DOCKETED	
Docket Number:	20-SPPE-02
Project Title:	Lafayette Backup Generating Facility
TN #:	252595
Document Title:	Final Environmental Impact Report - Part 2
Description:	N/A
Filer:	Marichka Haws
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	10/13/2023 10:21:01 AM
Docketed Date:	10/13/2023

LAFAYETTE DATA CENTER

Final Environmental Impact Report

SCH # 2021080074

Part 2 of 2

CALIFORNIA
ENERGY
COMMISSION
Gavin Newsom,
Governor

October 2023

CEC-700-2023-003-F

DOCKET NUMBER 20-SPPE-02

Table of Contents

Part 1

1 Summary **1-1**

2 Introduction **2-1**

3 Project Description **3-1**

4 Environmental Setting and Environmental Impacts

4.1 Aesthetics **4.1-1**

4.2 Agriculture and Forestry Resources **4.2-1**

4.3 Air Quality **4.3-1**

4.4 Biological Resources **4.4-1**

4.5 Cultural and Tribal Cultural Resources **4.5-1**

4.6 Energy **4.6-1**

4.7 Geology and Soils **4.7-1**

4.8 Greenhouse Gas Emissions **4.8-1**

4.9 Hazards and Hazardous Materials **4.9-1**

4.10 Hydrology and Water Quality **4.10-1**

4.11 Land Use and Planning **4.11-1**

4.12 Mineral Resources **4.12-1**

4.13 Noise **4.13-1**

4.14 Population and Housing **4.14-1**

4.15 Public Services **4.15-1**

4.16 Recreation **4.16-1**

4.17 Transportation **4.17-1**

4.18 Utilities and Service Systems **4.18-1**

4.19 Wildfire **4.19-1**

Part 2

4.20 Mandatory Findings of Significance **4.20-1**

4.21 Environmental Justice **4.21-1**

5 Alternatives **5-1**

6 Authors and Reviewers **6-1**

7 Mitigation Monitoring and Reporting Program **7-1**

8 Responses to Comments **8-1**

Appendix A: Project's Jurisdictional and Generating Capacity Analysis

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

Appendix C: Natural Gas Supplemental Information

Appendix D: Mailing List

4.20 Mandatory Findings of Significance

This section describes impacts specific to mandatory findings of significance associated with the construction and operation of the project.

MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☒	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Environmental checklist established by CEQA Guidelines, Appendix G.

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 an endangered, rare or threatened species; or eliminate important examples of the major periods of California history or prehistory?

Less Than Significant with Mitigation Incorporated.

Biological Resources

Less Than Significant with Mitigation Incorporated. With implementation of CEC staff (staff) recommended mitigation measures, the project would not substantially degrade the quality of the environment, substantially reduce the existing habitat of any fish or wildlife species, cause any fish or wildlife population to drop below self-sustaining levels,

threaten to eliminate any plant or animal community, or substantially reduce the number or restrict the range of an endangered, threatened, or rare plant or animal species.

The project site is in a highly developed area and surrounded by commercial and industrial buildings. Therefore, the potential to degrade environmental quality is minimal, as the project site and surrounding properties do not support natural vegetation that would allow for extensive wildlife foraging or occupancy. However, mature landscaping trees and shrubs provide nesting opportunities for protected migratory bird species. Implementation of mitigation measures **BIO-1** and **BIO-2**, which would require avoidance and minimization measures for protected migratory bird species, as well as a mitigation plan for removal of on-site trees protected by local ordinance, would ensure that project impacts would be less than significant.

Cultural and Tribal Cultural Resources

Less Than Significant with Mitigation Incorporated. Important examples of the major periods of California history or prehistory represented by historical, unique archaeological, or tribal cultural resources are not known to be present in the project area. Nevertheless, the extent of proposed ground disturbance has the potential to damage unknown, buried archaeological resources in the project area. As described in **Section 4.5 Cultural and Tribal Cultural Resources**, the majority of archaeological resources aged about 5,000 years or older are buried beneath the ground surface. If these resources were to be exposed or destroyed, it would be a significant impact. Implementation of mitigation measures **CUL-1** and **CUL-2** included in **Section 4.5 Cultural and Tribal Cultural Resources** would reduce the impacts to buried cultural resources to a less-than-significant level. The proposed project therefore is unlikely to eliminate important examples of major periods of California history or prehistory, thus, the impact would be less than significant.

Geology and Soils

Less Than Significant with Mitigation Incorporated. Paleontological resources that represent important examples of the major periods of California prehistory are known to be present in the project area. The extent of proposed ground disturbance has the potential to damage unknown, buried paleontological resources in the project footprint. As described in **Section 4.7 Geology and Soils**, paleontological resources may be buried beneath the ground surface in Pleistocene age sediments. Five fossil sites have been found at or near the ground surface within several miles of the project site, particularly along stream beds (UCMP 2020). If significant paleontological resources were to be exposed or destroyed, it would be a significant impact. Adherence to the City of Santa Clara 2010-2035 General Plan (General Plan) Goal 5.6.3 through implementation of policies (5.6.3-P1, 2, 4, and 5) (Santa Clara 2010), and implementation of proposed mitigation measure **GEO-1** included in **Section 4.7 Geology and Soils** would reduce the impacts to buried paleontological resources to a less-than-significant level. The proposed project therefore is unlikely to eliminate important examples of paleontological

resources that are part of the prehistory of California, therefore the impact would be less than significant.

There are no unique geologic features on or adjacent the project site, thus there would be no project impacts to such features.

b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Less Than Significant with Mitigation Incorporated. The analysis of cumulative impacts can employ one of two methods to establish the effects of other past, current, and probable future projects. A lead agency may select a list of projects, including those outside the control of the agency, or, alternatively, a summary of projections. These projections may be from an adopted general plan or related planning document, or from a prior environmental document that has been adopted or certified, and these documents may describe or evaluate the regional or area-wide conditions contributing to the cumulative impact.

General Plan Projection

This section evaluates cumulative impacts using the City of Santa Clara 2010-2035 General Plan Integrated Final Environmental Impact Report (General Plan FEIR) since the project would be consistent with applicable land use plans and policies (Santa Clara 2011). The General Plan FEIR identified that the build out of the General Plan would contribute to five, significant and unavoidable cumulative impacts in the areas of climate change, noise, population and housing, traffic, and solid waste.

General Plan Significant Unavoidable Impacts

The General Plan FEIR identified the following significant unavoidable environmental impacts applicable to the proposed project:

- Climate Change – Contribution to greenhouse gas (GHG) emissions exceeding Santa Clara's emission reduction target for 2035;
- Noise – Increase in localized traffic noise level on roadway segments throughout Santa Clara;
- Population and Housing – Exacerbation of land use impacts arising from the jobs/housing imbalance;
- Traffic – Degradation of traffic operations on regional roadways and highways within Santa Clara of an unacceptable level of service; and
- Solid Waste – Contribution to solid waste generation beyond available capacity after 2024.

Although the project, in combination with future development in the city of Santa Clara, could conceivably have a significant cumulative impact to these environmental resources, the following discussion demonstrates how the project's contribution to these impacts would be less than cumulatively considerable.

Climate Change Impacts (Greenhouse Gas Emissions)

Less Than Significant with Mitigation Incorporated. The Bay Area Air Quality Management District (BAAQMD) 2017 California Environmental Quality Act (CEQA) Air Quality Guidelines do not identify a GHG emissions threshold for construction-related emissions. Because construction emissions would cease once construction is complete, these emissions are considered short term. Instead, BAAQMD recommends that GHG emissions from construction be quantified and disclosed, and the impacts be determined in relation to meeting California Global Warming Solution Act of 2006, Assembly Bill (AB) 32, GHG emissions reduction goals. BAAQMD further recommends the incorporation of Best Management Practices (BMPs) to reduce GHG emissions during construction, as feasible and applicable.

BMPs may include the use of alternative-fueled (for example, renewable diesel or electric) construction vehicles and equipment for at least 15 percent of the fleet, use of at least 10 percent of local building materials, and recycling or reusing at least 50 percent of construction waste (BAAQMD 2017b). The project would implement mitigation measure **AQ-1**, which would require, among other things, that the construction equipment be tuned and maintained in accordance with manufacturer's specifications and that construction equipment idling time be limited to five minutes to reduce GHG emissions from fuel consumed from unnecessary idling or the operation of poorly maintained equipment. The project would also participate in the city's Construction & Demolition Debris Recycling Program by recycling or diverting at least 65 percent of materials generated for discards by the project to reduce the amount of demolition and construction waste going to the landfill.

The project's temporary construction emissions would be in conformance with state and local GHG emissions reduction goals, so impacts would be less than significant and not cumulatively considerable.

For readiness testing and maintenance-related emissions, the BAAQMD 2017 CEQA Air Quality Guidelines state that for stationary-source projects, the threshold to determine the significance of an impact from GHG emissions is 10,000 metric tons per year of carbon dioxide equivalent ($MTCO_2e/yr$). However, BAAQMD is in the process of preparing and presenting to the BAAQMD board for approval an update to the CEQA GHG threshold for stationary sources to 2,000 $MTCO_2e/yr$ or compliance with the California Air Resources Board's cap-and-trade program. As a stationary source, the project's emergency backup generators (gensets) may be subject to the pending CEQA GHG threshold. The gensets would not have a cumulatively considerable contribution to GHGs if emissions are below the applicable BAAQMD CEQA GHG threshold.

Other project-related emissions from mobile sources, area sources, energy use, and water use would not be included for comparison to the stationary source threshold, based on guidance in BAAQMD's CEQA Guidelines. Instead, GHG impacts from all other project-related emissions sources would be considered to have a less-than-significant impact if the project is consistent with the city of Santa Clara Climate Action Plan (CAP), which is considered a qualified GHG reduction strategy, and applicable regulatory programs and policies adopted by the California Air Resources Board (CARB) or other California agencies. The city of Santa Clara updated the CAP on June 7, 2022 (Santa Clara 2021). The 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045.

With the applicant's requested 50 hours of readiness testing and maintenance per year per engine, the GHG emissions of the gensets of the project are expected to be less than the 10,000 $MTCO_2e$/yr threshold but more than the 2,000 $MTCO_2e$/yr threshold BAAQMD is currently considering. Therefore, staff proposes mitigation measure **GHG-1** would require the applicant to use renewable diesel as fuel for the gensets. Staff also proposes mitigation measure **GHG-2** to require the applicant to participate in Silicon Valley Power's 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 renewable energy credits or similar instruments that accomplish the same goals of 100 percent carbon-free electricity. Additionally, the project would implement efficiency measures to meet California's green building standards, and additional voluntary efficiency and use reduction measures. As such, GHG emissions related to the project would not conflict with the city of Santa Clara CAP or other plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs. Therefore, the project's GHG emissions would not be cumulatively considerable.

Noise Impacts

Less Than Significant with Mitigation Incorporated. The General Plan FEIR anticipates significant noise impacts from the build-out of the General Plan. The significant noise impacts identified are attributed to noise associated with increased traffic. As discussed in **Section 4.17 Transportation**, traffic from the project would not have a significant impact on surrounding roadways and the transportation network. The project would contribute to vehicle trips during the construction period as construction workers commute, and trucks deliver construction materials, to the project site. These trips would be temporary in nature; therefore, they would not significantly add to regular traffic. Implementation of mitigation measure **NOI-1** would reduce noise from construction vehicles to less than significant levels. Operational employees would generate minimal daily trips and would not substantially increase the traffic or associated traffic-related noise levels in the project area. Any noise impacts associated with construction and operations traffic would be less than significant. The project's contribution to this cumulative impact would not be cumulatively considerable.

Population and Housing Impacts

Less Than Significant. The General Plan FEIR identified significant impacts from the build-out of the General Plan land use designations. The General Plan EIR concluded that the proposed land uses would create a regional jobs/housing imbalance, as workers who are unable to live near their employment would commute long distances from outlying areas. As described in **Section 4.14 Population and Housing**, the project would not displace any people or housing, or necessitate construction of replacement housing elsewhere. Operation of the project would require 30 to 35 employees. The project's construction and operation workforce would not directly or indirectly induce a substantial population growth in the project area. Therefore, the project's contribution to the jobs-housing imbalance would not be cumulatively considerable.

Transportation Impacts

Less Than Significant. The General Plan FEIR anticipates significant traffic impacts from the build-out of the General Plan. As discussed in **Section 4.17 Transportation**, traffic from the project would not have a significant impact on surrounding roadways and the transportation network. The project would contribute vehicle trips during the construction period as construction workers commute, and trucks deliver construction materials, to the project site. These trips would be temporary in nature; therefore, they would not significantly add to regular traffic. Operational employees, periodic tanker truck trips to replenish diesel fuel for the gensets on an as needed bases, visits from customers setting up or maintaining equipment and delivery and trash-hauling trucks would generate minimal daily trips and would not substantially increase the regular traffic in the project area. Furthermore, implementation of **TRANS-1** would reduce the project's operational VMT to a level below the city of Santa Clara's industrial threshold thus, the project's contribution to this cumulative impact would not be cumulatively considerable.

For cumulative impacts related to thermal plumes, staff reviewed several projects[1] in proximity to the Lafayette Data Center (LDC) that would produce plumes that could possibly merge with the LDC's plumes produced by the diesel-fired gensets and rooftop chillers. The merging of thermal plumes relies on the distance from other plume producing equipment and atmospheric conditions, such as wind (DayZen 2022b). The Walsh Data Center is located immediately south of the LDC, and also produces thermal plumes from rooftop chillers and diesel gensets. Walsh's rooftop chillers produce a thermal plume reaching hazardous velocities of 10.6 m/s (5.3 m/s average plume velocity) up to an altitude of 203-feet above ground level (AGL), and the gensets produce thermal plumes reaching hazardous velocities of 10.6 m/s up to an altitude of 126-feet AGL over the site.

