and the CEQA Guidelines define significant cultural resources under two regulatory definitions: historical resources and unique archaeological resources. A historical resource is defined as a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources," or "a resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code," or "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record." (Cal. Code Regs., tit. 14, § 15064.5(a).) Historical resources that are automatically listed in the CRHR include California historical resources listed in or formally determined eligible for the NRHP and California Registered Historical Landmarks from No. 770 onward (Pub. Resources Code, § 5024.1(d)).

CEQA generally considers a resource historically significant if it meets the criteria for listing in the CRHR. In addition to being at least 45 years old, a resource must meet one or more of the following four criteria (Pub. Resources Code, § 5024.1):

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Criterion 2, is associated with the lives of persons important in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important in prehistory or history.

In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (Cal. Code Regs., tit. 14, § 4852(c)).

Even if a resource is not listed or determined to be eligible for listing in the CRHR, CEQA requires the lead agency to determine whether the resource is a historical resource as defined in Public Resources Code, sections 5020.1(j) or 5024.1.

In addition to historical resources, archaeological artifacts, objects, or sites can meet CEQA's definition of a unique archaeological resource even if the resource does not qualify as a historical resource (Cal. Code Regs., tit. 14, § 15064.5(c)(3)). Archaeological artifacts, objects, or sites qualify as unique archaeological resources if it is clearly demonstrable that, without merely adding to the current body of knowledge, there is a high probability that the resource meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
1. Has a special and particular quality such as being the oldest of its type or the best available example of its type
2. Is directly associated with a scientifically recognized important prehistoric or historic event or person (Pub. Resources Code, § 21083.2(g).)

To determine whether a proposed project may have a significant effect on the environment, staff analyzes the project's potential to cause a substantial adverse change in the significance of historical or unique archaeological resources. The magnitude of an impact depends on:

- the historical resource(s) affected;
- the specific historic significance of any potentially impacted historical resource(s);
- how the historical resource(s) significance is manifested physically and perceptually;

- appraisals of those aspects of any historical resource's integrity that figure importantly in the manifestation of the resource's historical significance; and
- how much the impact will change historical resource integrity appraisals.

Title 14, California Code of Regulations, section 15064.5(b) defines a "substantial adverse change" as the "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired."

**California Native American Tribes, Lead Agency Tribal Consultation Responsibilities, and Tribal Cultural Resources.** CEQA provides definitions for California Native American tribes, lead agency responsibilities to consult with California Native American tribes, and tribal cultural resources. A "California Native American tribe" is a "Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission for the purposes of Chapter 905 of the Statutes of 2004" (Pub. Resources Code, § 21073). Lead agencies implementing CEQA are responsible to consult with California Native American tribes about tribal cultural resources within specific timeframes. If tribal cultural resources could be impacted by a CEQA project, lead agencies are to exhaust the consultation to points of agreement or termination.

Tribal cultural resources are either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
   a. Included or determined to be eligible for inclusion in the CRHR
   b. Included in a local register of historical resources as defined in the Public Resources Code, section 5020.1(k).

2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in the Public Resources Code, section 5024.1(c). In applying these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe. (Pub. Resources Code, § 21074(a).)

A cultural landscape that meets the criteria of Public Resources Code, section 21074(a), is a tribal cultural resource to the extent that the landscape is geographically defined in terms of its size and scope (Pub. Resources Code, § 21074(b)). Historical resources, unique archaeological resources, and non-unique archaeological resources, as defined at Public Resources Code, sections 21084.1, 21083.2(g), and 21083.2(h), respectively, may also be tribal cultural resources if they conform to the criteria of Public Resources Code, section 21074(a).

CEQA also states that a project with an impact that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (Pub. Resources Code, § 21084.2).

### *Local*

**City of Santa Clara General Plan.** Section 5.6.3 of the city of the General Plan outlines the goals and policies related to archaeological and cultural resources. The applicable goals in this section of the General Plan encourage the protection and preservation of cultural resources, including archaeological and paleontological sites, and encourage appropriate mitigation in the event of discovery during construction.

Relevant policies require protecting historic resources through the avoidance or reduction of potential impacts, using the Secretary of the Interior's Standards for the Treatment of Historic Properties, and using the city's established historic preservation program for ensuring resource evaluation, protection, and integrity (Santa Clara 2010).

Appendix 8.9 of the General Plan, the Historic Preservation and Resource Inventory, established criteria for local significance and included a list of recorded historic properties (Santa Clara 2010). In addition, the city has embedded in its City Code a section on Historic Preservation (Title 18 Zoning, Chapter 18.106, Historic Preservation). The purpose of Chapter 18.106 is "to promote the identification, protection, enhancement and perpetuation of buildings, structures and properties within the City that reflect special elements of the City's social, economical, historical, architectural, engineering, archaeological, cultural, natural, or aesthetic heritage" (Santa Clara 2018). The chapter requires the maintenance of a Historic Resource Inventory.

Appendix 8.9 of the General Plan also identifies significance criteria for local listings. The city of Santa Clara's City Council adopted the Criteria for Local Significance on April 20, 2004 and incorporated the criteria into the General Plan Appendix 8.9. Any building, site, or property in the city that is 50 years old or older and meets certain criteria of architectural, cultural, historical, geographical, or archaeological significance is potentially eligible. The Criteria for Local Significance established in General Plan Appendix 8.9 (Santa Clara 2010) are as follows:

Criterion for Historical or Cultural Significance - To be historically or culturally significant, a property must meet at least one of the following criteria:

1. The site, building or property has character, interest, integrity and reflects the heritage and cultural development of the city, region, state, or nation.

2. The property is associated with a historical event.

3. The property is associated with an important individual or group who contributed in a significant way to the political, social and/or cultural life of the community.

4. The property is associated with a significant industrial, institutional, commercial, agricultural, or transportation activity.

5. A building's direct association with broad patterns of local area history, including development and settlement patterns, early or important transportation routes or social, political, or economic trends and activities. Included is the recognition of urban street pattern and infrastructure.

6. A notable historical relationship between a site, building, or property's site and its immediate environment, including original native trees, topographical features, outbuildings, or agricultural setting.

Criterion for Architectural Significance - To be architecturally significant, a property must meet at least one of the following criteria:

1. The property characterizes an architectural style associated with a particular era and/or ethnic group.

2. The property is identified with a particular architect, master builder, or craftsman.

3. The property is architecturally unique or innovative.

4. The property has a strong or unique relationship to other areas potentially eligible for preservation because of architectural significance.

5. The property has a visual symbolic meaning or appeal for the community.

6. A building's unique or uncommon building materials or its historically early or innovative method of construction or assembly.

7. A building's notable or special attributes of an aesthetic or functional nature. These may include massing, proportion, materials, details, fenestration, ornamentation, artwork, or functional layout.

Criterion for Geographic Significance - To be geographically significant, a property must meet at least one of the following criteria:

1. A neighborhood, group, or unique area directly associated with broad patterns of local area history.

2. A building's continuity and compatibility with adjacent buildings and/or visual contribution to a group of similar buildings.

3. An intact, historical landscape or landscape features associated with an existing building.

4. A notable use of landscaping design in conjunction with an existing building.

Criterion for Archaeological Significance - For the purposes of CEQA, an "important archaeological resource" is one which:

5. Is associated with an event or person of
   a. Recognized significance in California or American history, or
   b. Recognized scientific importance in prehistory.
6. Can provide information, which is both of demonstrable public interest, and useful in addressing scientifically consequential and reasonable or archaeological research questions;
7. Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;
8. Is at least 100 years old and possesses substantial stratigraphic integrity; or
9. Involves important research questions that historical research has shown can be answered only with archaeological methods.

## 4.5.2 Environmental Impacts

## Cultural Resources CEQA Checklist Questions

### a. Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

*Construction*

*Less Than Significant Impact with Mitigation Incorporated.* No historic built environment resources meeting CEQA's criteria for historical resources are located on site or within the PAA. No archaeological or ethnographic resources meeting CEQA's criteria for historical resources occupy the surface of the PAA. Previous studies in the project vicinity, however, indicate that the PAA could harbor buried archaeological or ethnographic resources. The PAA is located between two waterways (Saratoga and San Tomas Aquino creeks) on the former grounds of historic farms. Archaeologists working independently of the present analysis have estimated the PAA's likelihood to contain buried, prehistoric archaeological resources as moderate (Byrd et al. 2017, Figure 27).

The ground disturbance required to build the proposed project would extend into native soils more than 30 feet below grade. Known buried archaeological sites in the Santa Clara Valley are located at depths of 1.0–10.5 feet below grade (Rehor and Kubal 2014, Table 4-1). If such resources were to be damaged during construction, it would be considered a significant impact, particularly since virtually all archaeological sites 5,000 years or older occur only in buried contexts.

This EIR, however, proposes a mitigation measure, **CUL-1**, to reduce the significance of any such impacts on historical resources. **CUL-1** requires qualified professionals to survey the exposed ground surface for cultural resources once the demolition of existing structures is complete. It also requires test excavation to determine the presence or absence of buried cultural resources and describes criteria for avoidance measures and construction monitoring (see **Section 4.5.3: Mitigation Measures**). This measure would reduce impacts to any discovered historical resources to a less-than-significant level.

### *Operation*

*No Impact.* Ground-disturbing activities are not part of the operational or maintenance profile of the proposed project. Therefore, there would be no impact to historical resources, as described in CEQA Guidelines Section 15064.5.

## b. Would the project cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5?

### *Construction*

*Less Than Significant Impact with Mitigation Incorporated*. As discussed in the potential construction impacts for CEQA Checklist Question "a" above, mitigation measure **CUL-1** would reduce impacts to unique archaeological resources to a less-than-significant level.

### *Operation*

*No Impact*. Ground-disturbing activities are not part of the operational or maintenance profile of the proposed project. The operation and maintenance of the proposed project would not require excavation or other ground-disturbance. Therefore, there would be no impact to unique archaeological resources, as described in CEQA Guidelines Section 15064.5.

## c. Would the project disturb any human remains, including those interred outside of formal cemeteries?

### *Construction*

*Less Than Significant Impact with Mitigation Incorporated*. See staff's response to CEQA Checklist Questions "a" and "b" above for construction. In addition to mitigation measure **CUL-1**, mitigation measure **CUL-2** describes a protocol to minimize or avoid impacts on inadvertently discovered human remains. Combined, mitigation measures **CUL-1** and **CUL-2** would reduce the impacts to human remains to a less-than-significant level.

*Operation*

*No Impact*. Ground-disturbing activities are not part of the operational or maintenance profile of the proposed project. Therefore, there would be no impact to human remains during the operation and maintenance of the proposed project.