1 Staff analyzed thermal plume data from five nearby data centers (Walsh Data Center, Sequoia Data Center, Martin Data Center, McLaren Data Center and SC-1 Data Center) to determine if these data center's thermal plumes could combine to create a thermal plume that would pose a hazard to aircraft.

CEC air quality staff analyzed emergency operational data contained in Appendix B[2]of this document to consider the possibility of the LDC's rooftop chillers and gensets thermal plumes merging with the Walsh Data Center's thermal plumes and at what altitude the critical velocity of those plumes would occur.

Staff determined plume exit velocities of the rooftop chillers and the gensets, if both data centers were operating concurrently under conservative calm wind conditions, would not result in a merged plume with a critical velocity threshold of 10.6 m/s (5.3 m/s average plume velocity). Rather, cumulative impacts associated with nearby data center plumes would be unlikely because thermal plumes would merge only at a height exceeding 200-feet AGL, with a combined velocity of approximately 3.4 m/s, which is below the critical threshold of 10.6 m/s. Therefore, nearby data centers could potentially generate thermal plumes simultaneously with LDC's thermal plumes; however, these plumes would not be expected to increase thermal plume velocity due to the physical distance between the data centers and the low buoyancy of the thermal plumes generated. The LDC would not cause significant cumulative impacts to aviation.

As discussed in **Section 4.17 Transportation**, the project would create high-velocity thermal plumes that would exceed a peak velocity of 10.6 m/s (5.3 m/s average plume velocity) and could impact aviation safety at altitudes up to 173-feet AGL under unusual worst-case weather conditions of cool weather and calm winds, which rarely occur in the project area as discussed in the **Air Quality** section 4.3.2. Cumulative thermal plume impacts to aircraft would be less than significant, as the chance of a low altitude overflight coinciding with the generation of worst-case thermal plumes would be unlikely.

Solid Waste Impacts

Less Than Significant. As stated in **Section 4.18 Utilities and Service Systems**, the city of Santa Clara has available landfill capacity at the Newby Island Landfill in the city of San José through 2041. The current landfill impacts are addressed within an ongoing Integrated Waste Management Plan of the city of Santa Clara to provide waste disposal services. The project would participate in the city's Construction and Demolition Debris Recycling Program by recycling or diverting at least 50 percent of materials generated for discards by the project to reduce the amount of demolition and construction waste going to the landfill. During operation the project would generate minimal operational waste as data centers typically require very little equipment turnover. Additionally, the project does not include a residential component and would not generate any increases in the supply and demand of utility services and infrastructure. Therefore, the project's contribution to this cumulative impact would not be cumulatively considerable.

2 Staff analyzed the probability of the LDC engaging in emergency operation. Staff determined emergency operation would be infrequent and unlikely. See Appendix B for more details.

Other Technical Areas

Although the city's General Plan FEIR did not identify significant effects in the areas of air quality, cultural resources, and geology (paleontology), and did not include an analysis of impacts to tribal cultural resources as the General Plan FEIR was adopted before the passage of AB 52 requiring such analysis, CEC staff concluded that the project's impacts in these areas are *less than significant with mitigation*. Thus, staff has considered whether the project would contribute to cumulatively considerable impacts in these areas. Staff has also included an analysis of potential cumulative impacts for the other technical areas where project impacts would be *less than significant*.

Aesthetics

Less Than Significant. The proposed project is located on relatively flat land in a highly developed urban area within the city of Santa Clara, specifically intended to encourage heavy industrial development.

There are no scenic vistas as discussed in **Section 4.1 Aesthetics** in the area. Existing aboveground buildings, structures, earthworks, equipment, trees, and vegetation, et cetera block or limit public views of the project and new or foreseeable projects from scenic resources.

The project and new or foreseeable projects within this urbanized area would not conflict with applicable city zoning and other regulations governing scenic quality.

The project and other projects typically include outdoor lighting for driveways, entrances, walkways, parking areas, and security purposes. Lighting would be directed away from residential areas and public streets.

The project and new or foreseeable projects would not: have a substantial adverse effect on a scenic vista; substantially damage scenic resources; substantially degrade the existing visual character or quality of public views of the site and its surrounding; and would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. The project's contribution to Aesthetics impacts in the area would not be cumulatively considerable.

Air Quality

Less Than Significant with Mitigation Incorporated. The proposed project would be in Santa Clara County in the San Francisco Bay Area Air Basin (SFBAAB), under the jurisdiction of BAAQMD. The SFBAAB is designated as a nonattainment area for ozone and fine particulate matter having a diameter of less than or equal to 2.5 microns (PM2.5) under both California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS). The SFBAAB is also designated as nonattainment for particulate matter having a diameter of less than or equal to 10 microns (PM10) under CAAQS but not NAAQS.

SFBAAB's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. In developing thresholds of significance for air pollutants, BAAQMD considers the emissions 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. CEQA would then require the implementation of all feasible mitigation measures.

The construction exhaust emissions of the project would be lower than the thresholds of significance from the BAAQMD CEQA Air Quality Guidelines. There is no numerical threshold for fugitive dust generated during construction in BAAQMD's jurisdictional boundaries. The BAAQMD CEQA Guidelines recommend the control of fugitive dust through BMPs to conclude that impacts from fugitive dust emissions are less than significant. The mitigation measure **AQ-1** would reduce air quality impacts during project construction. This measure requires incorporation of BAAQMD's recommended construction BMPs to control fugitive dust. This measure also incorporates exhaust control measures to reduce emissions from construction equipment. With the implementation of **AQ-1**, PM10 and PM2.5 emissions during construction would be reduced to a level that would not result in a considerable increase of these pollutants. Therefore, the project's construction emissions would not be cumulatively considerable.

During readiness testing and maintenance, the oxides of nitrogen (NOx) emissions of the gensets are estimated to exceed the BAAQMD significance threshold of 10 tons per year. All other pollutants would have estimated emissions rates below BAAQMD significance thresholds. The NOx emissions from the genset readiness testing and maintenance would be required to be fully offset through the BAAQMD permitting process. Therefore, the project's emissions during readiness testing and maintenance would not be cumulatively considerable.

The criteria pollutant air quality impact analysis found that the concentrations from construction and readiness testing and maintenance of the gensets would not cause any exceedance of ambient air quality standards. Therefore, the project's criteria air pollutant impacts from genset readiness testing and maintenance would be less than significant and would not be cumulatively considerable.

The health risk assessment (HRA) shows that the project's health risk impacts would not exceed BAAQMD significance thresholds during construction or genset readiness testing and maintenance. The proposed project would not cause cumulatively considerable impacts, either. The project would not expose sensitive receptors to substantial toxic air contaminant (TAC) concentrations during construction or genset readiness testing and maintenance.

Due to the infrequent nature of emergency conditions and the record of highly reliable electric service available to the project (see **Appendix B**), the project's emergency

operations would be unlikely to expose sensitive receptors to substantial concentrations of criteria air pollutants or TACs. Therefore, the project's air quality impacts would not be cumulatively significant.

Biological Resources

Less Than Significant with Mitigation Incorporated. The General Plan FEIR found less than significant biological resources impacts in the event of a full build-out scenario. The project site and surrounding properties are highly developed with commercial and industrial buildings and associated paved parking. The potential to degrade environmental quality is minimal, as the project site and surrounding properties do not support natural vegetation that would allow for extensive wildlife foraging or occupancy. However, mature landscaping trees and shrubs and other features on and near the project site could provide nesting opportunities for birds protected under the Migratory Bird Treaty Act and Fish and Game Code. Effects could include disruptions during the breeding season from construction and tree removal. To ensure impact avoidance, **Section 4.4 Biological Resources** identifies the following mitigation measures: **BIO-1**, which requires nesting bird pre-construction surveys and implementation of appropriate nest buffers, and **BIO-2**, which provides detailed requirements for the replacement of trees removed as part of the project. Biological resources impacts from the proposed project would be less than significant with implementation of staff's proposed mitigation measures, and therefore would not be cumulatively considerable.

Cultural and Tribal Cultural Resources

Less Than Significant with Mitigation Incorporated. The General Plan FEIR does not specifically address impacts on tribal cultural resources. Historical resources and unique archaeological resources, as defined by CEQA, share several of the impact vulnerabilities that tribal cultural resources face, especially the effects of ground-disturbing activities. In addition, historical and unique archaeological resources can also qualify as tribal cultural resources. The suite of mitigation measures for cultural resources presented in the General Plan FEIR would reduce the severity of some impacts on tribal cultural resources. No known historical resources, unique archaeological resources, or tribal cultural resources have been found on the project site, although ground disturbance associated with the proposed project could result in the exposure and destruction of buried, as-yet unknown archaeological resources that could qualify as historical resources, unique archaeological resources, or tribal cultural resources. Implementation of mitigation measures **CUL-1** and **CUL-2** would prevent, minimize, or compensate for impacts on buried historical, unique archaeological, or tribal cultural resources. Project impacts to cultural resources and tribal cultural resources therefore would not be cumulatively considerable.

Energy and Energy Resources

Less Than Significant Impact. The total number of hours of operation for reliability purposes (i.e., readiness testing and maintenance) for the gensets would be restricted to

no more than 50 hours per genset. At this rate, the total quantities of diesel fuel used for all the gensets operating at full load would be approximately 10,929 barrels per year (bbl/yr). California has a diesel fuel supply of approximately 316,441,000 bbl/yr. The project's use of fuel constitutes a small fraction (less than 0.003 percent) of available resources, and the supply is more than sufficient to meet necessary demand. For these reasons, the project's use of fuel is less than significant.

The project's consumption of energy resources during operation would not be inefficient or wasteful, as discussed in **Section 4.6 Energy and Energy Resources**. Project operation would have a less-than-significant adverse effect on local or regional energy supplies and energy resources and likewise, would not be cumulatively considerable.

Geology and Soils

Less Than Significant with Mitigation Incorporated. The General Plan identifies four policies (5.6.3-P1, 2, 4, and 5) that specifically address impacts on paleontological resources (Santa Clara 2010). Paleontological resources can be impacted by the effects of ground-disturbing activities. Five fossil sites have been found at or near the ground surface within several miles of the project site, particularly along stream beds (UCMP 2020). The suite of mitigation measures for paleontological resources presented in the General Plan FEIR would reduce the severity of some impacts on paleontological resources. No known paleontological resources have been found on the project site. Ground disturbance associated with the proposed project could result in the exposure and destruction of buried, as-yet unknown paleontological resources that could qualify as significant paleontological resources. Implementation of mitigation measure **GEO-1** would prevent, or minimize, impacts on buried paleontological resources. Project impacts to paleontological resources therefore would not be cumulatively considerable.

Hazards and Hazardous Materials

Less Than Significant Impact with Mitigation Incorporated. As discussed in **Section 4.9 Hazards and Hazardous Materials**, ground disturbing activities associated with the grading and construction activities of the project would have the potential to encounter impacted soil. The contaminated soil could contain residual pesticides and herbicides from agriculture use, fuel related volatile organic compounds, and chlorinated solvents from industrial use. Mitigation measure **HAZ-1** would require a site management plan (SMP) to be created. The SMP would establish proper procedures to be taken when contaminated soil is found and how to dispose of the contaminated soil properly. In addition, if contaminated soils are found in concentrations above set thresholds, the project would halt construction and the soil would be treated or removed to an appropriate disposal facility. With the implementation of **HAZ-1,** the construction of the project would create a less than significant impact to the public or the environment.

The proposed project would use hazardous materials in small quantities associated with construction. These hazardous materials would be stored in designated construction staging areas in compliance with local, state, and federal requirements. Any diesel fuel

transported on site would also comply with the extensive regulatory framework that applies to the shipment of hazardous materials. In addition, the project owner would implement procedures, safety features and precautions that would reduce the risk of an accidental hazardous materials release. Therefore, the impact from the use, transport, disposal, or accidental release of hazardous materials would not be cumulatively significant.

Hydrology and Water Quality

Less Than Significant Impact with Mitigation Incorporated. The project would comply with the Municipal NPDES Permit and the Santa Clara Valley Urban Runoff Pollution Prevention Program. The plans and permits work together to establish specific requirements to reduce storm water pollution from new and redevelopment projects, individually and cumulatively. If implemented as described in **Section 4.10 Hydrology and Water Quality**, these standards would avoid a cumulatively considerable impact to the basin's hydrology by protecting water quality of both surface water and groundwater bodies receiving discharge from the project. Incorporation of mitigation measure **HYD-1**, which outlines implementation of best management practices included in the Storm Water Pollution Prevention Plan, is expected to ensure the project would not violate water quality standards or violate waste discharge requirements during construction and operation, thereby reducing impacts to less than significant.

Land Use and Planning

Less Than Significant Impact. Staff assessed consistency of the proposed project with applicable plans, policies, and regulations. Relevant policies and regulatory requirements are identified in the Santa Clara County Comprehensive Land Use Plan (CLUP) for the Norman Y. Mineta San José International Airport, City of Santa Clara 2010–2035 General Plan (General Plan), and the Santa Clara Zoning Code. The General Plan land use designation is Light Industrial, which has a maximum floor area ratio (FAR) of 0.60. City of Santa Clara (city) staff agreed that a FAR of 0.90 would be set as a not-to-exceed threshold for the project, which the city considers appropriate for data centers. The zoning district is MH – Heavy Industrial. As described in **Section 4.11 Land Use and Planning**, the project would conform to applicable industrial site and building requirements in the MH zoning district (e.g., building heights and setbacks).

The Santa Clara County Airport Land Use Commission (ALUC) will review the project, including this environmental document, prior to issuing a final consistency determination letter listing conditions that the project owner must satisfy. The conditions will include an updated avigation easement and the plan to underground specific fuel tanks on the east side of the site. With its conditions met, the ALUC could find the proposed project to be consistent with the CLUP. Staff anticipates including a discussion of ALUC requirements in the final EIR for the project. Construction and operation of the project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Land use impacts would be less than significant.

In its description of existing land uses, the General Plan FEIR states that as of 2010 the city had developed almost all its vacant land and was essentially built out (Santa Clara 2011). It also describes how the central portion of the city, north of the Caltrain corridor and south of U.S. 101 (where the project site is located), consists mostly of light and heavy industrial uses, although some of the area had by that time transitioned into office, research and development, and data center uses. In describing areas of potential development, the General Plan FEIR states that most new development will reuse existing underutilized properties for redevelopment. It was concluded that implementation of the General Plan in accordance with the city's proposed policies and actions would result in less-than-significant land use impacts, and no mitigation measures were required (Santa Clara 2011). Neither would the proposed project cause a cumulatively considerable incremental contribution to any land use impact.

Public Services

Less Than Significant Impact. As discussed in **Section 4.15 Public Services**, the construction and operation of the project would not result in substantial adverse physical environmental impacts associated with the provision of new or physically altered fire and police service facilities to maintain acceptable service ratios, response times, or other performance objectives. The project would be consistent with the planned growth in the General Plan. The Santa Clara Fire Department would review the site development plans to ensure appropriate safety measures are incorporated to reduce fire hazards and the police department would review the final site design to ensure that the project provides adequate safety and security measures.

In accordance with California Government Code Section 65996, the project would be required to pay the appropriate school impact fees to Santa Clara Unified School District. The applicant anticipates the operational workforce would be drawn from the greater Bay Area. Even if all the operation work force would relocate closer to the project site, the additional population would be consistent with growth projections and service ratios in the General Plan and thus the project would not cause significant environmental impacts associated with the provision of new or physically altered park and other public facilities to maintain acceptable service ratios or other performance objectives. The project's impacts to the public services would not be cumulatively considerable.

Recreation

Less Than Significant Impact. As discussed in **Section 4.16 Recreation**, the project does not require or propose the construction or expansion of recreation facilities. The project's operational workforce of 30-35 persons would be consistent with growth projects and service ratios in the General Plan and thus the project would not increase the use of existing parks or recreational facilities to the extent that substantial physical deterioration of the park or facility would result. The project's impacts to recreation would not be cumulatively considerable.

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant Impact with Mitigation Incorporated. The proposed project would not cause substantial adverse effects on human beings either directly or indirectly. With mitigation, ~~T~~the proposed project would result in less than significant ~~temporary~~ impacts to human health during construction or operation, including changes to air and water quality, ~~and~~ exposure to ~~geologic hazards,~~ noise~~,~~ and hazardous materials~~, and water quality~~, and from greenhouse gas (GHG) emissions. As discussed in **Section 4.3 Air Quality**, with implementation of ~~the applicant's mitigation incorporated into the project design,~~ **~~-~~AQ-1**, which includes the BAAQMD's recommended BMPs for fugitive dust and construction equipment emissions, the project would result in a less than significant impact related to human health. ~~As discussed in **Section 4.7 Geology and Soils**, implementation of seismic design guidelines in the current California Building Code and project-specific recommendations in a final geotechnical engineering report, as required by **GEO-1**, would ensure the project would not expose people or property to significant impacts associated with geologic or seismic conditions onsite. The project would result in temporary noise impacts to humans during construction and intermittently during operation.~~ As discussed in **Section 4.8 Greenhouse Gas Emissions**, direct GHG emissions from maintenance and testing of the project gensets would be less than significant with implementation of **GHG-1**, and indirect GHG emissions from the project's energy usage, mobile sources, and building operation (electricity use) would be less than significant with implementation of **GHG-2**. As discussed in **Section 4.13 Noise**, noise impacts during construction would be less than significant with the implementation of **NOI-1**. As discussed in **Section 4.9 Hazards and Hazardous Materials**, hazards to humans from any contaminated soils ~~impacts~~ would be less than significant with the implementation of **HAZ-1**. As discussed in **Section 4.10 Hydrology and Water Quality**, water quality impacts during construction and operation would be less than significant with the implementation of **HYD-1**. ~~No additional impacts to human beings would occur during operation and maintenance activities.~~

References

DayZen 2022b – Thermal Plume Analysis – Lafayette Backup Generating Facility (TN242934), May 2022. Available online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=242934&DocumentContentId=76519

Santa Clara 2010 – City of Santa Clara (Santa Clara). City of Santa Clara 2010–2035 General Plan. Adopted November 16, 2010. Available online at: https://www.santaclaraca.gov/our-city/departments-a-f/community-development/planning-division/general-plan

Santa Clara 2011 – City of Santa Clara (Santa Clara). 2010-2035 General Plan Integrated Final Environmental Impact Report. January 2011. Available online at: http://santaclaraca.gov/home/showdocument?id=12900

Santa Clara 2021 – City of Santa Clara (Santa Clara). Climate Action Plan Update. May 30, 2022. Available online at: https://www.santaclaraca.gov/our-city/departments-a-f/community-development/planning-division/general-plan/climate-action-plan

UCMP 2020 – University of California Museum of Paleontology (UCMP) 2019. UCMP database. Accessed on: June 22, 2020. Available online at: https://ucmpdb.berkeley.edu/

4.21 Environmental Justice

This section describes the environmental setting and regulatory background and discusses impacts specific to environmental justice associated with the construction and operation of the proposed project.

4.21.1 Environmental Setting

The United States Environmental Protection Agency (U.S. EPA) defines environmental justice (EJ) as, "the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies" (U.S. EPA 2015, pg. 4).

The "Environmental Justice in the Energy Commission Site Certification Process" subsection immediately below describes why EJ is part of the California Energy Commission's (CEC's) site certification process, the methodology used to identify an EJ population, and the consideration of data from the California Environmental Protection Agency's (CalEPA) California Communities Environmental Health Screening Tool (CalEnviroScreen 4.0). Below that, the "Environmental Justice Project Screening" subsection presents the demographic data for those people living in a six-mile radius of the project site and a determination on presence or absence of an EJ population. When an EJ population is identified, the analysis in 10 technical areas[1] and Mandatory Findings of Significance consider the project's impacts on this population and whether any impacts would disproportionately affect the EJ population. Lastly, the "Project Outreach" subsection discusses the CEC's outreach program specifically as it relates to the proposed project.

Environmental Justice in the CEC Site Certification Process

President Clinton's Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on federal agencies to achieve environmental justice as part of their mission. The order requires the U.S. EPA and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations.

The California Natural Resources Agency recognizes that EJ communities are commonly identified as those where residents are predominantly minorities or live below the poverty

1 The 10 technical areas are Aesthetics, Air Quality, Cultural and Tribal Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Noise, Population and Housing, Transportation, and Utilities and Service Systems. Cultural and Tribal Cultural Resources considers impacts to Native American populations.

level; where residents have been excluded from the environmental policy setting or decision-making process; where they are subject to a disproportionate impact from one or more environmental hazards; and where residents experience disparate implementation of environmental regulations, requirements, practices, and activities in their communities. Environmental justice efforts attempt to address the inequities of environmental protection in these communities.

An EJ analysis is composed of the following:

- Identification of areas potentially affected by various emissions or impacts from a proposed project;
- Providing notice in appropriate languages (when possible) of the proposed project and opportunities for participation in public meetings to EJ communities;
- A determination of whether there is a significant population of minority persons, or persons below the poverty level, living in an area potentially affected by the proposed project; and
- A determination of whether there may be a significant adverse impact on a population of minority persons or persons below the poverty level caused by the proposed project alone, or in combination with other existing and/or planned projects in the area.

California law defines EJ as "the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies" (Gov. Code, § 65040.12; Pub. Resources Code, §§ 71110-71118). All departments, boards, commissions, conservancies and special programs of the California Natural Resources Agency must consider EJ in their decision-making process if their actions have an impact on the environment, environmental laws, or policies. Such actions that require EJ consideration may include:

- Adopting regulations;
- Enforcing environmental laws or regulations;
- Making discretionary decisions or taking actions that affect the environment;
- Providing funding for activities affecting the environment; and
- Interacting with the public on environmental issues.

Bay Area Air Quality Management District Community Health Programs

The project site is located within the Bay Area Air Quality Management District (BAAQMD). BAAQMD has community health programs intended to reduce air pollution disparities in the San Francisco Bay Area. The Community Health Protection Program is BAAQMD's local implementation of the California Air Resources Board's (CARB) Community Air Protection Program, as enacted by Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017). The statewide Community Air Protection Program requires CARB to develop a new community-focused program to reduce exposure more effectively to air pollution and preserve public health and to take measures to protect communities disproportionally

impacted by air pollution. CARB selects the highest priority locations in the state for the deployment of community air monitoring systems and select locations around the state for the preparation of community emissions reduction programs. CARB's governing board has selected 17 communities for a community emissions reduction program (CARB 2022). The project site is not located in an AB 617 community.

The Community Air Risk Evaluation (CARE) program was implemented by BAAQMD to identify areas in the Bay Area that experience a disproportionate share of air pollution exposure. One goal of the CARE program is to identify areas where air pollution contributes most to health impacts and where populations are most vulnerable to air pollution (BAAQMD 2022). The proposed project is located in the 2013 Cumulative Impact Area and therefore a CARE community. However, since its overall CalEnviroScreen 4.0 percentile score is 60 (less than 70), the proposed project is not located in an overburdened community (BAAQMD 2021).

CalEnviroScreen - More Information About an EJ Population

CalEnviroScreen is a science-based mapping tool used by CalEPA to identify disadvantaged communities[2] pursuant to Health and Safety Code section 39711 as enacted by Senate Bill (SB) 535 (De León, Stats. 2012 Ch. 830). As required by state law, disadvantaged communities are identified based on geographic, socioeconomic, public health, and environmental hazard criteria. CalEnviroScreen identifies impacted communities by taking into consideration pollution exposure and its effects, as well as health and socioeconomic status, at the census-tract level (OEHHA 2021, pg. 8).

The CalEnviroScreen model consists of four components in two broad categories. The Exposure and Environmental Effects components comprise a Pollution Burden category, and the Sensitive Populations and Socioeconomic Factors components comprise a Population Characteristic category. The four components are made up of environmental, health, and socioeconomic data from 21 indictors.

The CalEnviroScreen score presents a relative, rather than an absolute, evaluation of pollution burdens and vulnerabilities in California communities by providing a relative ranking of communities across the state (OEHHA 2021, pg. 8). Calculating the CalEnviroScreen scores begins by assigning percentile scores to the 21 statewide indicators, which fall into two categories of Pollution Burden and Population

2 The California Environmental Protection Agency, for purposes of its Cap-and-Trade Program, defines communities in terms of census tracts and identifies four types of geographic areas as disadvantaged: (1) census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0; (2) census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores; (3) census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0; (4) and areas under the control of federally recognized Tribes (CalEPA 2022a).

Characteristics. The percentiles are averaged for the set of indicators in each of the four components (Exposures, Environmental Effects, Sensitive Populations, and Socioeconomic Factors). These four components in turn, are combined to yield an overall CalEnviroScreen score (Cal/EPA 2022a, pg. 5-6). Each category has a maximum score of 10, and, thus, when multiplied the maximum CalEnviroScreen score is 100. Based on these scores, census tracts across California are ranked relative to one another. Values for the various components are shown as percentiles, which indicate the percent of all census tracts with a lower score. A higher percentile indicates a higher potential relative burden. A percentile does not describe the magnitude of the difference between two tracts, but rather it simply tells the percentage of tracts with lower values for that indicator (OEHHA 2021, pg. 20).

Table 4.21-1 lists the indicators that go into the Pollution Burden score and the Population Characteristics score to form the final CalEnviroScreen score. These indicators are used to measure factors that affect the potential for pollution impacts in communities.

TABLE 4.21-1 COMPONENTS THAT FORM THE CALENVIROSCREEN 4.0 SCORE

Pollution Burden	
Exposure Indicators	**Environmental Effects Indicators**
Children's lead risk from housing	Cleanup sites
Diesel particulate matter (PM) emissions	Groundwater threats
Drinking water contaminants	Hazardous waste
Ozone concentrations	Impaired water bodies
PM 2.5 concentrations	Solid waste sites and facilities
Pesticide use	
Toxic releases from facilities	
Traffic density	
Population Characteristics	
Sensitive Populations Indicators	**Socioeconomic Factors Indicators**
Asthma emergency department	Educational attainment
Cardiovascular disease (emergency department visits for heart attacks)	Housing burdened low-income households
Low birth-weight infants	Linguistic isolation
	Poverty
	Unemployment

Notes: PM= particulate matter. PM 2.5= fine particulate matter 2.5 microns or less.
Source: OEHHA 2021

Part of the CEC staff's (staff) assessment of how, or if, the project would impact an EJ population includes a review of CalEnviroScreen data for the project area. There are three technical areas that could have project impacts that could combine with the indicators in CalEnviroScreen: Air Quality, Hydrology and Water Quality, and Utilities and Service Systems.

The CalEnviroScreen indicators relevant to each of the three technical areas are:

- For air quality, these indicators are asthma, cardiovascular disease, diesel particulate matter (PM) emissions, low birth-weight infants, ozone concentrations, pesticide use,

PM with diameters of 2.5 micrometers or smaller (PM2.5) concentrations, toxic releases from facilities, and traffic density.