## Tribal Cultural Resources CEQA Checklist Questions

**Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, section 21074, as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:**

**a. Listed or eligible for listing in the California Register of Historical Resources or in a local register of historical resources, as defined in Public Resources Code, section 5020.1(k)?**

*Construction*

*No Impact*. There are no tribal cultural resources listed or eligible for listing in the CRHR or other state registers, NRHP, or local register of historical resources in the PAA, and, therefore, no impacts would occur during construction.

*Operation*

*No Impact*. Ground-disturbing activities are not part of the operational or maintenance profile of the proposed project. Impacts on tribal cultural resources listed or eligible for listing in the CRHR or other state registers, NRHP, or local register of historical resources would, therefore, not occur during operation or maintenance.

**b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Public Resources Code, section 5024.1 (c). In applying the criteria set forth in Public Resources Code, section 5024.1 (c), the lead agency shall consider the significance of the resource to a California Native American tribe?**

*Construction*

*Less Than Significant Impact with Mitigation Incorporated*. Although there are no known tribal cultural resources on or directly adjacent to the proposed site, ground-disturbance associated with the proposed project could result in the exposure and destruction of buried, as-yet-unknown prehistoric archaeological resources that could qualify as tribal cultural resources. If these resources were to be exposed or destroyed, it would be a significant impact. Implementation of **CUL-1** and **CUL-2**

would reduce the impacts on buried, tribal cultural resources to a less than significant level (see Cultural Resources CEQA Checklist Questions "a" and "b" above).

### *Operation*

*No Impact*. Ground-disturbing activities are not part of the operational or maintenance profile of the proposed project. Impacts on tribal cultural resources listed or eligible for listing in the CRHR or other state registers, NRHP, or local registers of historical resources would, therefore, not occur during operation and maintenance.

## 4.5.3 Mitigation Measures

**CUL-1:** The following project-specific measures would be implemented during construction to avoid significant impacts to unknown subsurface cultural resources:

- A Secretary of the Interior-qualified archaeologist and a Native American cultural resources monitor shall be on site to monitor all ground-disturbing activity, including the removal of foundations and landscaping, on the project site. The project applicant shall submit the name and qualifications of the selected archaeologist and Native American monitor, along with a signed letter of commitment or agreement to monitor, to the City's Director of Community Development prior to the issuance of a grading permit. Preference in selecting Native American monitors shall be given to Native Americans with:
  - Aboriginal, culturally affiliated ties to the area being monitored.
  - Knowledge of local historic and prehistoric Native American village sites.
  - Knowledge and understanding of Health and Safety Code, section 7050.5, and Public Resources Code, section 5097.9 et seq.
  - Ability to effectively communicate the requirements of Health and Safety Code, section 7050.5, and Public Resources Code, section 5097.9 et seq.
  - Ability to work with law enforcement officials and the Native American Heritage Commission to ensure the return of all associated grave goods taken from a Native American grave during excavation.
  - Ability to travel to project sites within traditional tribal territory.
  - Knowledge and understanding of California Code of Regulations, title 14, section 15064.5.
  - Ability to advocate for the preservation in place of Native American cultural features through knowledge and understanding of CEQA mitigation provisions.
  - Ability to read a topographical map and be able to locate site and reburial locations for future inclusions in the Native American Heritage Commission's Sacred Lands Inventory.
  - Knowledge and understanding of archaeological practices, including the phases of archaeological investigation.

After the removal of pavement and prior to grading, the archaeologist shall conduct a pedestrian survey over the exposed soils to determine if any surface archaeological manifestations are present.

- After the demolition of the existing building and paved parking lot on the site, a qualified archaeologist with a Native American monitor present shall complete mechanical presence/absence testing for archaeological deposits and cultural materials. In the event any prehistoric site indicators are discovered, additional backhoe testing will be conducted to map the aerial extent and depth below the surface of the deposits. In the event prehistoric or historic archaeological deposits are found during presence/absence testing, the significance of the find will be determined. If deemed significant, a treatment plan will be prepared and provided to the city's Director of Community Development. Where Native American cultural materials are identified, the archaeological monitor will prepare a treatment plan in collaboration with the monitoring California Native American tribe. The key elements of a treatment plan shall include the following:
    - Identify the scope of work and range of subsurface effects (include location map and development plan),
    - Describe the environmental setting (past and present) and the historic/prehistoric background of the parcel (potential range of what might be found),
    - Develop research questions and goals to be addressed by the investigation (what is significant vs. what is redundant information),
    - Detail the field strategy used to record, recover, or avoid the finds (photos, drawings, written records, provenience data maps, soil profiles, excavation techniques, standard archaeological methods) and address research goals.
    - Analytical methods (radiocarbon dating, obsidian studies, bone studies, historic artifacts studies [list categories and methods], packaging methods for artifacts, etc.); the monitoring California Native American tribe shall determine the appropriateness of analytical methods proposed for Native American cultural materials,
    - Report structure, including a technical and layperson's report and an outline of document contents in one year of completion of development (provide a draft for review before a final report),
    - Disposition of the artifacts (the monitoring California Native American tribe will determine the disposition of California Native American cultural materials),
    - Appendices: site records, update site records, correspondence, consultation with Native Americans, etc.

The archaeologist and California Native American monitor will monitor full-time all grading and ground disturbing activities associated with the construction of the proposed project. If the archaeologist and Native American monitor believe that a reduction in monitoring activities is prudent, then a letter report detailing the rationale for making such a

reduction and summarizing the monitoring results shall be provided to the city's Director of Community Development. Department of Recreation 523 forms shall be submitted along with the report for any cultural resources encountered over 50 years old.

- If prehistoric or historic resources are encountered during on-site construction activities, all activity within a 50-foot radius of the find shall be stopped, the city's Director of Community Development shall be notified, and a Secretary of the Interior-qualified archaeologist shall examine the find and record the site, including field notes, measurements, and photography for a Department of Parks and Recreation 523 Primary Record form. The archaeologist shall make a recommendation in collaboration with the monitoring California Native American tribe regarding eligibility for the California Register of Historical Resources, data recovery, curation, or other appropriate mitigation. Ground-disturbance within the 50-foot radius can resume once these steps are taken and the city's Director of Community Development has concurred with the recommendations. Within 30 days of the completion of the construction or cultural resources monitoring, whichever comes first, a report of findings documenting any cultural resource finds, recommendations, data recovery efforts, and other pertinent information gleaned during cultural resources monitoring shall then be submitted to the city's Director of Community Development under confidential cover, along with a report that redacts the location(s) of all cultural resources. Once finalized, this report shall be submitted to the Northwest Information Center at Sonoma State University.
- Prior to and for the duration of ground-disturbance, the project owner shall provide Worker Environmental Awareness Program training to all existing and any new employees. This training should include: a discussion of the applicable laws and penalties under the laws; samples or visual aids of the artifacts that could be encountered in the project vicinity, including what those artifacts may look like partially buried, or wholly buried and freshly exposed; and instructions to halt work in the vicinity of any potential cultural resource discovery, and notify the city-approved archaeologist and Native American cultural resources monitor. The Native American monitor shall provide a Tribal Cultural Resources Sensitivity Training in conjunction with the Worker Environmental Awareness Program.

**CUL-2:** The project proposes to implement the following measure to ensure the project's impacts to human remains are less than significant:

- If human remains are discovered during the presence/absence testing or excavation and/or grading of the site, all activity within a 50-foot radius of the find will be stopped. The Santa Clara County Coroner will be notified and shall determine whether the remains are of Native American origin or whether an investigation into the cause of death is required. If the remains are determined to be Native American, the coroner will notify the NAHC immediately. Once NAHC identifies the most likely descendants, the descendants will make recommendations regarding proper burial, which will be implemented in accordance with the California Code of Regulations, ~~Title~~ title 14,

section 15064.5(e) of the CEQA Guidelines. All actions taken under this mitigation measure shall comply with the Health and Safety Code, section 7050.5(b).

## 4.5.4 References

Akmenkalns 2020 – Jessika Akmenkalns, Letter Regarding Record Search Results for the Proposed CoreSite SV9 Project located at 2905 Stender Way, Santa Clara, Santa Clara County, California. Prepared by Northwest Information Center, California Historical Resources Information System, Rohnert Park. Appendix B to *CoreSite SV9 Data Center, 2905 Stender Way, CEQ2020-01075: Initial Study with Proposed Mitigated Negative Declaration (MND)*, by Circlepoint, San Jose, CA. Prepared for Community Development Department, City of Santa Clara, CA. July 2020.

Anastasio and Garaventa 1988 – Rebecca L. Anastasio and Donna M. Garaventa, *Historic Property Survey of the Proposed Central Expressway Commuter Lane Project Located in the Cities of Santa Clara, Sunnyvale, and Mountain View in Santa Clara County, California*. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-010154. Prepared for Donaldson Associates, Albany, CA. Prepared by Basin Research Associates, Inc., Hayward, CA. Revised April 1988.

Baker 1998 – Susan Baker, *Archaeological Survey, San Tomas Aquino/Saratoga Creek Trail Project, Santa Clara County, California*. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-022570. July 1998.

Basin 2009a – Basin Research Associates, *Historic Property Survey Report/Finding of Effect: South Bay Water Recycling (SBWR) Stimulus Projects, Santa Clara Industrial 2, City of Santa Clara, Santa Clara County*. Prepared for Mid-Pacific Region, Bureau of Reclamation, U.S. Department of the Interior, Sacramento, CA, and CH2M Hill, Sacramento, CA. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-036717. Prepared by Basin Research Associates, Inc., San Leandro, CA. October 2009.

Basin 2009b – Basin Research Associates, *Historic Property Survey Report/Finding of Effect: South Bay Water Recycling (SBWR) Stimulus Projects, Santa Clara Industrial 3A, City of Santa Clara, Santa Clara County*. Prepared for Mid-Pacific Region, Bureau of Reclamation, U.S. Department of the Interior, Sacramento, CA, and South Bay Water Recycling, San Jose, CA. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-037218. Prepared by Basin Research Associates, Inc., San Leandro, CA. Revised, December 2009.

BioSystems 1989 – BioSystems Analysis, *Technical Report of Cultural Resources Studies for the Proposed WTG-WEST, Inc., Los Angeles to San Francisco and Sacramento, California: Fiber Optic Cable Project*. Confidential report on file,

Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-011396. Prepared for Applied Conservation Technology, Inc., Westminster, CA. Prepared by BioSystems Analysis, Inc., Santa Cruz, CA. October 1989.