- For hydrology and water quality, these indicators are drinking water contaminants, groundwater threats, and impaired water bodies.
- For utilities and service systems, these indicators are cleanup sites, hazardous waste, and solid waste sites and facilities.

When these technical areas have identified a potential project impact where an EJ population is present, CalEnviroScreen is used to better understand the characteristics of the areas where the impact would occur and ensure that disadvantaged communities in the vicinity of the proposed project have not been missed when screened by race/ethnicity and low income.

Note that CalEnviroScreen is not intended to:

- substitute for a cumulative impact analysis under the California Environmental Quality Act (CEQA),
- restrict the authority of government agencies in permit and land use decisions; or,
- guide all public policy decisions.

Project Outreach

As a part of the U.S. EPA's definition of EJ, meaningful involvement is an important part of the siting process. Meaningful involvement occurs when:

- those whose environment or health would be potentially affected by the decision on the proposed activity have an appropriate opportunity to participate in the decision,
- the population's contribution can influence the decision; and,
- the concerns of all participants involved are considered in the decision-making process.

The Office of the Public Advisor, Energy Equity and Tribal Affairs outreach consists of emails to state and local elected officials, environmental justice organizations, local chambers of commerce, schools and school districts, labor unions and trade associations, community centers, daycare centers, park departments, and religious organizations within a six- and twelve-mile radius of the proposed project.

The staff docketed and mailed to the project mail list, including EJ organizations and similar interest groups, a Notice of Receipt of the Lafayette Backup Generating Facility (or project) Small Power Plant Exemption Application on June 25, 2020. Based on current U.S. Census English fluency data for the population residing in the cities and communities within a six-mile radius of the project site, translation of project notices was deemed appropriate. U.S. Census data also showed that of those who report they "Speak English less than very well", the predominant language spoken was Chinese. Mandarin Chinese was the more commonly spoken dialect. Public notices for the project in English and

Chinese (Mandarin) were published in local newspapers on July 31, 2020, and July 29, 2020, respectively. A Notice of Preparation was issued to responsible and trustee agencies on August 4, 2021.

Staff conducted outreach and consultation with regional tribal governments as described in **Section 4.5 Cultural and Tribal Cultural Resources**.

As described in **Section 2 Introduction**, staff exceeded the noticing requirements under CEQA Guidelines section 15087 by mailing the Notice of Availability of the Draft EIR to all owners and occupants not just contiguous to the project site but also to property owners within 1,000 feet of the project site and 500 feet of project linears.

Environmental Justice Project Screening

Figure 4.21-1 shows 2020 census blocks in a six-mile radius of the project with a minority population greater than or equal to 50 percent (U.S. Census 2020). The population in these census blocks represents an EJ population based on race and ethnicity as defined in the U.S. EPA's *Guidance on Considering Environmental Justice During the Development of Regulatory Actions* (U.S. EPA 2015).

Based on California Department of Education data in **Table 4.21-2** and presented in **Figure 4.21-2**, staff concludes that the percentage of those living in the school districts of Campbell Union Elementary, Luther Burbank Elementary, Orchard Elementary and San Jose Unified school districts (in a six-mile radius of the project site) are enrolled in the free or reduced-price meal program is larger than those in the reference geography (Santa Clara County). Thus, the populations in these school districts are considered an EJ population based on a low-income population as defined in *Guidance on Considering Environmental Justice During the Development of Regulatory Actions*.

TABLE 4.21-2 LOW INCOME DATA WITHIN THE PROJECT AREA

School Districts in a Six-Mile Radius of the Project Site	Enrollment Used for Meals	Free or Reduced Price Meals	
Berryessa Union Elementary	6,258	1,751	28.0%
Campbell Union Elementary	**6,230**	**2,445**	**39.2%**
Fremont Union High	10,296	1,134	11.0%
Luther Burbank Elementary	**437**	**364**	**83.3%**
Milpitas Unified	10,072	2,883	28.6%
Moreland Elementary	4,043	1,244	30.8%
Orchard Elementary	**765**	**319**	**41.7%**
Santa Clara Unified	14,028	3,645	26.0%
San Jose Unified	**26,901**	**10,087**	**37.5%**
Reference Geography			
Santa Clara County	241,326	79,000	32.7%

Bold indicates school districts considered having an EJ population based on low income.
Source: CDE 2022.

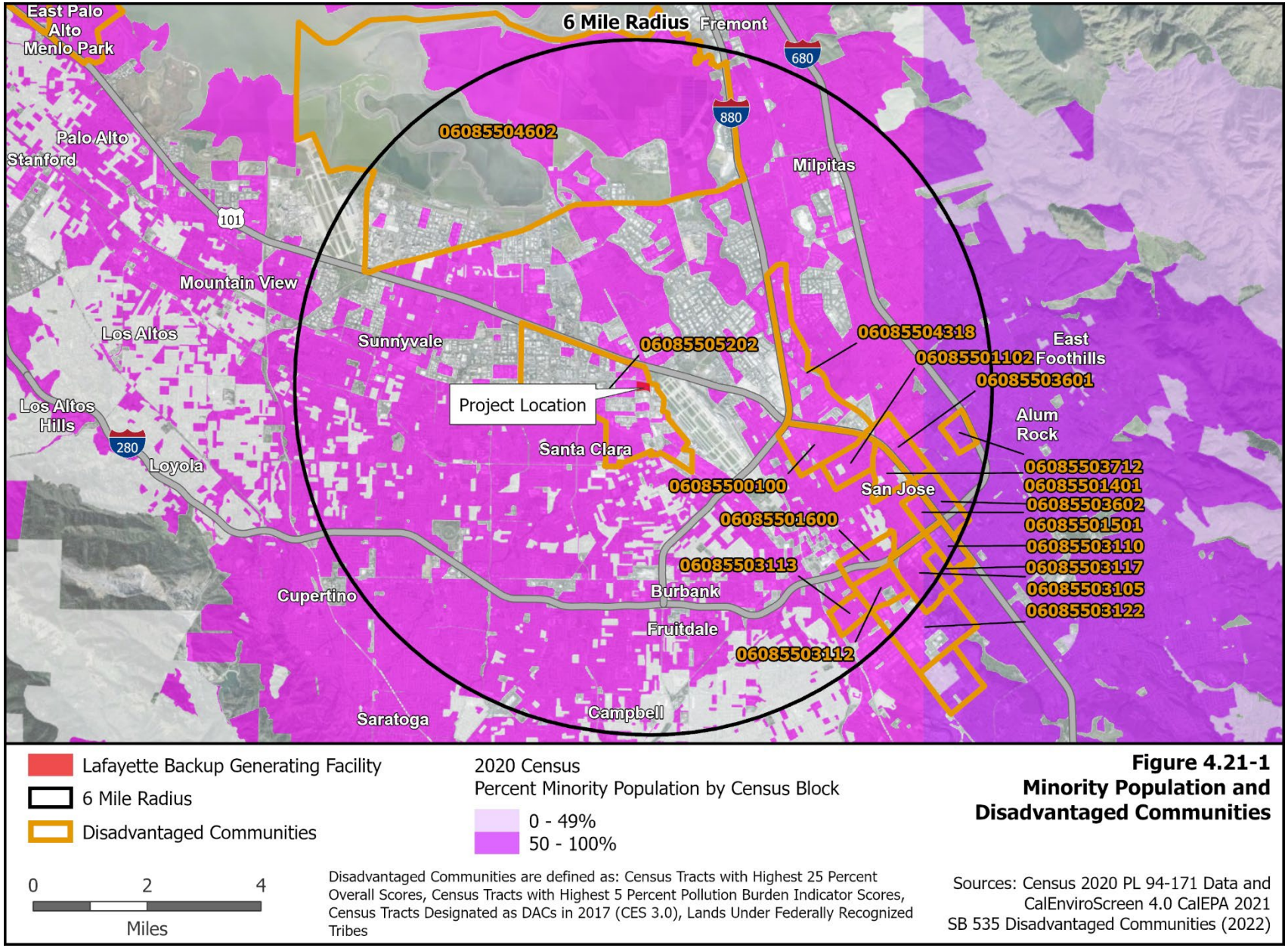
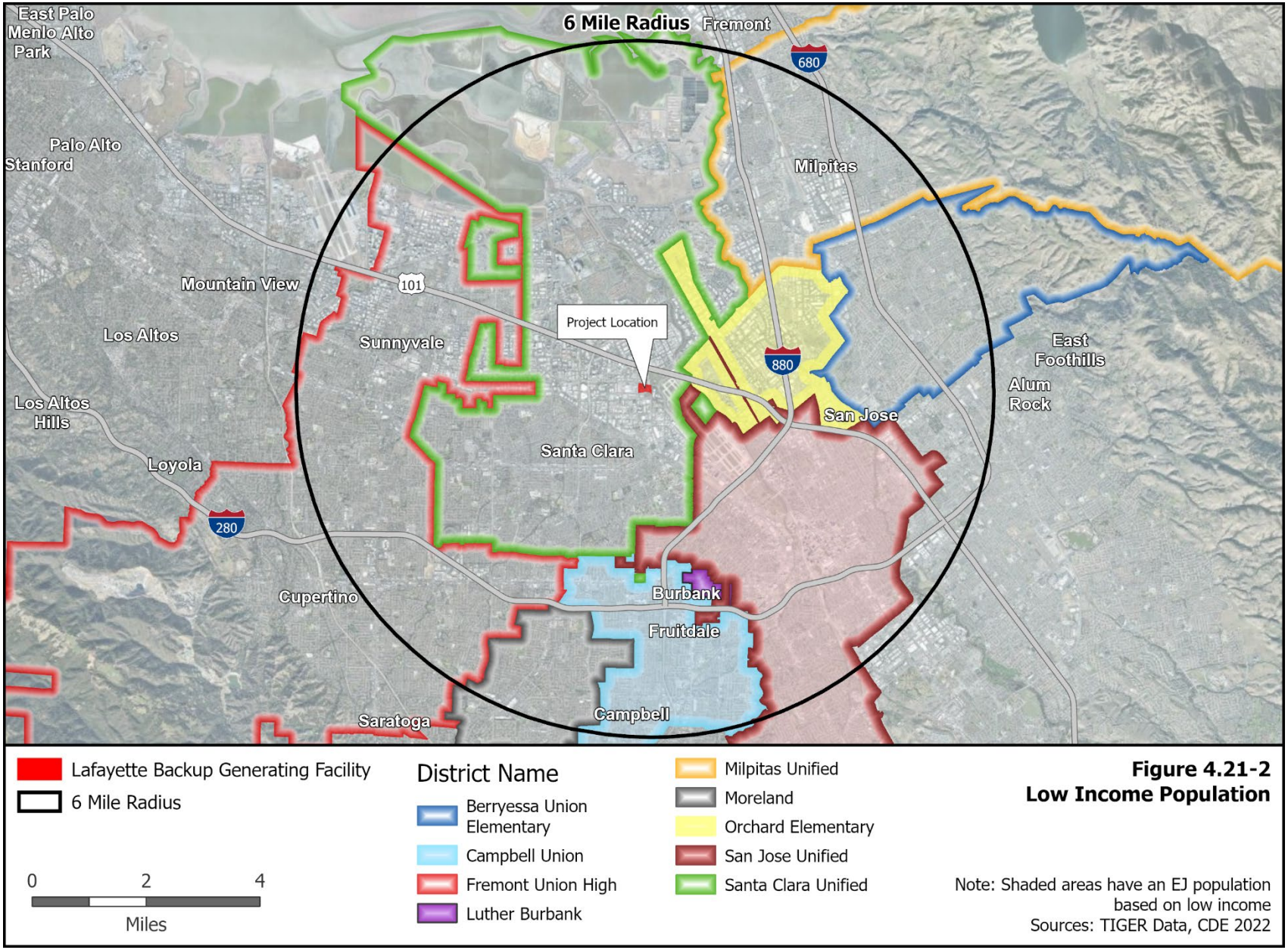


Figure 4.21-1
Minority Population and Disadvantaged Communities


East Palo Alto
Menlo Alto Park
6 Mile Radius
Fremont
680
Palo Alto
Stanford
Milpitas
Mountain View
101
Project Location
Los Altos
Sunnyvale
880
East Foothills
Alum Rock
Los Altos Hills
San Jose
Santa Clara
Loyola
280
Cupertino
Burbank
Fruitdale
Saratoga
Campbell
Lafayette Backup Generating Facility
6 Mile Radius
0
2
4
Miles
District Name
Berryessa Union Elementary
Campbell Union
Fremont Union High
Luther Burbank
Milpitas Unified
Moreland
Orchard Elementary
San Jose Unified
Santa Clara Unified
Figure 4.21-2
Low Income Population
Note: Shaded areas have an EJ population based on low income
Sources: TIGER Data, CDE 2022

CalEnviroScreen - Disadvantaged Communities

CalEnviroScreen 4.0 was used to gather additional information about the population potentially impacted by the proposed project. The CalEnviroScreen indicators (see **Figure 4.21-1**) are used to measure factors that affect the potential[3] for pollution impacts in communities. Staff used CalEnviroScreen to identify disadvantaged communities[4] in the vicinity of the proposed project and better understand the characteristics of the areas where impacts would occur.

Table 4.21-3 presents the CalEnviroScreen overall scores and DAC category for the disadvantaged communities within a six-mile radius of the project site. The location of each of these census tracts is shown on **Figure 4.21-1.**

TABLE 4.21-3 CALENVIROSCREEN SCORES FOR DISADVANTAGED COMMUNITIES

Census Tract No.	Total Population	CES 4.0 Percentile	Pollution Burden Percentile	Population Characteristics Percentile	DAC Category
06085504602	2,355	66.97	82.46	49.76	CES 3.0 DAC Only
06085505202	6,936	59.53	86.86	37.92	CES 3.0 DAC Only
06085500100	8,306	71.19	89.77	50.16	CES 3.0 DAC Only
06085501600	7,716	85.01	77.80	81.48	CES 4.0 top 25%
06085503113	5,052	67.75	62.85	63.46	CES 3.0 DAC Only
06085503112	4,141	77.50	75.68	70.34	CES 4.0 top 25%
06085504318	6,095	80.06	88.82	63.28	CES 4.0 top 25%
06085501102	4,305	71.32	79.53	57.83	CES 3.0 DAC Only
06085503601	3,383	85.36	84.12	76.94	CES 4.0 top 25%
06085503712	4,484	75.77	40.05	94.52	CES 4.0 top 25%
06085501401	3,226	71.72	67.98	66.69	CES 3.0 DAC Only
06085503602	5,602	75.71	49.27	87.28	CES 4.0 top 25%
06085501501	4,623	71.03	49.88	79.37	CES 3.0 DAC Only
06085503110	4,917	77.17	50.57	88.65	CES 4.0 top 25%
06085503117	3,071	59.32	27.54	79.53	CES 3.0 DAC Only
06085503105	2,460	78.97	70.19	76.61	CES 4.0 top 25%
06085503122	3,602	69.25	67.59	61.68	CES 3.0 DAC Only

3 It is important to note that CalEnviroScreen is not an expression of health risk and does not provide quantitative information on increases of impacts for specific sites or project. CalEnviroScreen uses the criteria of "proximity" to a hazardous waste site, a leaking underground tank, contaminated soil, an emission stack (industry, power plant, etc.) to determine that a population is "impacted". It does not address general principles of toxicology: dose/response and exposure pathways. For certain toxic chemicals to pose a risk to the public, offsite migration pathways must exist (through ingestion, inhalation, dermal contact, etc.) and contact to a certain amount – not just any amount – must exist.

4 The CalEPA, for purposes of its Cap-and-Trade Program, has defines communities in terms of census tracts and identifies four types of geographic areas as disadvantaged: (1) census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0; (2) census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores; (3) census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0; (4) and areas under the control of federally recognized Tribes. (CalEPA 2022a).

Notes: Disadvantaged communities by census tract in the project's 6-mile radius.
Shaded row indicates census tract where project is located.
Source: CalEPA 2022b

Table 4.21-4 presents the CalEnviroScreen percentiles for the indicators that make up the pollution burden percentile. **Table 4.21-5** presents the CalEnviroScreen percentiles for the indicators that make up the population characteristics.

TABLE 4.21-4 CALENVIROSCREEN INDICATOR PERCENTILES FOR POLLUTION BURDEN FOR DISADVANTAGED COMMUNITIES

Census Tract No.		Percentiles												
	Pollution Burden	Ozone	PM2.5	Diesel PM	Drinking Water	Lead	Pesticides	Toxic Release	Traffic	Cleanup Sites	Groundwater Threats	Hazardous Waste	Impaired Water Bodies	Solid Waste
06085504602	82.46	15.05	19.43	29.00	39.04	50.59	0.00	30.32	94.13	99.38	94.17	93.21	91.87	99.95
06085505202	86.86	17.65	22.50	79.33	50.17	56.66	1.97	37.85	82.46	99.85	98.41	98.37	33.16	95.01
06085500100	89.77	20.85	37.86	89.71	22.74	70.23	3.59	35.00	81.73	98.11	96.26	98.99	43.78	97.87
06085501600	77.80	20.85	37.13	95.13	22.74	83.20	0.79	32.10	79.25	50.56	91.57	65.18	43.78	77.96
06085503113	62.85	20.85	32.20	79.96	22.74	88.75	0.00	32.12	77.06	33.87	92.98	35.98	33.16	70.42
06085503112	75.68	22.19	35.54	89.82	22.74	57.69	0.00	31.56	62.36	72.81	93.52	77.02	43.78	91.04
06085504318	88.82	20.85	33.71	90.49	22.74	52.73	4.97	39.48	94.31	99.74	96.73	99.85	33.16	99.77
06085501102	79.53	20.85	36.85	63.71	22.74	91.30	0.41	33.76	68.21	83.85	88.01	86.45	33.16	91.43
06085503601	84.12	20.85	35.76	91.50	22.74	93.48	0.00	33.02	91.00	81.02	62.49	91.36	33.16	84.74
06085503712	40.05	20.85	34.18	87.99	22.74	58.49	0.00	31.16	95.96	0.00	43.85	88.48	12.45	0.00
06085501401	67.98	20.85	37.19	78.38	22.74	83.02	0.00	33.03	87.66	62.04	73.75	28.30	33.16	85.22
06085503602	49.27	22.19	41.56	95.30	22.74	75.97	0.00	31.20	94.83	0.00	62.73	78.98	12.45	0.00
06085501501	49.88	20.85	38.97	94.82	22.74	77.82	0.00	31.41	98.70	0.00	66.45	11.08	33.16	44.31
06085503110	50.57	22.19	38.56	96.17	22.74	60.89	0.00	30.83	99.54	0.00	63.71	24.71	33.16	54.85
06085503117	27.54	22.19	37.62	44.54	22.74	52.79	0.00	30.66	58.18	18.70	47.43	16.64	33.16	64.40
06085503105	70.19	22.19	38.77	83.48	22.74	24.39	0.00	30.98	91.53	70.42	82.32	75.96	33.16	94.57
06085503122	67.58	22.19	33.20	80.29	22.74	29.12	0.00	30.31	53.55	80.37	94.89	87.65	33.16	98.79

Notes: Disadvantaged communities by census tract in the project's 6-mile radius. Shaded row indicates census tract where project is located.
Source: CalEPA 2022b

TABLE 4.21-5 CALENVIROSCREEN INDICATOR PERCENTILES FOR POPULATION CHARACTERISTICS FOR DISADVANTAGED COMMUNITIES

Census Tract No.	Percentiles								
	Population Characteristics	Asthma	Low Birth Weight	Cardiovascular Disease	Education	Linguistic Isolation	Poverty	Unemployment	Housing Burden
06085504602	49.76	37.96	98.85	40.00	73.42	NA	27.85	36.44	23.80
06085505202	37.92	28.61	54.62	47.52	55.80	15.64	35.15	4.89	89.21
06085500100	50.16	66.59	54.12	42.40	66.31	76.64	40.80	17.11	26.17
06085501600	81.48	72.98	91.34	39.71	63.76	67.45	80.28	64.51	94.47
06085503113	63.46	53.23	49.62	17.24	91.09	63.04	82.54	57.25	92.84
06085503112	70.34	54.97	73.76	25.87	75.22	86.13	72.40	66.61	73.41
06085504318	63.28	36.05	71.79	28.12	78.63	95.72	59.52	78.97	46.02
06085501102	57.83	69.65	61.41	45.03	65.20	67.72	34.70	52.52	37.48
06085503601	76.94	73.54	77.05	53.39	79.42	95.03	78.45	21.11	63.26
06085503712	94.52	88.43	93.65	71.62	83.23	97.48	64.90	56.19	95.67
06085501401	66.69	60.99	73.33	31.68	79.73	93.80	65.93	29.41	62.42
06085503602	87.28	88.33	44.47	71.54	90.36	96.21	71.42	72.53	83.94
06085501501	79.37	81.90	30.59	59.88	89.52	95.21	69.16	81.69	71.15
06085503110	88.65	79.21	53.85	66.05	96.71	95.99	87.39	69.13	83.94
06085503117	79.53	79.47	33.95	66.44	90.94	98.06	79.55	49.86	77.21
06085503105	76.61	62.33	55.85	39.46	86.36	99.49	69.35	76.05	81.32
06085503122	62.68	44.14	65.36	16.65	81.70	95.29	87.50	15.84	91.46

Notes: Disadvantaged communities by census tract in the project's 6-mile radius. Shaded row indicates census tract where project is located.
Source: CalEPA 2022b

4.21.2 Environmental Impacts and Mitigation Measures

The following technical areas discuss impacts to EJ populations: Aesthetics, Air Quality[5] Cultural and Tribal Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Noise, Population and Housing, Transportation, and Utilities and Service Systems.

Part of staff's assessment of how, or if, the project would impact an EJ population includes a review of CalEnviroScreen data for the project area. There are three technical areas that could have project impacts that could combine with the indicators in CalEnviroScreen: Air Quality, Hydrology and Water Quality, and Utilities and Service Systems. When these technical areas have identified a potential impact where an EJ population is present, CalEnviroScreen is used to better understand the characteristics of the areas where the impact would occur and ensure that disadvantaged communities in the vicinity of the proposed project have not been missed when screened by race/ethnicity and low income.

Aesthetics

Less Than Significant Impact. A disproportionate impact pertaining to Aesthetics to an EJ population may occur if a project is in proximity to an EJ population and the following:

- The project, if in an "urbanized area" per Public Resources Code section 21071, conflicts with applicable zoning and other regulations governing scenic quality.
- The project, if in a non-urbanized area, substantially degrades the existing visual character or quality of the public view of the site and its surroundings.
- The project creates a new source of substantial light and glare that adversely affects day or nighttime views in the area.

As discussed in **Section 4.1 Aesthetics** the project is in an urbanized area. The project conforms to the applicable city zoning and other regulations governing scenic quality.

Staff viewed aerial, surface and street imagery, topographic and other maps in addition to **Figures 4.21-1** and **4.21-2** and concludes the nearest EJ population would have none to restricted public views of the project due to the existence of aboveground landscape components (buildings, structures, earthworks, trees, etc.). Proposed project landscaping would add to the obstructing or obscuring.

The project design includes directional and shielded light fixtures to keep lighting onsite. The project design includes installing LED lighting throughout the project site. Project components would have no to low reflectivity offsite.

For these reasons, the project would have a less than significant effect on aesthetics and would not have a disproportionate effect to an EJ population.

5 Public Health concern discussed under Air Quality

Air Quality

Less Than Significant Impact. **Table 4.21-4** and **Table 4.21-5** include indicators that relate to both air quality and public health. The indicators that are associated with criteria pollutants such as ozone and PM2.5 are indicators related to air quality. Indicators that are associated with protecting public health are: Diesel PM, Pesticide Use, Toxic Release from Facilities, Traffic Density, Asthma, Low Birth Weight Infants, and Cardiovascular Disease. Each of these air quality and public health indicators are summarized under this Air Quality subsection.

Ambient air quality standards (AAQS) are established to protect the health of even the most sensitive individuals in our communities, which includes the EJ population, by defining the maximum amount of a pollutant that can be present in outdoor air without harm to the public's health. Both CARB and the U.S. EPA are authorized to set AAQS.

Staff identified the potential air quality impacts (i.e., ozone and PM2.5) that could affect the EJ population represented in **Figures 4.21-1** and **4.21-2**. Staff also examined individual contributions of indicators in CalEnviroScreen that are relevant to air quality (see **Table 4.21-4**).

Staff identified the potential public health impacts (i.e., cancer and non-cancer health effects) that could affect the EJ population represented in **Figures 4.21-1** and **4.21-2**. These potential public health risks were evaluated quantitatively based on the most sensitive population, which includes the EJ population, by conducting a health risk assessment (HRA). The results were presented by levels of risk. The potential construction and emergency backup generator (gensets) readiness testing and maintenance risks are associated with exposure to diesel PM.

In **Section 4.3 Air Quality**, staff concludes that, with the implementation of mitigation measure **AQ-1**, the project would not have a significant impact on air quality or public health. Criteria pollutants would not cause or contribute to exceedances of health-based ambient standards and the project's toxic air emissions would not exceed health risk limits. Therefore, no mitigation is required. Likewise, the project would not cause disproportionate air quality or public health impacts on sensitive populations, such as the EJ population represented in **Figures 4.21-1** and **4.21-2**.

The text below addresses each of the air quality and public health indicators included in **Tables 4.21-4** and **4.21-5**.

Ozone Impacts

Ozone is known to cause numerous health effects, which can potentially affect EJ communities as follows:

- lung irritation, inflammation and exacerbation of existing chronic conditions, even at low exposures (Alexis et al. 2010, Fann et al. 2012, Zanobetti and Schwartz 2011),

- increased risk of asthma among children under 2 years of age, young males, and African American children (Lin et al. 2008, Burnett et al. 2001); and,
- higher mortality, particularly in the elderly, women and African Americans (Medina-Ramón and Schwartz 2008).

Even though ozone is not directly emitted from emission sources such as the gensets, precursor pollutants that create ozone, such as NOx and VOCs, would be emitted. The NOx emissions of the gensets during readiness testing and maintenance would be required to be fully offset through the permitting process with the Bay Area Air Quality Management District (BAAQMD). See more detailed discussion in **Section 4.3 Air Quality**.

For CalEnviroScreen, the air monitoring data used in this indicator have been updated to reflect ozone measurements for the years 2017 to 2019. CalEnviroScreen 4.0 uses the mean of the daily maximum 8-hour ozone concentration (ppm) for the summer months (May-October), averaged over three years (2017-2019). According to CalEnviroScreen data, census tracts are ordered by ozone concentration values, and then are assigned a percentile based on the statewide distribution of values.

Results for ozone are included in **Table 4.21-4**. Ozone levels in all the census tracts within six-mile radius of the project site are relatively low, with percentiles at or below 22. Another way to look at the data is that approximately 78 percent of all California census tracts have higher ozone levels than these census tracts near the project. For ozone, the census tracts within a six-mile radius of the proposed project's site are not exposed to high ozone concentrations compared to the rest of the state.