Busby 1999 – Colin I. Busby, Letter Regarding Historic Properties Affected or Potentially Affected by the South Bay Water Recycling Program (SBWRP), Phase 2 Master Plan, Tasman Drive Interconnection, SC-2 and SC-4 Segments, Cities of Milpitas and Santa Clara, Santa Clara County. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-023364. Submitted to Montgomery Watson Americas, Inc., San Jose, CA. Prepared by Basin Research Associates, San Leandro, CA. December 7, 1999.

Busby et al. 1996a – Colin I. Busby, Donna M. Garaventa, Melody E. Tannam, and Stuart A. Guedon, *Historic Properties Treatment Plan, South Bay Water Recycling Program*. Revised. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-019072. Prepared for Parsons Engineering Science, Alameda, CA. Prepared by Basin Research Associates, San Leandro, CA. July 1996.

Busby et al. 1996b – Colin I. Busby, Donna M. Garaventa, Melody E. Tannam, and Stuart A. Guedon, *Supplemental Report: Historic Properties Affected or Potentially Affected by the South Bay Water Recycling Program*. Prepared for Parsons Engineering Science, Alameda, CA. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-019072a. June 1996.

Byrd et al. 2017 – Brian F. Byrd, Adrian R. Whitaker, Patricia J. Mikkelsen, and Jeffrey S. Rosenthal, *San Francisco Bay-Delta Regional Context and Research Design for Native American Archaeological Resources, Caltrans District 4*. Prepared for Office of Cultural Resources Studies, District 4, California Department of Transportation, Oakland. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-049780. June 2017.

Carrico et al. 2000 – Richard Carrico, Theodore Cooley, and William Eckhardt, *Cultural Resources Reconnaissance Survey and Inventory Report for the Metromedia Fiberoptic Cable Project, San Francisco Bay Area and Los Angeles Basin Networks*. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-026045. Submitted to ESA Environmental Science Associates, San Francisco, CA. Prepared for Metromedia Fiber Network Services, Inc., Hayward, CA. Prepared by Mooney & Associates, San Diego, CA. March 2000.

CEC 2017 – California Energy Commission, *Tribal Consultation Policy*. Revised. December 2017. Sacramento, CA. CEC-700-2017-002-D. Accessed March 10,

2020. Electronic document, https://www.energy.ca.gov/sites/default/files/2020-01/2017CEC_Tribal_Consultation_Policy_ADA.pdf

CEC and NAHC 2021-California Energy Commission and Native American Heritage Commission (TN 239156). CA3 Tribal Consultation Request Letter, dated August 2, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

Davis 1961 – James T. Davis, *Trade Routes and Economic Exchange among the Indians of California*. Report No. 54. Berkeley: University of California Archaeological Survey, March 31, 1961.

DayZenLLC 2021a – DayZenLLC (DayZenLLC). (TN 237380). VDC CA3BGF SPPE Application Part I, dated April 5, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2021c – DayZenLLC (DayZenLLC). (TN 237382). VDC CA3BGF SPPE Application Part IV, dated April 5, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

DayZenLLC 2021e – DayZenLLC (DayZenLLC). (TN 237423). VDC CA3BGF SPPE Application Part II, dated April 12, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

Draper 1949 – W. Marvin Draper, Owens-Corning Fiberglass Plant, Santa Clara, CA, 1949. May 5. Aerial photograph. W. Marvin Draper Collection, Santa Clara City Library. Electronic Document. Available online at: https://oac.cdlib.org/ark:/13030/kt9s2024bv/?brand=oac4, accessed October 18, 2021

EDR 2017a – Environmental Data Resources, EDR Historical Topo Map Report with QuadMatch™. May 17. Shelton, CT. Inquiry Number 4940607.4. Prepared for Vishay Siliconix, Santa Clara, CA. Appendix C to *Phase I Environmental Site Assessment, 2201 Laurelwood Road, Santa Clara, California*, by Cornerstone Earth Group. Project No. 1075-1-1. Prepared for MECP1 Santa Clara 1, LLC. November 26, 2018.

EDR 2017b – Environmental Data Resources, The EDR Aerial Photo Decade Package. May 18. Shelton, CT. Inquiry Number 4940607.12. Prepared for Vishay Siliconix, Santa Clara, CA. Appendix C to *Phase I Environmental Site Assessment, 2201 Laurelwood Road, Santa Clara, California*, by Cornerstone Earth Group. Project No. 1075-1-1. Prepared for MECP1 Santa Clara 1, LLC. November 26, 2018

Edward Denny & Co. 1913 – Edward Denny & Co. Map Publishers, *Denny's Pocket Map, Santa Clara County, California*.

Fike 2016 – Aisha Fike, *651 Mathew Street*. California Department of Recreation Primary Record Form. October 25. ICF international. Prepared for the City of Santa Clara.

Flynn 1979 – Katherine Flynn, Letter Regarding Archaeological Reconnaissance of Approximately 9 Miles of Central Expressway from De La Cruz Boulevard to San

Antonio Road (WO #872824). Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-008521. Submitted to Property Division, Transportation Agency, County of Santa Clara, San Jose, CA. Prepared by Archaeological Resource Service, Novato, CA. September 13, 1979.

GLO 1866 – General Land Office, Survey Plat of Township No. 6 South, Range No. 1 West, Mount Diablo Meridian. May 12. San Francisco, CA. Surveyed 1851, 1853, 1857–1862, 1865–1866.

Golla 2007 – Victor Golla, Linguistic Prehistory. Chapter 6 in *California Prehistory: Colonization, Culture, and Complexity*, edited by Terry L. Jones and Kathryn A. Klar, pp. 71–82. Lanham, MD: Altamira, 2007.

Guldenbrein 2017 – Jillian Guldenbrein, Letter Regarding Record Search Results for the Proposed Coresite SV8 Data Center Project, 3045 Stender Way, Santa Clara, APN 216-29-084. Prepared for Circlepoint, Oakland, CA. Appendix B to *Mitigated Negative Declaration: Coresite SV8 Data Center*, prepared for Community Development Department, City of Santa Clara, CA. May 2018.

Hammerle 2015 – Esme Hammerle, *Cultural Resources Constraints Report: Gas Main Bowers & Kifer, Santa Clara City and County*. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-47529. Prepared for Pacific Gas and Electric Company. Prepared by Garcia and Associates. January 29, 2015.

Hickman 1974 – Patricia P. Hickman, *An Archeological Survey of a Portion of Saratoga Creek, Santa Clara County, California*. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-004391. Submitted to Creegan and D'Angelo, San Jose, CA. June 1974.

Holson et al. 2002 – John Holson, Cordelia Sutch, and Stephanie Pau, *Cultural Resources Report for San Jose Local Loops, Level 3 Fiber Optics Project in Santa Clara and Alameda Counties, California*. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-025173. Prepared for Fluor Global Services, Inc., Aliso Viejo, CA. Prepared by Pacific Legacy, Albany, CA. May 2002.

Hylkema 1994 – Mark G. Hylkema, Tamien Station Archaeological Project. In *The Ohlone Past and Present: Native Americans of the San Francisco Bay Region*, compiled and edited by Lowell J. Bean, pp. 249–270. Anthropological Papers No. 42. Menlo Park, CA: Ballena Press, 1994.

Hylkema 1998 – Mark G. Hylkema, *Extended Phase I Archaeological Survey Report: Subsurface Presence/Absence Testing at the Woolen Mills Chinatown Site (CA-SCL-807/H) and Three Storm Water Detention Basins, for the Route 87 Guadalupe Corridor Freeway Project, City of San Jose, Santa Clara County, California*. 04-SCL-87 PM 6.3/9.4, 04-SCL-101 PM 40.2/41.2. On file, Northwest

Information Center, California Historical Resources Information System, Rohnert Park. Study S-020327. Office of Environmental Planning, South, District 4, California Department of Transportation, Oakland. May 8, 1998.

NAHC 2021a – Native American Heritage Commission (NAHC). (TN 239156). CA3 Tribal Consultation Request Letter, dated August 2, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

Jones & Stokes 2001 – Jones & Stokes, *Cultural Resources Investigations for XO California, Inc. Fiber Optic Installations in San Francisco and Santa Clara Counties*. Prepared for XO California, Inc., Fremont, CA. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-023934. Oakland, CA. June 2001.

Jones et al. 2007 – Terry L. Jones, Nathan E. Stevens, Deborah A. Jones, Richard T. Fitzgerald, and Mark G. Hylkema, The Central Coast: A Midlatitude Milieu. Chapter 9 in *California Prehistory: Colonization, Culture, and Complexity*, edited by Terry L. Jones and Kathryn A. Klar, pp. 125–146. Lanham, MD: Altamira, 2007.

JRP 2002 – JRP Historical Consulting. Inventory and Evaluation of Historic Resources, Caltrain Electrification Program, San Francisco to Gilroy (MP 0.0 to 77.4). S-043525. July 2002.

Jurich and Grady 2011 – Denise Jurich and Amber Grady, *California High-Speed Train Project, Environmental Impact Report/Environmental Impact Statement, San Francisco to San Jose Section, Archaeological Survey Report, Technical Report*. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-048738. Prepared for California High Speed Rail Authority and Federal Railroad Administration, U.S. Department of Transportation. Prepared by PBS&J, San Francisco, CA. Draft. March 2011.

Kroeber 1976 – A. L. Kroeber, *Handbook of the Indians of California*. Originally published in 1925, Bulletin No. 78, Bureau of American Ethnology, Smithsonian Institution, Washington, D.C. Reprinted. New York, NY: Dover Publications, 1976.

Lehmann 2000 – Susan Lehmann, Economic Development of the City of Santa Cruz, 1850-1950. From: *Fully Developed Context Statement for the City of Santa Cruz*. Prepared for the City of Santa Cruz Planning and Development Department. Chapter 3, Context I: Economic Development of the City of Santa Cruz 1850-1950, pp. 25–27. Accessed March 9, 2020. Electronic Document: https://history.santacruzpl.org/omeka/items/show/134510#?c=0&m=0&s=0&cv=0

Levy 1978 – Richard Levy, Costanoan. In *California*, edited by Robert F. Heizer, pp. 485–495. Handbook of North American Indians, vol. 8, William C. Sturtevant, ed. Washington, D.C.: Smithsonian Institution, 1978.

Milliken et al. 2007 – Randall Milliken, Richard T. Fitzgerald, Mark G. Hylkema, Randy Groza, Tom Origer, David G. Bieling, Alan Leventhal, Randy S. Wiberg, Andrew Gottsfield, Donna Gillette, Viviana Bellifemine, Eric Strother, Robert Cartier, and David A. Fredrickson, Punctuated Culture Change in the San Francisco Bay Area. Chapter 8 in *California Prehistory: Colonization, Culture, and Complexity*, edited by Terry L. Jones and Kathryn A. Klar, pp. 99–123. Lanham, MD: Altamira, 2007.

Mission College 2019 – Application for Small Power Plant Exemption: Mission College Data Center, dated November 2019. (TN 230848). Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-SPPE-05.

Murray 2021 – Samantha Murray. Historic Built Environment Assessment: CA3-2590 Walsh Avenue Project. TN 239260. August 2, 2021. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

Nelson et al. 2000 – Wendy J. Nelson, Maureen Carpenter, and Julia G. Costello, *Cultural Resources Survey for the Level (3) Communications Long Haul Fiber Optics Project, Segment WS05: San Jose to San Luis Obispo*. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-022819. Prepared for Parson Brinckerhoff Network Services, Pleasanton, CA. Prepared by Far Western Anthropological Research Group, Inc., Davis, CA. June 30, 2000.

OHP 1995 – Office of Historic Preservation, *Instructions for Recording Historical Resources*. Sacramento, CA: Office of Historic Preservation, March 1995.

Oosterhous et al. 2002 – Kara Oosterhous, Franklin Maggi, and Leslie A. G. Dill, *Historical and Architectural Evaluation: 4423 Cheeney Street, Santa Clara, County of Santa Clara, California*. Prepared for Lauson Fargher, Santa Clara, CA. On file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-026095. Dill Design Group, Los Gatos, CA, September 17, 2002.

Ngo and DePietro 2021 – Ti Ngo and Dana D. DePietro, *Phase I Cultural Resources Assessment, CA3-2590 Walsh Avenue City of Santa Clara, Santa Clara County, California*. Confidential report prepared for Vantage Data Centers, Sterling, VA. Prepared by First Carbon Solutions, Walnut Creek, CA. April 1, 2021, revised May 25 and August 18, 2021.

Parsons and KEMCO 1983 – Parsons Brinckerhoff Quade & Douglas and Kobori Environmental Management Corp, *Data Recovery Plan for the Guadalupe Corridor Transportation Project, Santa Clara County, California*. Prepared for Santa Clara County Transportation Agency. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-006066. February 1983.

Psota 2016 – Sunshine Psota, Letter Regarding Results of a Cultural Resources Literature Search for the San Tomas Expressway & Monroe Blvd. Park and Community Garden, Santa Clara, Santa Clara County. Prepared for David J.

Powers & Associates, San José, CA. Prepared by Holman & Associates, San Francisco, CA. June 8, 2016. Appendix A in *Initial Study for the San Tomas Expressway & Monroe Street Park and Community Garden Project*, by City of Santa Clara, CA. December 2016.

Rehor and Kubal 2014 – Jay Rehor and Kathleen Kubal, *Extended Phase I Study: US 101 Express Lands Project, Santa Clara County, California*. Prepared for District 4, Department of Transportation, State of California, Oakland, and Santa Clara Valley Transportation Authority, San Jose, CA. US PM 16.0/52.55, SR 85 PM 23.0/R24.1. Project No. 0412000459. EA 2G7100. On file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-045670c. URS Corporation, Oakland, CA. April 2014.

Ruby et al. 1992 – Allika Ruby, Jason Bass, and Mike Kelley, *Evaluation of Archaeological Resources for the San Jose/Santa Clara Nonpotable Water Reclamation Project*. Prepared for Engineering Science, Alameda, CA. Project #60800-92-62. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-014230. Prepared by Archaeological Resource Management, San Jose, CA. May 11, 1992.

Santa Clara 2010 – City of Santa Clara, *City of Santa Clara General Plan 2010-2035*. Adopted on November 16, 2010. Accessed on February 28, 2020. Available at: https://www.santaclaraca.gov/our-city/departments-a-f/community-development/planning-division/general-plan

Santa Clara 2018 – City of Santa Clara, City Code, Title 18 Zoning, Chapter 18.106 Historic Preservation. Accessed on: June 30, 2021. Available online at: http://www.codepublishing.com/CA/SantaClara/#!/santaclara18/SantaClara18106.html#18.106.030

Santa Clara 2021 – City of Santa Clara, Map Santa Clara tool. Accessed August 20, 2021. Available online at: https://www.santaclaraca.gov/our-city/about-santa-clara/maps

Santa Clara County 2012 – County of Santa Clara Department of Planning and Development, Planning Office, *County of Santa Clara Historic Context Statement*. December 2004, Revised February 2012

SFEI 2010 – San Francisco Estuary Institute (SFEI), *Historical Vegetation and Drainage Patterns of Western Santa Clara Valley: A Technical Memorandum Describing Landscape Ecology in Lower Peninsula, West Valley, and Guadalupe Watershed Management Areas*. Historical Ecology Program, Contribution No. 622

Shipley 1978 – William F. Shipley, Native Languages of California. In *California*, edited by Robert F. Heizer, pp. 80–90. Handbook of North American Indians, vol. 8, William C. Sturtevant, ed. Washington, D.C.: Smithsonian Institution, 1978.

SWCA 2006 – SWCA Environmental Consultants, *Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of*

*California*. Confidential report on file, Northwest Information Center, California Historical Resources Information System, Rohnert Park. Study S-033061. Prepared for Qwest Communications, Denver, CO. Prepared by SWCA Environmental Consultants, Sacramento, CA. December 2006.

Smart Permit 2021 – City of Santa Clara Smart Permit Search. Accessed April 15, 2021. https://www.santaclaraca.gov/our-city/departments-a-f/community-development/building-division/permits/permit-parcel-search

TRC 2020 – TRC. Phase 1 Environmental Site Assessment. 2590 Walsh Avenue, Santa Clara, CA 95051. Prepared for Vantage Data Centers. 21-SPPE-01. TN 237382. August 2020. https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SPPE-01

USGS 1897 – United States Geological Survey. California San Jose Quadrangle. USGS Historical File, Topographic Division. November 23, 1897.

USGS 1899 – United States Geological Survey. California San Jose Quadrangle. USGS Historical File, Topographic Division. May 1, 1899.

USGS 1915 – United States Geological Survey. Santa Clara & Santa Cruz Counties from a portion of Sheet 6a: Geologic and Topographic Map of the Coast Route from Los Angeles, California to San Francisco, California. 1915.

Woodrow 2016 – Kenneth Woodrow, Letter Regarding California Environmental Quality Act Public Resources Code Section 21080.3, subd. (b) Request for Formal Notification of Proposed Projects within the Tribe's Geographic Area of Traditional and Cultural Affiliation. Submitted to California Energy Commission, Sacramento. Prepared by Wucksachi Indian Tribe, Salinas, CA. December 8, 2016.

# DECLARATION OF
**Gabriel Roark**

I, Gabriel Roark, declare as follows:

1. I am employed by the California Energy Commission as an Energy Resources Specialist III (Supervisory).

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony titled **Update to Section 4.5 Cultural and Tribal Cultural Resources (Archaeology and Ethnography)** for the **CA3 BACKUP GENERATING FACILITY,** attached to this declaration, based on my independent analysis of the Application for Small Power Plant Exemption and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and, if called as a witness, could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 07/21/2022 Signed: Gabriel Roark

At: Sacramento, California

# APPENDIX D

MITIGATION MONITORING AND REPORTING PROGRAM

# MITIGATION MONITORING AND REPORTING PROGRAM

# CA3 Backup Generating Facility
# 21-SPPE-01
# March 2022

# PREFACE

Public Resources Code section 21081.6 of the California Environmental Quality Act (CEQA) requires a Lead Agency to adopt a Mitigation Monitoring and Reporting Program (MMRP) whenever it approves a project for which measures have been required to mitigate or avoid significant effects on the environment. The purpose of the monitoring and reporting program is to ensure compliance with the mitigation measures during project implementation.

The Final Environmental Impact Report prepared for the CA3 Backup Generating Facility project concluded that the implementation of the project would not result in significant effects on the environment with the incorporation of mitigation measures. This MMRP addresses those measures in terms of how and when they will be implemented.

This document does *not* discuss those subjects for which the Final Environmental Impact Report concluded that the impacts from the implementation of the project would be less than significant.

*I, _____, the applicant, on the behalf of _____, hereby agree to fully implement the Mitigation Measures described below, which have been developed in conjunction with the preparation of an EIR for my proposed project. I understand that these mitigation measures or substantially similar measures will be adopted as conditions of approval with my development permit request to avoid or significantly reduce potential environmental impacts to a less than significant level*.

Project Applicant's Signature _____

Date_____

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
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| | Documentation of Compliance [Project Applicant/Proponent Responsibility] | | Documentation of Compliance [Lead Agency Responsibility] | | |
| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| **AIR QUALITY** | | | | | |
| Impact 4.3-b 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? | | | | | |
| AQ-1: To ensure that fugitive dust impacts are less than significant, the project will implement the Bay Area Air Quality Management District (BAAQMD) recommended Best Management Practices (BMPs) during the construction phase, the project owner shall implement a construction emissions control plan that has been reviewed and approved by the Director or Director's designee of the City of Santa Clara Community Development prior to the issuance of any grading or building permits, whichever occurs earliest. These BMPs are incorporated into the design of the project and will include:<br>• Water all exposed areas (e.g. parking areas, graded areas, unpaved access roads) twice a day.<br>• Maintain a minimum soil moisture of 12% in exposed areas by maintaining proper watering frequency.<br>• Cover all haul trucks carrying sand, soil, or other loose material.<br>• Suspend excavation, grading, and/or demolition activities when average wind speed exceeds 20 miles per hour.<br>• Pave all roadways, driveways, and sidewalks as soon as possible. Lay building | Implement the BAAQMD's recommended BMPs to control fugitive dust and additional measures to control exhaust emissions | During construction phase | Director of Community Development or director's designee of the City of Santa Clara | Receive and approve the fugitive dust control measures and exhaust control measures during construction | Prior to the issuance of any demolition, grading, and/or building permits (whichever occurs earliest) |

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| pads as soon as grading is completed, unless seeding or soil binders are used.<br>• Install wind breaks (e.g., trees, fences) on the windward side(s) of actively disturbed areas of construction with a maximum 50 percent air porosity.<br>• Use a power vacuum to sweep and remove any mud or dirt-track next to public streets if visible soil material is carried onto the streets.<br>• Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).<br>• Minimize idling time for all engines by shutting engines when not in use or limiting idling time to a maximum of five minutes. Provide clear signage for construction workers at all access points.<br>• Properly tune and maintain construction equipment in accordance with manufacturer's specifications. Check all equipment against a certified visible emissions calculator.<br>• Post a publicly visible sign with the telephone number and person to contact at the Lead Agency and the on-site job superintendent regarding dust complaints.<br>• Install vegetative ground cover in disturbed areas as soon as possible and water appropriately until vegetation is established. | | | | | |