The project would not contribute significantly to regional air quality as it relates to ozone. The project would be required to comply with air quality emission rate significance thresholds for NOx and VOCs, which are precursor pollutants that create ozone during the construction and testing and maintenance phases. The project would use best management practices (BMPs) during construction, which would reduce NOx and VOCs. The project's impacts would not cause exceedance of AAQS during readiness testing and maintenance. NOx emissions resulting from readiness testing and maintenance would need to be fully offset to reduce net impacts to levels below the BAAQMD's CEQA threshold. VOC emissions would be below the BAAQMD's threshold of significance and the applicant would not be required to offset them. Therefore, the project would not contribute significantly to regional ozone concentrations, relative to baseline conditions.

Staff concludes that the project would not expose sensitive receptors to substantial ozone precursor concentrations. The project's ozone and ozone precursor air quality impacts would be less than significant for the local EJ community and the general population. Additionally, as NOx emissions of the gensets would be fully offset, the project would not result in a cumulatively considerable net increase of secondary pollutants such as ozone in the air basin.

PM2.5 Impacts

PM is a complex mixture of aerosolized solid and liquid particles including such substances as organic chemicals, dust, allergens, and metals. These particles can come from many sources, including cars and trucks, industrial processes, wood burning, or other activities involving combustion. The composition of PM depends on the local and regional sources, time of year, location, and weather.

PM2.5 refers to particles that have a diameter less than or equal to 2.5 micrometers. PM2.5 is known to cause numerous health effects, which can potentially affect EJ communities. Particles in this size range can have adverse effects on the heart and lungs, including lung irritation, exacerbation of existing respiratory disease, and cardiovascular effects.

For CalEnviroScreen, the indicator PM2.5 is determined by the annual mean concentration of PM2.5 (weighted average of measured monitor concentrations and satellite observations, $\mu g/m^3$), averaged over three years (2015-2017). According to CalEnviroScreen data, census tracts are ordered by PM2.5 concentration values, and then are assigned a percentile based on the statewide distribution of values and are shown in **Table 4.21-4**. All the census tracts within the six-mile radius of the project site range from the lowest of 19.43 percentile for census tract 6085504602 to the highest of 41.56 percentile for census tract 6085503602 in the PM2.5 indicator (see **Table 4.21-4**). This indicates that the highest PM concentrations in census tract 6085503602 are higher than 41.56 percent of tracts statewide. This means that these communities are exposed to below average PM2.5 concentrations compared to the rest of the state.

The project would not contribute significantly to the regional air quality related to PM2.5. The project would not expose sensitive receptors to substantial pollutant concentrations of PM2.5 during construction or readiness testing and maintenance of the gensets. The project would use BMPs during construction, which would reduce PM emissions. The gensets would be equipped with diesel PM filters, which would reduce PM emissions from the engines. Therefore, the project would not contribute significantly to regional PM2.5 concentrations, relative to baseline conditions.

The project's PM2.5 air quality impacts would be less than significant for the local EJ community and the general population. Additionally, as NOx emissions of the gensets would be fully offset, the project would not result in cumulatively considerable net increase of secondary pollutants such as PM in the air basin.

Diesel Particulate Matter (Diesel PM)

This indicator represents how much diesel PM is emitted into the air within and near the census tract. The data are from 2016 California Air Resources Board's emission data from on-road vehicles (trucks and buses) and off-road sources (ships and trains, for example). This is the most recent data available with which to make the necessary comparisons.

Table 4.21-4 shows that among these census tracts, six are higher than the 90th percentile. They are 95.13, 90.49, 91.5, 95.3, 94.82 and 96.17 (in census tracts 06085501600, 06085504318, 06085503601, 06085503602, 06085501501, and 06085503110, respectively), meaning they are higher than 95.13, 90.49, 91.5, 95.3, 94.82 and 96.17 percent of the census tracts in California.

However, according to the results of the HRA conducted for this project in **Section 4.3 Air Quality**, impacts associated with diesel PM from the proposed project construction and operation activities (diesel-fueled equipment) would be less than significant and would not have a significant cumulative contribution to the diesel PM levels in the disadvantaged communities. Therefore, the project's diesel PM impacts would be less than significant for the local EJ community and the general population.

Pesticide Use

Specific pesticides included in the Pesticide Use indicator were narrowed from the list of all registered pesticides in use in California to focus on a subset of 132 selected active pesticide ingredients that are filtered for hazard and volatility for the years 2017-2019 collected by the California Department of Pesticide Regulation. Only pesticides used on agricultural commodities are included in the indicator.

Table 4.21-4 shows that none of these census tracts are higher than the 90th percentile. in the Pesticide Use indicator. The highest percentile is from census tract 6085504318, indicating that pesticide use in this census tract (6085504318) is only higher than 4.97 percent of tracts statewide. This also indicates that pesticide use in these census tracts are below the statewide average in terms of pesticide use and that these communities are not exposed to high pesticide concentrations as compared to the rest of the state. Therefore, the pesticide use in the project's census tract would be less than significant for the local EJ community and the general population.

Toxic Releases from Facilities

This indicator represents modeled toxicity-weighted concentrations of chemical releases to air from facility emissions and off-site incineration in and near the census tract. The U.S. EPA provides public information on the amount of chemicals released into the environment from many facilities. This indicator uses the modeled air concentration and toxicity of the chemical to determine the toxic release score. The data are from 2017-2019.

Table 4.21-4 shows that none of these census tracts are higher than the 90th percentile. The highest percentile is from census tract 6085505202, indicating that toxic release from facilities threats in this census tract (6085505202) is higher than 37.85 percent of tracts statewide. This also indicates that these communities are lower than the state average for exposure to toxic releases. This also indicates that these communities are not exposed to high toxic releases from facilities as compared to the rest of the state.

According to the results of the HRA conducted for the project in **Section 4.3 Air Quality**, impacts associated with toxic releases from construction and operation activities (diesel-fueled equipment) would be less than significant. The project would not have a significant cumulative contribution to toxic releases. Therefore, the project's toxics emissions would be less than significant for the local EJ community and the general population.

Traffic Density

This indicator represents the sum of traffic volumes adjusted by road segment length. It is calculated as sum of traffic volumes adjusted by road segment length (vehicle-kilometers per hour) divided by total road length (kilometers) within 150 meters of the census tract. It is not a measure of level of service on roadways. The data are from 2017.

Table 4.21-4 shows that among these census tracts, eight are higher than the 90th percentile. The highest percentiles are 99.54 and 98.7 (in census tracts 06085503110 and 06085501501, respectively), meaning these two are higher than 99.54 and 98.7 percent of the census tracts in California. Traffic volume impacts are related to the diesel PM emitted from diesel-fueled vehicles.

The proposed project would generate few vehicle trips to the site during normal operation of the proposed project. These trips include workers, material, and equipment deliveries. It is unlikely that the addition of vehicle trips from the project would result in a significant contribution to the traffic density on any roadway in the vicinity of the project site. However, according to the results of the HRA conducted for the project in **Section 4.3 Air Quality**, impacts associated with diesel PM from the proposed project construction and operation activities (diesel-fueled equipment) would be less than significant and would not have a significant cumulative contribution to the diesel PM-related traffic density in the disadvantaged communities. Therefore, the project's traffic volume impact would not have a significant cumulative contribution to the traffic density for the local EJ community and the general population.

Asthma

This indicator is a representation of an asthma rate. It measures the number of emergency department (ED) visits for asthma per 10,000 people over the years 2015 to 2017. The California Office of Statewide Health Planning and Development (OSHPD) collected the information.

Table 4.21-5 shows that none of these census tracts are higher than the 90th percentile in the asthma indicator. The highest percentile is from census tract 6085503712 (88.43 percent). This indicates the number of emergency department visits for asthma per 10,000 people over the years 2015 to 2017 are higher than 88.43 percent of tracts statewide. Census tract 06085503602 was slightly lower, at the 88.33 percentile. This indicates that these two communities have the above average numbers of emergency room visits due to asthma compared to the rest of the state.

According to the results of the HRA conducted for the project in **Section 4.3 Air Quality**, impacts associated with emissions from construction and operation activities (diesel-fueled equipment) would be less than significant and would not have a significant cumulative contribution to asthma ER visits. Therefore, the project's emissions would not have a significant cumulative contribution to asthma ER visits for the local EJ community and the general population.

Low Birth Weight Infants

This indicator measures the percentage of babies born weighing less than 2500 grams (about 5.5 pounds) out of the total number of live births over the years 2009 to 2015. The information was collected by the California Department of Public Health (CDPH).

Table 4.21-5 shows that among these census tracts, three of them are higher than the 90th percentile. They are 98.85, 91.34 and 93.65 (in census tracts 06085504602, 06085501600, and 06085503712, respectively), meaning they are higher than 98.85, 91.34 and 93.65 percent of the census tracts in California. This indicates that these three communities are higher than the state average of low birth-weight infants.

The HRA of the project in **Section 4.3 Air Quality** was based on a highly conservative health-protective methodology that accounts for impacts on the most sensitive individuals in a population. According to the results of the assessment, the risks at the maximally exposed sensitive receptors (i.e., the point of maximum impact [PMI], the maximally exposed individual resident [MEIR], the maximally exposed individual worker [MEIW], and the maximally exposed individual sensitive receptor [MEIS]) would be below health-based thresholds. Therefore, the toxic emissions from the project would not cause significant health effects for the low birth-weight infants in these disadvantaged communities or have a significant cumulative contribution to these disadvantaged communities. The project's emissions would not have a significant cumulative contribution to low birth-weight infant births for the local EJ community and the general population.

Cardiovascular Disease

This indicator represents the rate of heart attacks. It measures the number of emergency department (ED) visits for acute myocardial infarction (AMI) (or heart attack) per 10,000 people over the years 2015 to 2017.

Table 4.21-5 shows that none of these census tracts are higher than the 90th percentile in the cardiovascular disease indicator. The highest percentile is from census tract 6085503712. It indicates the number of emergency department visits for acute myocardial infarction (or heart attack) per 10,000 people over the years 2015 to 2017 is higher than 71.62 percent of tracts statewide. This also indicates that this community is about the average number of emergency department visits for acute heart attack compared to the rest of the state.

According to the results of the HRA conducted for the project in **Section 4.3 Air Quality**, impacts associated with emissions from construction and operation activities (diesel-fueled equipment) would be less than significant and would not have a significant cumulative contribution to cardiovascular disease. The project's emissions would not have a significant cumulative contribution to cardiovascular disease for the local EJ community and the general population.

Cultural and Tribal Cultural Resources

No Impact. Staff considered EJ populations in its analysis of the project. Staff did not identify any Native American EJ populations that either reside within 6 miles of the project or that rely on any subsistence resources that could be impacted by the proposed project.

Hazards and Hazardous Materials

Less Than Significant Impact. EJ populations may experience disproportionate hazards and hazardous materials impacts if the storage and use of hazardous materials within or near EJ communities occur to a greater extent than within the community at large. A disproportionate impact upon the EJ population resulting from the planned storage and use of hazardous materials on the site is extremely low. The greatest quantity of hazardous material on site would be the diesel fuel to run the gensets. The total quantity of diesel would be stored in many separate double-walled fuel tanks (one for each generator) with proper spill controls. Therefore, the likelihood of a spill of sufficient quantity to impact the surrounding community and EJ population would be very unlikely, thus the impact on the EJ community would be less than significant.

Hydrology and Water Quality

Less Than Significant Impact. A disproportionate hydrologic or water quality impact on an EJ population could occur if the project would contribute to impairment of drinking water, exacerbate groundwater contamination threats, or contribute pollutants to impaired water bodies.

Since the overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors, staff examined the individual contributions to indicators as they relate to hydrology and water quality. The pollutants of concern in this analysis are those from construction and operational activities. The CalEnviroScreen scores for the disadvantaged community census tracts in a 6-mile radius of the project (see **Figure 4.21-1**) are presented in **Table 4.21-4** for each of the following environmental stressors that relate to hydrology and water quality: Drinking Water Contaminants, Groundwater Threat, and Impaired Water Bodies. The percentile for each disadvantaged census tract reflects its relative ranking among all of California's census tracts. A disproportionate hydrology or water quality impact on an EJ population could occur if a project introduces an additional pollutant burden to a disadvantaged community.

CalEnviroScreen assigns a score to each type of stressor. To assess the impact of a stressor on population within a census tract, the score is assigned a weighting factor

that decreases with distance from the census tract. For stationary stressors related to hydrology or water quality, the weighting factor diminishes to zero for distances larger than 1,000 meters (0.6 mile). As **Figure 4.21-1** shows, all but one of the assessed census tracts are more than 1,000 meters away from the project. The only census tract that is within 1,000 meters of the proposed project site is tract 6085505202—the tract in which the project would be located. Therefore, this analysis focuses on that census tract.

Drinking Water Contaminants

Low income and rural communities, particularly those served by small community water systems, can be disproportionately exposed to contaminants in their drinking water. CalEnviroscreen aggregates drinking water quality data from the California Department of Public Health, the U. S. EPA, and the California State Water Resources Control Board (SWRCB). The score provided by the Drinking Water Contaminant metric calculation is intended to rank water supplies relative to their history or likelihood to provide water that exceeds drinking water standards.

Census tract 6085505202 scored 50 percent in the Drinking Water Contaminants indicator (see **Table 4.21-4**). This indicates that drinking water contamination threat in this census tracts is low, and that this community does not have a significant level of exposure to contaminants through drinking water.

The project would not contribute significantly to drinking water source degradation. The project would be required to comply with the Clean Water Act (CWA) by controlling the discharge of pollutants during its construction and operation phases. The project would implement modern operational phase storm water and containment controls that would improve upon the site's potential to release contaminants to the environment. The project would therefore provide a long-term drinking water quality benefit relative to baseline conditions. The project's hydrology and water quality impacts would be reduced to less than significant for the census tract of concern and the general population.

Groundwater Threats

Common groundwater pollutants found at leaking underground storage tank and cleanup sites in California include gasoline and diesel fuels, chlorinated solvents and other volatile organic compounds such as benzene, toluene, and methyl tert-butyl ether; heavy metals such as lead, chromium and arsenic; polycyclic aromatic hydrocarbons; persistent organic pollutants like polychlorinated biphenyls; Dichlorodiphenyl-trichloroethane and other insecticides; and perchlorate. CalEnviroscreen aggregates data from the SWRCB's GeoTracker website about groundwater threats. The score provided by the Groundwater Threat metric calculation is intended to rank the relative risk of environmental contamination by groundwater contamination, within each census tract.

Census tract 6085505202 scored 98 percent in the Groundwater Threat indicator (see **Table 4.21-4**). This indicates that groundwater contamination threats in this census tract is within the top 10 percent of tracts statewide. This indicates that this community is located alongside a high relative proportion of groundwater threats.

The project would not contribute significantly to groundwater degradation, relative to existing conditions. The project would be required to comply with the CWA by controlling the discharge of pollutants during its construction and operation phases. The project would implement modern operational phase storm water and containment controls that would improve upon the site's potential to release contaminants to groundwater. The project would therefore provide a long-term drinking groundwater quality benefit relative to baseline conditions. The project's hydrology and water quality impacts would be reduced to less than significant for the census tract of concern and the general population.

Impaired Water Bodies

Rivers, lakes, estuaries and marine waters in California are important for many different uses. Water bodies used for recreation may also be important to the quality of life of nearby residents if subsistence fishing is critical to their livelihood. Water bodies also support abundant flora and fauna. Changes in aquatic environments can affect biological diversity and overall health of ecosystems. Aquatic species important to local economies may be impaired if the habitats where they seek food and reproduce are changed. Additionally, communities of color, low-income communities, and tribes generally depend on the fish, aquatic plants, and wildlife provided by nearby surface waters to a greater extent than the general population. CalEnviroscreen aggregates data from the SWRCB's Final 2012 California Integrated Report (CWA Section 303(d) List / 305(b) Report). The score provided by the Impaired Water Bodies metric calculation is intended to rank the relative risk of impaired water bodies, within each census tract.

Census tract 6085505202 scored 33 percent in the Impaired Water Bodies indicator (see **Table 4.21-4**). This indicates that impaired water bodies in these census tracts are below the statewide average in terms of relative abundance. This indicates that these communities are not expected to contain a high abundance of impaired water bodies.

The project would not contribute significantly to the impairment of local or regional water bodies. The project would be required to comply with the CWA by controlling the discharge of pollutants during its construction and operation phases. Also, the project would implement modern operational phase storm water and containment controls that would improve upon the site's potential to release contaminants to the environment. The project would therefore provide a long-term benefit to local and regional water bodies, relative to baseline conditions. The project's hydrology and water quality impacts would be reduced to less than significant for the census tract of concern and the general population.

Land Use and Planning

Less Than Significant Impact. A land use impact could occur if a project would cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Staff assessed consistency of the proposed project with relevant policies and regulatory requirements contained in the Santa Clara County Comprehensive Land Use Plan (CLUP) for the Norman Y. Mineta San Jose International Airport, City of Santa Clara 2010–2035 General Plan (General Plan), and the Santa Clara Zoning Code. The General Plan land use designation for the site is Light Industrial, which accommodates uses that include data centers. The proposed project would comply with the Santa Clara Zoning Code requirements for building and site design in the MH, Heavy Industrial zoning district. (See **Section 4.11 Land Use and Planning** for the analysis details.) The proposed project would not involve uses that could cause unmitigated hazardous conditions or nuisance impacts. (See also sections **4.3 Air Quality**, **4.9 Hazards and Hazardous Materials**, and **4.17 Transportation** of this EIR.)

Staff evaluated the proposed project's conformance with applicable policies in the CLUP and concluded that the project would not cause hazards to airport operations or aircraft in flight. The Santa Clara County Airport Land Use Commission (ALUC) will review the project, including this environmental document, prior to issuing a final consistency determination letter listing conditions that the project owner must satisfy. With its conditions met, the ALUC could find the proposed project to be consistent with the CLUP. Staff anticipates including a discussion of ALUC requirements in the final EIR for the project.

Construction and operation of the project would not conflict with land use plans or policies such that a significant environmental impact would occur. Therefore, land use impacts would be less than significant, including potential disproportionate impacts on an EJ population.

Noise

Less Than Significant Impact. EJ populations may experience disproportionate noise impacts if the siting of unmitigated industrial facilities occurs within or near EJ communities to a greater extent than within the community at large. The project site is within an area having an EJ population. Because the area surrounding the site is primarily industrial and commercial uses, and the nearest residences are approximately 0.7-mile away from the project site, potential impacts would not be disproportionate.

Construction activities would increase existing noise levels at the adjacent commercial and industrial land uses, but they would be temporary and intermittent. In addition, construction activities would not occur on Sundays and holidays, in compliance with the Santa Clara City Code, Section 9.10.230. Also, the loudest noise levels from construction and demolition activities are not expected to be higher than the existing ambient noise levels at the closest residential area. Therefore, potential noise effects related to project

construction would not result in a significant noise impact on the area's population, including the EJ population.

The operational noise levels would comply with the city's noise limits and would not elevate the existing ambient noise levels at the nearest residences. Thus, the impacts would be less than significant for all the area's population, including the EJ population.

Population and Housing

Less Than Significant Impact. The study area used to analyze the population influx and housing supply impacts includes Campbell, Cupertino, Milpitas, San Jose, Sunnyvale, and Santa Clara County. Staff considered the project's population and housing impacts on the EJ population living in these geographic areas.

The potential for population and housing impacts is predominantly driven by the temporary influx of non-local construction workers seeking lodging closer to a project site. For the project, the construction workers would be drawn from the greater Bay Area and thus would not likely seek temporary lodging closer to the project site. The operations workers are also anticipated to be drawn from the greater Bay Area and would not likely seek housing closer to the project site. If some operations workers were to relocate closer to the project site, there would be sufficient housing in the project area.

A population and housing impact could disproportionately affect an EJ population if the project were to displace minority or low income residents from where they live, causing them to find housing elsewhere. If this occurs, an EJ population may have a more difficult time finding replacement housing due to racial biases and possible financial constraints. As the project would not displace any residents or remove any housing, there would be no disproportionate impact to EJ populations from this project.

Transportation

Less Than Significant Impact. Reductions in transportation options may significantly impact EJ populations. An impact to bus transit, pedestrian facilities, or bicycle facilities could cause disproportionate impacts to low-income communities, as low-income residents more often use these modes of transportation. However, as concluded in section **5.17 Transportation**, temporary construction activities associated with the project's interconnection to existing water, sewer, fiber, gas and electrial services along Central Expressway and Lafayette Street would not interfere with alternative transportation, including pedestrian, bicycle or transit routes, as none exist on the affected portions of these roads. Impacts would be less than significant, and therefore would cause less than significant impacts to EJ populations. Likewise, transportation impacts would not be disproportionate.

Utilities and System Services

Less Than Significant Impact. A disproportionate utilities and system services impact on an EJ population could occur if the project would contribute to or exacerbate the effects of cleanup sites, hazardous waste generators and facilities, and solid waste facilities.

Since the overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors, staff examined the individual contributions to indicators as they relate to wastes addressed under utilities and system services. The wastes of concern in this analysis are those from construction and operational activities. The handling and disposal of each type of waste depends on the hazardous ranking of its constituent materials. Existing laws, ordinances, regulations, and standards ensure the desired handling and disposal of waste materials without potential public or environmental health impacts. The CalEnviroScreen scores for the disadvantaged community census tracts in a 6-mile radius of the project (see **Figure 4.21-1**) are presented in **Table 4.21-4** for each of the following environmental stressors that relate to waste management: cleanup sites, hazardous waste generators and facilities, and solid waste facilities. The percentile for each disadvantaged census tract reflects its relative ranking among all of California's census tracts. A disproportionate waste management impact on an EJ population could occur if project wastes impacted the disadvantaged community.

CalEnviroScreen assigns a score to each indicator of stressors. To assess the impact of a stressor on population within a census tract, the score is assigned a weighting factor that decreases with distance from the census tract. For stationery stressors, the weighting factor diminishes to zero for distances larger than 1,000 meters (0.6 mile). As **Figure 4.21-1** shows, all but one of the assessed census tracts are more than 1,000 meters away from the project. The only tract that is within 1,000 meters of the proposed project site is tract 6085505202—the tract in which the project would be located. Therefore, this analysis focuses on that tract.

Cleanup Sites

This indicator is calculated by considering the number of cleanup sites including Superfund sites on the National Priorities List (NPL), the weight of each site, and the distance to the census tract. Sites undergoing cleanup actions by governmental authorities, or by property owners, have suffered environmental degradation due to presence of hazardous substances. Of primary concern is the potential for people to contact with these substances.

The percentile score in the cleanup sites indicator for the only census tract within 1,000 meters of the project site (tract 6085505202) is 99.85 (see Table **Table 4.21-4**). The interpretation is that contamination threats due to the presence of cleanup sites in that census tract are among the highest of all tracts statewide. This is an indication that the communities within that tract are located alongside a high relative proportion of cleanup sites.

If there is any existing contamination at the project site, it would be remediated by the current owner in accordance with regulatory requirements that would ensure there would be no impacts to on- or off-site receptors. In addition, the project owner would have to comply with appropriate laws, ordinances, regulations, and standards that would require additional cleanup of contaminated soils and groundwater that might be encountered during construction and operation activities. Therefore, the project would not contribute significantly to effects from cleanup sites for the relevant census tract and for the general population.

Hazardous Waste Generators and Facilities

This indicator is calculated by considering the number of permitted treatment, storage, and disposal facilities (TSDFs) or generators of hazardous waste, the weighting factor of each generator or site, and the distance to the census tract. Most hazardous waste must be transported from hazardous waste generators to permitted TSDFs by registered hazardous waste transporters. Most shipments must be accompanied by a hazardous waste manifest. There are widespread concerns for both human health and the environment from sites that serve for the processing and disposal of hazardous waste. Newer facilities are designed to prevent the contamination of air, water, and soil with hazardous material. However, even newer facilities may negatively affect perceptions of surrounding areas in ways that have economic, social, and health impacts.

The percentile score in the hazardous waste generators and facilities indicator for the only census tract within 1,000 meters of the project site is 99.11. The interpretation is that threats related to hazardous waste generation and facilities in this census tract is among the worst of all tracts statewide, meaning that the communities in that tract are located alongside sites with a high relative proportion of hazardous waste generators and facilities.

The project would not contribute significantly to hazardous waste generation or to the number or size of facilities handling hazardous waste processing. Further, the project would be required to comply with appropriate laws, ordinances, regulations, and standards to control storage and disposal of hazardous waste during its construction and operation phases. The project would implement modern operational phase controls to prevent or reduce the generation of hazardous wastes and to dispose of them in a manner that would minimize impacts to the environment both during project construction and operation. The project's impacts related to hazardous waste generation and disposal would be reduced to less than significant for the relevant census tract and the general population.

Solid Waste Facilities

This indicator is calculated by considering the number of solid waste facilities including illegal sites, the weighting factor of each, and the distance to a census tract. Newer solid waste landfills are designed to prevent the contamination of air, water, and soil with hazardous materials. However, older sites that are out of compliance with current standards or illegal solid waste sites may degrade environmental conditions in the

surrounding area and pose a risk of exposure. Other types of facilities, such as composting, treatment, and recycling facilities may raise concerns about odors, vermin, and increased traffic.

The percentile score in the solid waste facilities indicator for the only assessed census tract within 1,000 meters is 95 (see **Table 4.21-4**). The interpretation is that the number and type of facilities within or nearby this census tract is in the upper 10 percent of the census tracts in California. This also indicates that environmental deterioration due to the presence of solid waste facilities in that census tract is within the top 10 percent of tracts statewide.

Solid waste generated during construction and operation of the project would be segregated, where practical, for recycling, and disposed where there is adequate capacity for disposal of nonhazardous waste. Also, the project would be required to develop and implement plans that would ensure proper disposal of nonhazardous waste at appropriately licensed facilities. The project owner would use solid wastes sites or facilities that are verified to comply with current laws, ordinances, regulations, and standards. In addition, there would be no increase of solid waste generators and facilities in the area due to project construction or operation because there is adequate space for disposal of waste from the project. Therefore, there would be no impact due to solid waste facilities that would disproportionately impact an EJ community in the relevant census tract.

List of Preparers and Contributors

The following are a list of preparers and contributors to **Section 4.21 Environmental Justice**:

Ellen LeFevre	General Environmental Justice information, CalEnviroScreen information, Environmental Justice screening, public outreach, CalEnviroScreen project screening, and Population and Housing.
Mark Hamblin	Aesthetics impact analysis
Hui-An (Ann) Chu, Jacque Record, Birdsall Brewster	Air Quality (public health) impact analysis
Gabriel Roark, Cameron Travis	Cultural and Tribal Cultural Resources impact analysis
Brett Fooks	Hazards and Hazardous Materials impact analysis
Abdel-Karim Abulaban	Hydrology and Water Quality, Noise, and Utilities and Service Systems impact analyses
Jeanine Hinde	Land Use and Planning impact analysis
Ashley Guiterrez	Transportation impact analysis

4.21.3 Mitigation Measures

None.