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| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| • Limit simultaneous occurrence of excavation, grading, and ground-disturbing construction activities.<br>• Install water washers to wash all trucks and equipment prior to leaving site.<br>• Treat site access to 100-feet from the paved road with a 6- to 12-inch compacted layer of wood chip, mulch, or gravel.<br>• Install sandbag or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.<br>• Minimize idling time of diesel-powered construction vehicles to two minutes.<br>• All off-road equipment greater than 25 horsepower (hp) shall have engines that meet or exceed Tier 4 final off-road emission standards. Use of zero-emission and hybrid-powered equipment is encouraged.<br>• All on-road trucks used for material delivery or hauling shall have engines that meet or exceed 2014 CARB emissions standards.<br>• Where grid power is available, portable diesel engines should be prohibited.<br>• Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings). | | | | | |

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| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| • All construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM.<br>• All contractors use equipment that meets CARB's most recent certification standard for off-road, heavy-duty diesel engines. | | | | | |
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| **BIOLOGICAL RESOURCES** | | | | | |
| Impact 4.4-a Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | | | | | |
| BIO-1, Avoid and Minimize Impacts to Protected Bird Species<br>• If possible, demolition and construction activities, including removal of trees and vegetation clearing, shall take place between September and January. If demolition or construction activities, including removal of the trees on –site, would take place between January and September, a pre-construction survey for nesting raptors and other protected native or migratory birds shall be conducted by a qualified ornithologist, approved by the City of Santa Clara, to identify active nests that may be disturbed during project implementation. Pre-construction surveys shall be conducted no more than 14 days prior to the initiation of demolition or construction activities or tree | Avoidance of construction activities during nesting season. If construction activities occur between January and September, a pre-construction nesting bird survey shall be conducted by a qualified ornithologist in consultation with the California Department of Fish and Wildlife, and a construction-free buffer zone shall be designed around any discovered nest | Prior to issuance of any permits for tree removal, demolition, or grading activities | Director of Community Development or director's designee of the City of Santa Clara (Director of Community Development) | Confirm that construction activities are scheduled outside of the nesting season | Prior to issuance of any permits for tree removal, demolition, or grading activity |

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| | **Method of Compliance Or Mitigation Action** | **Timing of Compliance** | **Oversight Responsibility** | **Actions/Reports** | **Monitoring Timing or Schedule** |
| relocation or removal. Surveys shall be repeated if project activities are suspended or delayed for more than 14 days during the nesting season. The surveying ornithologist shall inspect all trees in and immediately adjacent to the construction area to be disturbed by these activities, and the ornithologist shall, in consultation with the California Department of Fish and Wildlife (CDFW), designate a construction-free buffer zone (typically 250 feet for non-raptors to 500 feet for raptors) around the nest until the end of the nesting activity. Any changes to a buffer zone must be approved by the City of Santa Clara, in consultation with CDFW. The nests and buffers will be field checked weekly by the approved ornithologist. The approved buffer zone will be marked in the field with exclusion fencing, within which no construction, tree removal, or vegetation clearing shall commence until the ornithologist verifies that the nest(s) are no longer active. If an active bird nest is discovered during demolition or construction, then a buffer zone shall be established under the guidelines specified.<br><br>• The applicant shall submit a report indicating the results of the survey and any designated buffer zones to the satisfaction of the City of Santa Clara's Director of Community Development prior to the issuance of permits for tree removal, demolition, or grading. The report(s) shall contain maps showing the location of all | The ornithologist shall submit a report indicating the results of the survey and any designated buffer zones to the Director of Community Development or director's designee of the City of Santa Clara | Prior to issuance of any tree removal permit by the city arborist | Director of Community Development | The ornithologist shall inspect all potentially affected trees and designate a buffer-free zone around nest until the end of the nesting activity | Prior to issuance of any permits for tree removal, demolition, or grading |

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| nests, species nesting, status of the nest (e.g. incubation of eggs, feeding of young, near fledging), and the buffer size around each nest (including reasoning behind any alterations to the initial buffer size). The report shall be provided within 10 days of completing a pre-construction nest survey. | | | | | |
| BIO-2: Avoid and Minimize Impacts to Bat Species<br><br>If suitable roosting habitat for special-status bats will be affected by project construction (e.g., removal of buildings, removal of trees), a qualified wildlife biologist shall conduct surveys for special-status bats during the appropriate time of day to maximize detectability to determine if bat species are roosting near the work area no less than 7 days and no more than 14 days prior to beginning tree removal and/or demolition ground disturbance. Survey methodology may include visual surveys of bats (e.g., observation of bats during foraging period), inspection for suitable habitat, bat sign (e.g., guano), or use of ultrasonic detectors (e.g., Anabat, etc.). Visual surveys shall include trees within 0.25 mile of construction activities. The type of survey will depend on the condition of the potential roosting habitat. If no bat roosts are found, then no further study is required. | A qualified wildlife biologist shall conduct surveys during the appropriate time of day to determine if bats are roosting | No less than 7 days and no more than 14 days prior to beginning tree removal and/or demolition ground disturbance | Director of Community Development to California Department of Fish and Wildlife standards | A tally of the number and species of bats using the roost shall be documented. Depending on the presence of bats, exclusion methods and bat houses may be specified for use depending on the circumstances<br><br>A Bat Mitigation and Monitoring Plan shall be prepared and implemented for habitat loss, if necessary | Prior to issuance of any tree removal, grading, demolition, and/or building permit or activities |

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| • If evidence of bat use is observed, the number and species of bats using the roost shall be determined. Bat detectors may be used to supplement survey efforts.<br><br>• If roosts are determined to be present and must be removed, the bats shall be excluded from the roosting site before the tree or structure is removed. Exclusion methods may include use of one-way doors at roost entrances (bats may leave, but not reenter) or sealing roost entrances when the site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young).<br><br>• If roosts cannot be avoided or it is determined that construction activities may cause roost abandonment, such activities shall not commence until permanent, elevated bat houses have been installed outside of, but near, the construction area. Placement and height will be determined by a qualified wildlife biologist, but the height of bat house shall be at least 15 feet. Bat houses shall be multi-chambered and be purchased or constructed in accordance with CDFW standards. The number of bat houses required shall be dependent upon the size and number of colonies found, but at least one bat house shall be installed for each pair of bats (if occurring individually) or of a sufficient number to accommodate each colony of bats to be relocated.<br><br>• If bat roosts are detected, then a Bat Mitigation and Monitoring Plan (Plan) shall be prepared and implemented to mitigate for the loss of roosting habitat. The Plan shall include information pertaining to the species of bat and location of the roost, exclusion methods and roost removal procedures, compensatory | | | | | |

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
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| | **Method of Compliance Or Mitigation Action** | **Timing of Compliance** | **Oversight Responsibility** | **Actions/Reports** | **Monitoring Timing or Schedule** |
| mitigation for permanent impacts (including specific mitigation ratios and location of proposed mitigation as described in above bullet) and monitoring to assess bat use of mitigation areas. This Plan shall be submitted to CDFW for review. | | | | | |
| Impact 4.4-e Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | | | | | |
| BIO-3, Tree Removal<br><br>The project applicant shall obtain approval by the City's Department of Community Development for all trees to be removed. Acquisition of this permit shall include details of the final mitigation numbers. The City of Santa Clara's Tree Ordinance (SCCC 12.35.090(C)(7) mandates a replacement ratio and size of tree species for planting. Depending on the species and size of the tree, additional mitigation may be required by the City of Santa Clara. The project proposes to mitigate for the loss of 66 trees through a combination of 24-inch box size and 36-inch box size. | Obtain tree removal permits from the City's department of Community Development | Prior to the removal of any trees | Director of Community Development | Approved permits, including tabulation of final tree mitigation numbers | Prior to tree removal work |

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| BIO-4, Trees to Remain: Avoidance and Minimization of Impacts<br><br>The project applicant shall follow the tree protection measures for trees that are to remain in place, as included as specific conditions by the City of Santa Clara as part of Architectural Review approval and included on the approved landscape plans for the project | Follow the tree protection measures outlined by the City Arborist or other arborist retained by the city for trees that are to remain in place | To coincide with demolition activities | Director of Community Development | Retain final tally of trees retained and indicate said trees on final landscape plans | At the conclusion of construction |
| **CULTURAL RESOURCES** | | | | | |
| Impact 4.5-a Cause a substantial adverse change in the significance of a historical resource pursuant to California Code of Regulations, title 14, §15064.5? Impact 4.5-b Cause a substantial adverse change in the significance of a unique archaeological resources pursuant to California Code of Regulations, title 14, §15064.5? | | | | | |
| CUL-1: The following project-specific measures would be implemented during construction to avoid significant impacts to unknown subsurface cultural resources:<br>• A Secretary of the Interior-qualified archaeologist and a Native American cultural | Submit the name and qualifications of the selected archaeologist and Native American monitor with a signed letter of commitment or agreement to monitor | Before a grading permit is issued | Director of Community Development or director's designee of the City of Santa Clara (Director | Review and approve the archaeologist and Native American monitor's qualifications | Before issuance of permits for any ground disturbing activities (trenching, |

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| resources monitor shall be on site to monitor all ground-disturbing activity, including the removal of foundations and landscaping, on the project site. The project applicant shall submit the name and qualifications of the selected archaeologist and Native American monitor, along with a signed letter of commitment or agreement to monitor, to the City of Santa Clara's Director of Community Development prior to the issuance of a grading permit. Preference in selecting Native American monitors shall be given to members of the Tamien Nation and Native Americans with:<br>o Aboriginal, culturally affiliated ties to the area being monitored.<br>o Knowledge of local historic and prehistoric Native American village sites.<br>o Knowledge and understanding of Health and Safety Code section 7050.5 and Public Resources Code section 5097.9 et seq.<br>o Ability to effectively communicate the requirements of Health and Safety Code section 7050.5 and Public Resources Code section 5097.9 et seq.<br>o Ability to work with law enforcement officials and the Native American Heritage Commission to ensure the return of all associated grave goods taken from a Native American grave during excavation. | | | of Community Development) | | grading, excavation) |

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
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| ○ Ability to travel to project sites within traditional tribal territory.<br>○ Knowledge and understanding of California Code of Regulations, title 14, section 15064.5.<br>○ Ability to advocate for the preservation in place of Native American cultural features through knowledge and understanding of CEQA mitigation provisions.<br>○ Ability to read a topographical map and to locate site and reburial locations for future inclusions in the Native American Heritage Commission's Sacred Lands Inventory.<br>○ Knowledge and understanding of archaeological practices, including the phases of archaeological investigation.<br>After the removal of pavement and prior to grading, the archaeologist shall conduct a pedestrian survey over the exposed soils to determine if any surface archaeological manifestations are present.<br>• After the demolition of the existing building and paved parking lot on the site, a qualified archaeologist with a Native American monitor present shall complete mechanical presence/absence testing for archaeological deposits and cultural materials. In the event any prehistoric site indicators are discovered, additional backhoe testing will be conducted to map the aerial extent and depth below the surface of the deposits. In the event prehistoric | The archaeologist is to perform survey and presence/absence testing with a Native American monitor present | After the demolition of the existing building and pavement and prior to grading | Director of Community Development | Review the results and approve next steps | Prior to issuance of permits for any ground disturbing activities (trenching, grading, excavation) |

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| or historic archaeological deposits are found during presence/absence testing, the significance of the find will be determined. If deemed significant, a treatment plan will be prepared and provided to the City of Santa Clara's Director of Community Development. Where Native American cultural materials are identified, the archaeological monitor will prepare a treatment plan in collaboration with the monitoring California Native American tribe. The key elements of a treatment plan shall include the following:<br>o Identify the scope of work and range of subsurface effects (include location map and development plan),<br>o Describe the environmental setting (past and present) and the historic/prehistoric background of the parcel (potential range of what might be found),<br>o Develop research questions and goals to be addressed by the investigation (what is significant vs. what is redundant information),<br>o Detail the field strategy used to record, recover, or avoid the finds (photos, drawings, written records, provenience data maps, soil profiles, excavation techniques, standard archaeological methods), and address research goals.<br>o Analytical methods (radiocarbon dating, obsidian studies, bone studies, historic | If testing determines that cultural resources are present and significant, a treatment plan shall be prepared. If Native American cultural materials are present, the treatment plan shall be prepared in collaboration with the Native American monitor | Prior to issuance of permits for any ground disturbing activities (trenching, grading, excavation) | Director of Community Development | Review and approve the treatment plan | Prior to issuance of permits for any ground disturbing activities (trenching, grading, excavation) |

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| | Documentation of Compliance [Project Applicant/Proponent Responsibility] | | Documentation of Compliance [Lead Agency Responsibility] | | |
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| artifacts studies [list categories and methods], packaging methods for artifacts, etc.); the monitoring California Native American tribe shall determine the appropriateness of analytical methods proposed for Native American cultural materials,<br>o Report structure, including a technical and layperson's report and an outline of document contents in one year of completion of development (provide a draft for review before a final report),<br>o Disposition of the artifacts (the monitoring California Native American tribe will determine the disposition of California Native American cultural materials),<br>o Appendices: site records, update site records, correspondence, consultation with Native Americans, etc.<br>The archaeologist and California Native American monitor will monitor full-time all grading and ground disturbing activities associated with the construction of the proposed project. If the archaeologist and Native American monitor believe that a reduction in monitoring activities is prudent, then a letter report detailing the rationale for making such a reduction and summarizing the monitoring results shall be provided to the City of Santa Clara's Director of Community Development. Department of Parks and Recreation 523 forms shall be submitted | The archaeologist and California Native American monitor will monitor full-time all grading and ground disturbing activities and maintain a daily monitoring log | During grading and ground disturbing activities<br>During ground disturbing activities | Director of Community Development | Review monitoring logs as needed | |

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
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| along with the report for any cultural resources encountered over 50 years old.<br>• If prehistoric or historic resources are encountered during on-site construction activities, all activity within a 50-foot radius of the find shall be stopped, the City's Director of Community Development shall be notified, and a Secretary of the Interior-qualified archaeologist shall examine the find and record the site, including field notes, measurements, and photography for a Department of Parks and Recreation 523 Primary Record form. The archaeologist shall make a recommendation in collaboration with the monitoring California Native American tribe regarding eligibility for the California Register of Historical Resources, data recovery, curation, or other appropriate mitigation. Ground-disturbance within the 50-foot radius can resume once these steps are taken and the City of Santa Clara's Director of Community Development has concurred with the recommendations. Within 30 days of the completion of the construction or cultural resources monitoring, whichever comes first, a report of findings documenting any cultural resource finds, recommendations, data recovery efforts, and other pertinent information gleaned during cultural resources monitoring shall then be submitted to the City of Santa Clara's Director of Community Development under confidential cover, along with a report that redacts the location(s) of all cultural resources. Once finalized, this report | Request for reduction in monitoring based on results<br><br>Work shall be stopped if cultural resources are encountered within a 50' radius<br><br>Examination of the find and recordation on DPR 523 forms along with a determination of eligibility and recommendation for data recovery or curation<br><br>A final report shall summarize the findings documenting any cultural resources found during construction<br><br>Submittal of the final report to the NWIC | During ground disturbing activities<br><br>While ground disturbing activities are halted and prior to returning to work<br><br>Within 30 days of completion of construction or cultural resources monitoring<br><br>Upon finalization of the report<br><br>Prior to and during ground | Director of Community Development<br><br>Director of Community Development; Secretary of the Interior-qualified archaeologist<br><br>Secretary of the Interior-qualified archaeologist<br><br>Director of Community Development;<br><br> | Review and approve request to reduce monitoring<br><br>Review and approve work stoppage<br><br>Record on DPR forms with eligibility and curation recommendations<br><br>Review and approve final report<br><br>Obtain proof of submittal to NWIC | During grading and ground disturbing activities<br><br>During grading and ground disturbing activities<br><br>During grading and ground disturbing activities<br>During grading and ground disturbing activities<br><br>During grading and ground disturbing activities<br><br>Within 30 days of completion of |

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| shall be submitted to the Northwest Information Center at Sonoma State University.<br>• Prior to and for the duration of ground-disturbance, the project owner shall provide Worker Environmental Awareness Program training to all existing and any new employees. This training should include: a discussion of the applicable laws and penalties under the laws; samples or visual aids of the artifacts that could be encountered in the project vicinity, including what those artifacts may look like partially buried, or wholly buried and freshly exposed; and instructions to halt work in the vicinity of any potential cultural resource discovery, and notify the city-approved archaeologist and Native American cultural resources monitor. The Native American monitor shall provide a Tribal Cultural Resources Sensitivity Training in conjunction with the Worker Environmental Awareness Program. | WEAP training shall be provided for all existing and new employees | disturbing activities | Secretary of the Interior-qualified archaeologist<br><br>Director of Community Development<br><br>Director of Community Development | Review and approve WEAP submitted by archaeologist and Native American monitor | construction or cultural resources monitoring<br><br>Upon finalization of the report<br><br>Prior to and during ground disturbing activities |
| Impact 4.5-c, Disturb any human remains, including those interred outside of dedicated cemeteries.<br>Impact 4.5-b, (Tribal), A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | | | | | |

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| | **Method of Compliance Or Mitigation Action** | **Timing of Compliance** | **Oversight Responsibility** | **Actions/Reports** | **Monitoring Timing or Schedule** |
| CUL-2: The project proposes to implement the following measure to ensure the project's impacts to human remains are less than significant:<br>• If human remains are discovered during the presence/absence testing or excavation and/or grading of the site, all activity within a 50-foot radius of the find will be stopped. The Santa Clara County Coroner will be notified and shall determine whether the remains are of Native American origin or whether an investigation into the cause of death is required. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) immediately. Once NAHC identifies the most likely descendants, the descendants will make recommendations regarding proper burial, which will be implemented in accordance with the California Code of Regulations, title 14, section 15064.5(e) of the CEQA Guidelines. All actions taken under this mitigation measure shall comply with the Health and Safety Code section 7050.5(b) | The contractor shall stop work within a 50-foot radius of the find and notify the Santa Clara County Coroner and the Director of Planning or director's designee of the City of Santa Clara Community Development Department (Director of Community Development) | Immediately upon discovery of human remains | Director of Community Development | The coroner shall contact the NAHC if human remains are found and are believed to be Native American | Upon discovery of human remains |
| **GEOLOGY AND SOILS (PALEONTOLOGY)** | | | | | |
| Impact 4.7-a.ii., Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?<br>Impact 4.7-a.iii., Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction? | | | | | |

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| | **Method of Compliance Or Mitigation Action** | **Timing of Compliance** | **Oversight Responsibility** | **Actions/Reports** | **Monitoring Timing or Schedule** |
| Impact 4.7-c.-Be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or-off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? | | | | | |
| GEO-1: The project proposes to implement the following measures to ensure impacts to paleontological resources are reduced to less than significant.<br>• Prior to the start of any subsurface excavations that would extend beyond previously disturbed soils, all construction forepersons and field supervisors shall receive training by a qualified professional paleontologist, as defined by the Society of Vertebrate Paleontology, who is experienced in teaching non-specialists, to ensure they can recognize fossil materials and shall follow proper notification procedures in the event any are uncovered during construction. Procedures to be conveyed to workers include halting construction within 50 feet of any potential fossil find and notifying a qualified paleontologist, who shall evaluate its significance.<br>• If a fossil is found and determined by the qualified paleontologist to be significant and avoidance is not feasible, the paleontologist shall develop and implement an excavation and salvage plan in accordance with Society of Vertebrate Paleontology standards. Construction work in these areas shall be halted or diverted to allow preparation of the plan and | The contractor shall require training in recognition of fossils/artifacts. The contractor shall stop work within a 50-foot radius of the find and notify the Santa Clara County Coroner and the Director of Community Development or director's designee of the City of Santa Clara | Prior to any subsurface excavations | Director of Community Development or director's designee of the City of Santa Clara | Receive copy of excavation and salvage plan AND final paleontological mitigation plan/report<br><br>Review and approve final plans/reports and ensure the findings of the report are integrated into the final recommendations | First, if and when fossils are discovered AND second, following completion of construction |

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| recovery of fossil remains in a timely manner. Fossil remains collected during the monitoring and salvage portion of the mitigation program shall be cleaned, repaired, sorted, and cataloged. Prepared fossils, along with copies of all pertinent field notes, photos, and maps, shall then be deposited in a scientific institution with paleontological collections. A final Paleontological Mitigation Plan Report that outlines the results of the mitigation program shall be prepared and submitted to the Director or Director's designee with the City of Santa Clara Community Development Department at the conclusion of construction. The Director or Director's Designee with the Santa Clara Community Development shall be responsible for ensuring that the paleontologist's recommendations regarding treatment and reporting are implemented. | | | | | |
| **GREENHOUSE GAS EMISSIONS** | | | | | |
| Impact 4.8-a Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?<br>Impact 4.8-b Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | | | | | |
| GHG-1: If the Bay Area Air Quality Management District (BAAQMD) has adopted a new threshold of significance for stationary sources on or before CA3 receives its Authority to Construct permit, the project shall reduce the time the engines operate for readiness testing and maintenance on an | Time engines are run during operation for readiness testing and maintenance shall ensure emissions in accordance with the BAAQMD's | Prior to receiving an Authority to Construct permit from the BAAQMD | Director of Community Development or director's designee of the City of Santa Clara (Director | Provide a report describing how the owner will plan to comply with the limit. Thereafter, the owner shall submit a report | Prior to the start of operation and annually thereafter |

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| annual basis to ensure the project complies with the new limit. Prior to the start of operation, the project owner shall provide a report to the Director, or director's designee, of the City of Santa Clara Community Development describing how the project intends to comply with the limit, including a proposed schedule of readiness testing and maintenance operations for the year. The project owner shall provide an annual report thereafter to the Director, or director's designee, of the City of Santa Clara Community Development describing all operations of the facility that occurred for readiness testing and maintenance and calculating the attendant GHG emissions that resulted for the year. | thresholds for stationary sources | | of Community Development) | annually describing all readiness, testing, and maintenance operations and the GHG emissions | |

| MITIGATIONS | MONITORING AND REPORTING PROGRAM | | | | |
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| GHG-2: The project owner shall use renewable diesel as the primary fuel for the emergency backup generators to the maximum extent feasible, and only use ultra-low sulfur diesel (ULSD) as a secondary fuel in the event of supply challenges or disruption in obtaining renewable diesel. If testing confirms that use of this fuel will not result in emissions that would cause the project to exceed applicable thresholds after any available mitigation for such emissions has been applied, the project owner shall ensure that renewable fuels are used for a minimum of at least 44 percent of total energy use by the emergency backup generators by December 31, 2024; 52 percent by December 31, 2027; and 60 percent by December 31, 2030. Renewable fuels shall be used for 100 percent of total energy use by the emergency backup generators by December 31, 2045. The project owner shall provide an annual report of the status of procuring and using renewable diesel to the Director, or director's designee, of the City of Santa Clara Electric Utility Department demonstrating compliance with the mitigation measure. | Use renewable diesel as the primary fuel and ULSD as a secondary fuel in accordance with the implementation schedule outlined in the mitigation measure | During project operation | Director of Electric Utility Department | The project owner shall provide an annual report of the status of procuring and using renewable diesel | Annually |
| GHG-3: The project owner shall ensure that 100 percent of the electricity purchased to power the project is covered by carbon-free resources using one of the following options: (1) participate in Silicon Valley Power (SVP) Large Customer Renewable Energy (LCRE) Program or other renewable energy program | Ensure that 100 percent of the renewable electricity purchased is covered by carbon-free resources | Prior to local approval of project entitlements and during the operational phase | Director of Electric Utility Department | The project owner shall provide proof of enrollment in SVP's LCRE or other acceptable instrument and annual report, | Annual or other proof of recurring enrollment |

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| that accomplishes the same objective as SVP's LCRE Program for 100 percent carbon-free electricity, or (2) purchase ~~carbon offsets~~ renewable energy credits or similar instruments that accomplish the same goals of 100 percent carbon-free electricity. The project owner shall provide documentation to the director, or director's designee, of the City of Santa Clara Electric Utility Department of enrollment and annual reporting of continued participation in SVP's LCRE Program with 100 percent carbon-free electricity coverage. If not enrolled in SVP's LCRE Program, the project owner shall provide documentation and annual reporting to the Director, or director's designee, of the City of Santa Clara Electric Utility Department that confirms that alternative measures achieve the same 100 percent carbon free electricity as SVP's LCRE Program, with verification by a qualified third-party auditor specializing in greenhouse gas emissions. | | | | with verification by a qualified third-party auditor specializing in greenhouse gas emissions | |
| **Hazards and Hazardous Materials** | | | | | |
| Impact 4.9-c, Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?<br>Impact 4.9-d, Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | | | | | |
| HAZ-1: The project will implement the following measures to reduce potentially significant soil and or groundwater impacts to construction workers to a less than significant level. | The project owner shall 1) take soil samples in accordance with an approved soil sampling plan, 2) document the results of the sampling, | Prior to the issuance of grading permits | Santa Clara Fire Department Fire Prevention and Hazardous Materials Division | Report findings of soil studies to Santa Clara Fire Department Fire Prevention and | Prior to the issuance of grading permits |

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| • Prior to the issuance of grading permits, shallow soil samples shall be taken in areas where soil disturbance is anticipated to determine if contaminated soils with concentrations above established construction/trench worker thresholds may be present due to historical agricultural use and from historical leaks and spills. The soil sampling plan must be reviewed and approved by the Santa Clara Fire Department Fire Prevention and Hazardous Materials Division prior to initiation of work. Once the soil sampling analysis is complete, a report of the findings will be provided to the Santa Clara Fire Department Fire Prevention and Hazardous Materials Division and other applicable city staff for review.<br>• Documentation of the results of the soil sampling shall be submitted to and reviewed by the City of Santa Clara prior to the issuance of a grading permit. Any soil with concentrations above applicable environmental screening levels or hazardous waste limits would be characterized, removed, and disposed of off-site at an appropriate landfill according to all state and federal requirements.<br>• A Site Management Plan (SMP) will be prepared to establish management practices for handling impacted groundwater and/or soil material that may | and 3) develop a Site Management Plan to establish handling and management practices | | | Hazardous Materials Division | |

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| be encountered during site development and soil-disturbing activities. Components of the SMP will include:<br>• A detailed discussion of the site background.<br>• A summary of the analytical results.<br>• Preparation of a Health and Safety Plan by an industrial hygienist.<br>• Protocols for conducting earthwork activities in areas where impacted soil and/or groundwater are present or suspected.<br>• Worker training requirements, health and safety measures and soil handing procedures shall be described.<br>• Protocols shall be prepared to characterize/profile soil suspected of being contaminated so that appropriate mitigation, disposal, or reuse alternatives, if necessary, can be implemented.<br>• Notification procedures if previously undiscovered significantly impacted soil or groundwater is encountered during construction. | | | | | |

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| • Notification procedures if previously unidentified hazardous materials, hazardous waste, and/or underground storage tanks are encountered during construction.<br>• On-site soil reuse guidelines.<br>• Sampling and laboratory analyses of excess soil requiring disposal at an appropriate off-site waste disposal facility.<br>• Soil stockpiling protocols; and<br>• Protocols to manage groundwater that may be encountered during trenching and/or subsurface excavation activities. Prior to issuance of grading permits, a copy of the SMP must be approved by the Santa Clara County Environmental Health Department and the Santa Clara Fire Department Fire Prevention and Hazardous Materials Division. Prior to issuance of grading permits, a copy of the SMP must be approved by the Santa Clara County Environmental Health Department, and the Santa Clara Planning Division. | | | | | |

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| If contaminated soils are found in concentrations above risk-based thresholds pursuant to the terms of the SMP, remedial actions and/or mitigation measures will be taken to reduce concentrations of contaminants to levels deemed appropriate by the selected regulatory oversight agency for ongoing site uses. Any contaminated soils found in concentrations above thresholds to be determined in coordination with regulatory agencies shall be either 1) managed or treated in place, if deemed appropriate by the oversight agency or 2) removed and disposed of at an appropriate disposal facility according to California Hazardous Waste Regulations (CCR, tit. 22, div. 4.5) and applicable local, state, and federal laws. | | | | | |
| **NOISE** | | | | | |
| Impact 4.13-a Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | | | | | |
| NOI-1: The project shall implement the following measures to reduce temporary construction noise to less than significant levels.<br>• Construction is not permitted during the hours of 6 p.m. to 7 a.m. Monday through Friday between 6 p.m. to 9 a.m. on Saturday, and prohibited on Sundays and holidays.<br>• Prior to the start of construction, identify a noise control disturbance coordinator. The disturbance coordinator shall be responsible for responding to any local complaints about | Implement the City's municipal code and measures to reduce noise levels. Use best available noise control technologies.<br><br>Notify all adjacent business and other noise-sensitive land uses of the | During the construction phase<br><br>Prior to the start of demolition and | Director of Community Development or director's designee of the City of Santa Clara (Director of Community Development) | Confirm the code and measures have been implemented<br><br>Review and approve the schedule of "noisy" construction activities | During the construction phase<br><br>Prior to the start of demolition and construction activities |

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| construction noise. The disturbance coordinator shall determine the cause of any noise complaint received (e.g. starting too early, bad muffler, etc.) and shall ensure that reasonable measures warranted to correct the problem are implemented as soon as possible.<br>• Prior to the start of construction, establish a telephone number for the disturbance coordinator, and post it in a conspicuous location on the construction site.<br>• Prior to the start of construction, notify, in writing, the residents within 800 feet from the center of the project to the south across the rail line and industrial buildings to the north, east, and west of the project site of the construction schedule and provide a written schedule of "noisy" construction activities to the adjacent land uses.<br>• Include the telephone number for the disturbance coordinator construction site in the above notice regarding the construction schedule sent to residences south across the rail line and industrial buildings to the north, east, and west of the project site.<br>• The project owner shall orient construction equipment and locate construction staging areas within the project site away from the nearest residences to the south, to the extent feasible. | construction schedule, in writing, and provide a written schedule of "noisy" construction activities to the adjacent land uses and to the City's Community Development Department | construction activities | | | |

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| • Equip all construction-related internal combustion engine-driven equipment with the best available noise control equipment (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) and use best noise control practices to minimize noise levels from construction activities. | | | | | |
| **TRANSPORTATION** | | | | | |
| Impact 4.17-b Conflict or be inconsistent with CEQA Guidelines [California Code of Regulations, title 14,] section 15064.3, subdivision (b)? | | | | | |
| TRANS-1: The project shall implement a Transportation Demand Management (TDM) program sufficient to demonstrate that vehicle miles travelled (VMT) associated with the project would be reduced to 14.14 or less per employee. The TDM program shall include, but is not limited to, the following measure, which has been determined to be a feasible method for achieving the required VMT reduction:<br>• The operations workforce at the project shall work a 4-40 work schedule (40 hours in 4 days).<br><br>Prior to the issuance of an occupancy permit, the TDM program shall be submitted and approved by the Director of Community Development and shall be monitored annually to gauge its effectiveness in meeting the required VMT reduction. The TDM program shall establish an appropriate estimate of initial vehicle trips generated by the occupant of the proposed project and shall include the | Adopt a transportation demand management program to reduce project-related vehicle miles traveled to 14.14 or less per employee | Prior to the issuance an occupancy permit | Director of Community Development or director's designee of the City of Santa Clara | Receive approval of the TDM program based on traffic counts; the program shall be updated as necessary based on new traffic counts | Annually by the Director of Planning |

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| conducting of driveway traffic counts annually to measure peak-hour entering and exiting vehicle volumes. The volumes shall be compared to trip thresholds established in the TDM program to determine whether the required reduction in vehicle trips is being met. The results of annual vehicle counts shall be reported in writing to the Director of Community Development.<br><br>If TDM program monitoring results show that the trip reduction targets are not being met, the TDM program shall be updated to identify replacement and/or additional feasible TDM measures to be implemented. The updated TDM program shall be subject to the same approvals and monitoring requirements listed above. | | | | | |
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| **MANDATORY FINDINGS OF SIGNIFICANCE** | | | | | |
| Impact 4.20-a Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? | | | | | |
| **BIO-1**, **BIO-2, CUL-1**, **CUL-2**, **GEO-1** See impact 4.4-a, 4.5-a, 4.5-b, 4.5-c, 4.7-a.ii, 4.7-a.iii, and 4.7-c | | | | | |
| Impact 4.20-b Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.) | | | | | |

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| | Method of Compliance Or Mitigation Action | Timing of Compliance | Oversight Responsibility | Actions/Reports | Monitoring Timing or Schedule |
| **AQ-1**, **BIO-1, BIO-2, BIO-3, BIO-4, CUL-1**, **CUL-2, GEO-1, GHG-1, GHG-2, GHG-3**, **HAZ-1**, **NOI-1, TRANS-1**. See impact 4.3-b, 4.3-c, 4.4-a, 4.4-e, 4.5-a, 4.5-b, 4.5-c, 4.7-a.ii, 4.7-a.iii, 4.7-c, 4.8-a, 4.8-b, 4.9-c, 4.9-d, 4.13-a., and 4.17-b | | | | | |
| 4.20-c Does the project have environmental effects which will cause substantial adverse effects on human beings either directly or indirectly? | | | | | |
| **AQ-1**, **GEO-1, HAZ-1, NOI-1** See impact 4.3-b, 4.3-c, 4.7-a.ii, 4.7-a.iii, 4.7-c, 4.9-c, 4.9-d, and 4.13-a | | | | | |

**Source:** California Energy Commission. Final Environmental Impact Report for CA3 Backup Generating Facility. March 2022.

# APPENDIX E

EXHIBIT LIST

# Exhibit List

Docket: 21-SPPE-01
Project Title: CA3 Backup Generating Facility-Vantage
Generated On: 7/29/2022 3:13:31 PM

| Exhibit Number | Document Title and Description | Disposition |
|---|---|---|
| 1 | TN # 237380<br>**VDC CA3BGF SPPE Application Part I** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 2 | TN # 237423<br>**VDC CA3BGF SPPE Application Part II** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 3 | TN # 237381<br>**VDC CA3BGF SPPE Application Part III** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 4 | TN # 237382<br>**VDC CA3BGF SPPE Appllication Part IV** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 5 | TN # 237383<br>**VDC CA3BGF SPPE Application Part V** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 6 | TN # 237521<br>**CA3BGF Application for Confidential Designation for Phase I Cultural Resources Assessment**<br>Contains sensitive Cultural Resources Assessment information. ***This Application for Confidentiality requests Confidentiality Indefinitely*** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 7 | TN # 237825<br>**Revised SPPE Application Cover Page - Corrected Docket Number**<br>Corrected Docket Number for SPPE Application Cover Page | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 8 | TN # 242673<br>**Affidavit of Simon Casey - VDC CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 9 | TN # 238029<br>**CA3BGF Landscape Plan** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 10 | TN # 238030<br>**CA3BGF Revised General Arrangement and Site Layout Plan** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 11 | TN # 238031<br>**CA3BGF Request For Confidentiality - Revised Phase I Cultural Resources Assessment**<br>The confidential data contains sensitive cultural resources. | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 12 | TN # 238215<br>**VDC CA3BGF Responses to CEC Data Requests Set 1 - Part I** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 13 | TN # 238216<br>**VDC CA3BGF Responses to CEC Data Requests Set 1 - Part II** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 14 | TN # 238416<br>**VDC Supplemental Responses to Data Requests 15-20 - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |

| Exhibit Number | Document Title and Description | Disposition |
|---|---|---|
| 15 | TN # 238970<br>**VDC Initial Responses to CEC Data Request Set 2 - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 16 | TN # 239147<br>**VDC CA3BGF Supplemental Response to Data Request Set 1 DR 22 VMT** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 17 | TN # 239148<br>**VDC Tree Disposition Plan - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 18 | TN # 239224<br>**Presentation - VDC Status Conference - CA3BGF**<br>CEC Committee Informational Hearing | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 19 | TN # 239235<br>**VDC Response to Staff IIR** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 20 | TN # 239238<br>**Attachment to VDC Response to Staff IIR - CA3BGF**<br>Letter | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 21 | TN # 239260<br>**Supplemental Response to DR Set 1 DR 7 - Historic Evaluation - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 22 | TN # 239367<br>**Vantage Data Center's Repeated Request For Confidentiality - Revised Cultural Report CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 23 | TN # 239390<br>**VDC Supplemental Responses to CEC Data Request Set 2 Air Quality - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 24 | TN # 239483<br>**VDC Supplemenatl Responses to Data Requests Set 1 (3-7) - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 25 | TN # 239485<br>**VDC Responses to CEC Data Request Set 3 - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 26 | TN # 239678<br>**Updated Ammonia Slip Emissions Calculations** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 27 | TN # 239687<br>**VDC's Revised PD AQ-1 - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 28 | TN # 240159<br>**CA3DC Revised Project Description - PCC Revisions** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 29 | TN # 240158<br>**CA3DC PCC Drawing Set Rev3 - Part I** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 30 | TN # 240157<br>**CA3DC PCC Drawing Set Rev3 - Part II** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 31 | TN # 240160<br>**CA3DC PCC Drawing Set Rev3 - Part III** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 32 | TN # 240166<br>**CA3DC Repeated Request For Confidentiality - Second Revised CRA** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 33 | TN # 240169<br>**VDC Responses to CEC Data Request Set 4 - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 34 | TN # 240595<br>**Ramboll Noise Memorandum - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 35 | TN # 240596<br>**Ramboll Air Quality Memorandum - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 36 | TN # 240597<br>**Summary of Parking Changes Due to City PCC Comments - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |

| Exhibit Number | Document Title and Description | Disposition |
|---|---|---|
| 37 | TN # 241159<br>**Revised Phased Construction Emissions Analysis Update - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 38 | TN # 242216<br>**VDC's Comments on the DEIR - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 39 | TN # 242672<br>**VDC's Opening Testimony Package** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 40 | TN # 242753<br>**CalTrain Electrification Segment 3 Construction Schedule** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 41 | TN # 242754<br>**CalTrain Electrification Santa Clara and San Jose Presentation** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 42 | TN # 242755<br>**VDC's Rebuttal Testimony - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 43 | TN # 243305<br>**VDC's Supplemental Testimony - CA3BGF** | Offered by Applicant Representative (Scott Galati); Admitted on 5/27/2022. |
| 200 | TN # 242451<br>**Final Environmental Impact Report, Part 1, March 2022** | Offered by Commission Staff (Jennifer Baldwin); Admitted on 5/27/2022. |
| 201 | TN # 242452<br>**Final Environmental Impact Report, Part 2, March 2022** | Offered by Commission Staff (Jennifer Baldwin); Admitted on 5/27/2022. |
| 202 | TN # 242453<br>**Final Environmental Impact Report, Part 3, March 2022** | Offered by Commission Staff (Jennifer Baldwin); Admitted on 5/27/2022. |
| 203 | TN # 242454<br>**Final Environmental Impact Report, Part 4, March 2022** | Offered by Commission Staff (Jennifer Baldwin); Admitted on 5/27/2022. |
| 204 | TN # 242674<br>**Staff's Opening Testimony with Declarations and Resumes, dated April 14, 2022** | Offered by Commission Staff (Jennifer Baldwin); Admitted on 5/27/2022. |
| 205 | TN # 242884<br>**City of Santa Clara - Acceptance of MMRP and Mitigation Compliance**<br>Letter | Offered by Commission Staff (Jennifer Baldwin); Admitted on 5/27/2022. |
| 206 | TN # 242803<br>**Rebuttal Testimony**<br>Response to Committee Question | Offered by Commission Staff (Jennifer Baldwin); Admitted on 5/27/2022. |
| 207 | TN # 243672<br>**Memorandum, Update to Air Quality Section of the FEIR, dated June 22, 2022** | Offered by Commission Staff (Lisa DeCarlo); Admitted on 7/21/2022. |
| 208 | TN # 243635<br>**Peninsula Corridor Electrification Project, Final Environmental Impact Report, Part 1, January 2015**<br>Volume I: Revised Draft EIR, Part 1 | Offered by Commission Staff (Lisa DeCarlo); Admitted on 7/21/2022. |
| 209 | TN # 243636<br>**Peninsula Corridor Electrification Project, Final Environmental Impact Report, Part 2, January 2015**<br>Volume I: Revised Draft EIR | Offered by Commission Staff (Lisa DeCarlo); Admitted on 7/21/2022. |
| 210 | TN # 243442<br>**CalTrain Sustainability Report** | Offered by Commission Staff (Lisa DeCarlo); Admitted on 7/21/2022. |
| 211 | TN # 244192<br>**Declarations of Steven Kerr and Joseph Hughes**<br>Declarations for CA3 Backup Generating Facility from Steven Kerr and Joseph Hughes | Offered by Commission Staff (Lisa DeCarlo); Admitted on 7/28/2022. |
| 212 | TN # 242985<br>**Supplemental Testimony (Response to Second Committee Question)** | Offered by Commission Staff (Lisa DeCarlo); Admitted on 7/28/2022. |

| Exhibit Number | Document Title and Description | Disposition |
|---|---|---|
| 213 | TN # 244193<br>**Update to the FEIR**<br>Cultural and Tribal Cultural Resources Update to the FEIR and Declaration of Gabriel Roark | Offered by Commission Staff (Lisa DeCarlo); Admitted on 7/28/2022. |
| 500 | TN # 244199<br>**Justification Report**<br>CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans | Offered by Committee (Susan Cochran); Admitted on 7/28/2022. |

# APPENDIX F

PROOF OF SERVICE LIST

# Proof of Service List

Docket: 21-SPPE-01
Project Title: CA3 Backup Generating Facility-Vantage
Generated On: 7/28/2022 11:18:50 AM

## Applicant Representative

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