4.21.4 References

Alexis NE et al. 2010 – Alexis NE, Lay JC, Hazucha M, Harris B, Hernandez ML, Bromberg PA, et al. Low-level ozone exposure induces airways inflammation and modifies cell surface phenotypes in healthy humans. Inhal Toxicol 22(7):593-600. Available online at: https://www.ncbi.nlm.nih.gov/pubmed/20384440

BAAQMD 2021 – Bay Area Air Quality Management District (BAAQMD). AAQMD Regulation 2-1-243 Overburdened Community. Available online at: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20211215_rg0201-pdf.pdf?la=en

BAAQMD 2022 – Bay Area Air Quality Management District (BAAQMD). Community Air Risk Evaluation Program. Accessed on June 2022. Available online at: https://www.baaqmd.gov/community-health/community-health-protection-program/community-air-risk-evaluation-care-program

Burnett RT et al. 2001 – Burnett RT, Smith-Doiron M, Stieb D, Raizenne ME, Brook JR, et al. Association between Ozone and Hospitalization for Acute Respiratory Diseases in Children Less than 2 Years of Age. American Journal of Epidemiology 153(5):444-452. Available online at: https://academic.oup.com/aje/article/153/5/444/149769

CARB 2022 – California Air Resources Board (CARB). Community Air Protection Selection Process. Accessed June 2022. Available online at: https://ww2.arb.ca.gov/capp-selection

CalEPA 2022a – California Environmental Protection Agency (CalEPA). *Final Designation of Disadvantage Communities Pursuant to Sentate Bill 535,* May 2022. Available online at: https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/Updated-Disadvantaged-Communities-Designation-DAC-May-2022-Eng.a.hp_-1.pdf

CalEPA 2022b – California Environmental Protection Agency (CalEPA). SB 535 Excel Spreadsheet and data dictionary, last updated May 2022. Available online at: https://oehha.ca.gov/calenviroscreen/sb535

CDE 2022 – California Department of Education (CDE). California Department of Education Educational Demographics Unit, Data Quest, Selected District Level Data - 4369674--Santa Clara Unified for the year 2021-2022. Free or Reduced Price Meals. Available online at: https://dq.cde.ca.gov/dataquest/cbeds2.asp?cYear=2021-22&FreeLunch=on&cChoice=CoProf2&TheCounty=43%2CSANTA%25255ECLARA&cLevel=County&cTopic=Profile&myTimeFrame=S&submit1=Submit

Fann N et al. 2012 – Fann N, Lamson AD, Anenberg SC, Wesson K, Risley D, Hubbell BJ, Estimating the National Public Health Burden Associated with Exposure to

Ambient PM2.5 and Ozone. Risk Analysis 32(1):81- 95. Available online at: https://www.ncbi.nlm.nih.gov/pubmed/21627672

Lin S et al. 2008 – Lin S, Liu X, Le, LH, Hwang, S, Chronic Exposure to Ambient Ozone and Asthma Hospital Admissions among Children. Environ Health Perspect 116(12):1725-1730. Available online at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2599770/

Medina-Ramón M, Schwartz J 2008 – Who is more vulnerable to die from ozone air pollution? Epidemiology 19(5):672-9. Available online at: https://www.ncbi.nlm.nih.gov/pubmed/18480732

OEHHA 2021 – California Environmental Protection Agency's Office of Environmental Health Hazzard and Assessment (OEHHA). CalEnviroScreen 4.0, October 2021. Available online at: https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf

U.S. Census 2020 – United States Census Bureau (U.S. Census). QT-PL-Race, Hispanic or Latino, Age United States Census Bureau (U.S. Census). PL-Race, Hispanic or Latino, Age, and Housing Occupancy: 2020 – DEC Redistricting Data (Public Law 94-171) Summary File, Tables P1, P2, P3, P4, H1. Available online at: https://www.census.gov/data.html

U.S. EPA 2015 – United States Environmental Protection Agency (U.S. EPA). Guidance on Considering Environmental Justice During the Development of Regulatory Actions, May 2015. Available online at: https://www.epa.gov/environmentaljustice/guidance-considering-environmental-justice-during-development-action

Zanobetti A, Schwartz J 2011 – Ozone and survival in four cohorts with potentially predisposing diseases. Am J Respir Crit Care Med 184(7):836-41. Available online at: https://www.ncbi.nlm.nih.gov/pubmed/21700916

Section 5

Alternatives

5 Alternatives

5.1 Introduction

This section evaluates a reasonable range of potentially feasible alternatives to the Lafayette Data Center and Lafayette Backup Generating Facility (LDC and LBGF). Both together are known as the LDC or the project. Alternatives initially considered but dismissed for full analysis due to concerns about feasibility or reliability include an alternative site, 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 potentially 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 were:

- Alternative 1: No Project/No Build Alternative
- Alternative 2: Natural Gas Internal Combustion Engines

5.2 CEQA Requirements

CEQA requires that an environmental impact report (EIR) "consider a reasonable range of potentially feasible alternatives (to the project) that will foster informed decision making and public participation" (Cal. Code Regs., tit. 14, § 15126.6, subd. (a)). Section 15126.6 of the CEQA Guidelines provides that the alternatives analysis must include all the following:

- Description of 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,
- Evaluation of the comparative merits of the alternatives,
- A 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
- Description of the rationale for selecting alternatives to be discussed and identification of alternatives that were initially considered but then rejected from further evaluation.

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 project 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)). Section 15126.6 of the CEQA Guidelines states: "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 project objectives for the LDC are to develop a data center with the following characteristics:

- Commercial availability and feasibility: The data center must use proven technology currently in use. The technology must allow for the project to be operational within a reasonable timeframe where permits and approvals are required.
- Industry standard: The data center must be considered industry standard or best practice.
- Technical feasibility: The data center must use technology systems that are compatible with one another.
- Reliability: The data center must use technology that is reliable in the case of an emergency.

5.4 Reliability and Risk Factors for Data Centers

Reliability is essential for data centers. Crucial services, such as 911, offices of emergency management, and utilities, are increasingly using data centers for their operation. 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. The selected backup electric generation technology for the LDC must be extremely reliable in the case of an emergency loss of electricity from the utility provider. Any alternative backup generation technology would be measured against proven available technologies, including the diesel-fired emergency backup generator (genset) technology proposed for the LDC. Alternative backup generating technologies less reliable than the proposed diesel-fired genset technology would not be considered viable alternatives.

Risk factors that affect the reliable operation of gensets 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 2019). Sufficiently reducing or eliminating these risks would ensure that data center operation is not interrupted during a utility power failure. Any viable alternative technology must minimize these risks and have proven operational hours, a reliable source of fuel supply, and redundancy capabilities.

5.5 Environmental Impacts of the Proposed Project

The Alternatives section evaluates potential alternatives that could avoid or minimize environmental impacts from the proposed project. For the proposed project, environmental impacts would be less than significant with the following proposed mitigation measures:

- **Air Quality** – The mitigation measure **AQ-1** would reduce air quality impacts during project construction. This measure requires incorporation of the Bay Area Air Quality Management District's (BAAQMD's) recommended construction best management practices (BMPs) to control fugitive dust. This measure also incorporates exhaust control measures to reduce emissions from construction equipment. With the implementation of **AQ-1**, PM10 and PM2.5 emissions during construction would be reduced to a level that would not result in a considerable increase of these pollutants.

  During readiness testing and maintenance, the oxides of nitrogen (NOx) emissions of the gensets are estimated to exceed the BAAQMD significance threshold of 10 tons per year. All other pollutants would have estimated emissions rates below BAAQMD significance thresholds. The NOx emissions from the emergency backup generator readiness testing and maintenance would be required to be fully offset through the BAAQMD permitting process.
- **Biological Resources** – Implementation of **BIO-1** would reduce potential construction impacts to protected raptors and other migratory birds to less than significant. **BIO-1** includes the following requirements: tree removal outside the nesting period if possible; nesting bird surveys prior to the initiation of any

construction activities during the nesting period; buffers to avoid the disturbance of nesting birds if active nests are detected; and consultation between the surveying ornithologist and California Department of Fish and Wildlife (CDFW) on the extent of modifications to construction-free buffer zones. In addition, **BIO-1** specifies that tree removal shall not occur in any tree with an active nest until the ornithologist has determined that the young have fledged, or the nest is no longer active.

Implementation of mitigation measure **BIO-2** would ensure less than significant construction impacts to trees covered by City of Santa Clara 2010-2035 General Plan (General Plan) policies 5.10.1-P4 and 5.3.1-P10 (Santa Clara 2010). **BIO-2** requires the project owner to implement any tree replacement and tree protection measures included as part of approval of the final design package by the City of Santa Clara Community Development Department.

With implementation of **BIO-1** and **BIO-2**, construction of the project would not have a substantial adverse effect on biological resources.

- **Cultural and Tribal Cultural Resources** – Proposed mitigation measure **CUL-1** would require a qualified archaeologist and a Native American cultural resources monitor to monitor the grading of native soil once the demolition of existing structures and pavement is complete. **CUL-1** also would require: Worker Environmental Awareness Training for identification of potential cultural and tribal cultural resources; procedures for avoidance of any discovered resources; and procedures for assessing and handling any discovered resources. This mitigation 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** would require specific notification protocols to address the handling of any inadvertently discovered human remains. Combined, mitigation measures **CUL-1** and **CUL-2** would ensure any potential impacts to human remains would be less than significant.

  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** – Implementation of mitigation measure **GEO-1** would ensure less than significant impacts to paleontological resources from construction. **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, with the city ensuring implementation of the paleontologist's plans.

- **Greenhouse Gas Emissions** – The LDC would have a less than significant impact on greenhouse gas (GHG) emissions with the implementation of mitigation measures **GHG-1** and **GHG-2**. **GHG-1** would require the applicant to use renewable diesel as fuel for the gensets, as proposed by the applicant. CEC staff (staff) also proposes mitigation measure **GHG-2** to require the applicant to participate in Silicon Valley Power's Large Customer Renewable Energy (LCRE) program or other renewable energy program that accomplishes the same objective as Silicon Valley Power's LCRE program for 100 percent carbon-free electricity or purchase renewable energy credits or similar instruments that accomplish the same goals of 100 percent carbon-free electricity. The implementation of **GHG-1** and **GHG-2** 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** and **GHG-2**, the project's GHG emissions would not have a significant direct or indirect impact on the environment. With the implementation of **GHG-1** and **GHG-2**, 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 soil found during construction to minimize health risks. With the implementation of **HAZ-1**, construction of the project would create a less than significant impact to the public or the environment.
- **Hydrology and Water Quality** – Staff proposes mitigation measure **HYD-1**, which would require implementation of BMPs included in the Storm Water Pollution Prevention Plan (SWPPP) during construction. With implementation of **HYD-1**, the project would not be expected to violate water quality standards or waste discharge requirements during construction and operation, and impacts would be less than significant.
- **Noise** – The implementation of **NOI-1** would require a noise complaint and redress process to ensure construction noise impacts as perceived by the community would be less than significant.
- **Transportation** – The operation of the project would generate vehicle miles traveled (VMT) that would exceed the city's thresholds of environmental significance. **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 and Not Evaluated Further

This section discusses alternatives initially considered but ultimately not evaluated further due to infeasibility 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 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 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, most of 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, and construction noise impacts) or would be similar at another location in the Santa Clara region (e.g., cultural and tribal cultural resources impacts and geology and soils impacts [including paleontology]). Other sites further away from the San Jose International Airport may not require coordination with the San Jose Airport Department or the Federal Aviation Administration. However, with project modifications and issuance by the San Jose Airport Department of a revised avigation easement, the project would not cause impacts to aircraft and would be consistent with airport policies. (See Sections **4.9 Hazards and Hazardous Materials**, **4.11 Land Use and Planning**, and **4.17 Transportation** for more details.)

Furthermore, the applicant has already acquired the project site, located close to existing operational data centers, and with a General Plan land use and zoning designation appropriate for the proposed use. Acquiring an alternative site might be costly and infeasible if a suitable site (with needed infrastructure and a land use designation consistent with data center uses) 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.

5.6.2 Biodiesel Fuel Alternative

Another alternative initially considered but ultimately not evaluated is biodiesel fuel technology. Biodiesel, or Fatty Acid Methyl Ester (FAME), is a domestically produced renewable fuel. Like renewable diesel, FAME can be manufactured from a variety of biomasses, such as vegetable oils, animal fats, and grease. However, FAME is not the

same as renewable diesel. Biodiesel has different fuel properties than renewable diesel and must meet certain specifications given by the 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 2022). Biodiesel is generally blended with conventional diesel at a 5 percent to 20 percent ratio (Government Fleet 2016). Its physical properties approximate 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 gensets.

Potential Feasibility Issues

Biodiesel fuel currently suffers from technical problems, making it an unsuitable substitution for the conventional diesel proposed for use by the project. 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. Biodiesel is more hygroscopic than renewable diesel, meaning that it attracts more water (Farm Energy 2019). Water can accumulate in biodiesel fuel during transportation and storage, and 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 renewable diesel. Both conditions affect the function of the fuel filter, pump, and injectors in the fuel system of an engine, increasing project costs and the number of engine maintenance cycles. These issues could also result in voided engine warranties.

In addition to these technical problems, 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 2009). Biodiesel is also expensive, and to date, the operating hours for biodiesel fuel use are minimal, so it is not an industry standard.

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

5.6.3 Fuel Cell Alternatives

Another alternative considered but dismissed from further evaluation is fuel cell technology. 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 ranges, 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 2014).

Solid Oxide Fuel Cells (SOFCs) 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. SOFCs most commonly use natural gas as fuel but can also use biogas and gases made from coal as fuel (U.S. DOE 2022a). Carbon monoxide (CO) is a product of the chemical reaction created by the fuel and steam molecules. SOFCs are resilient and not susceptible to CO poisoning, which 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 its information technology (IT) load of 6 megawatts (MW), 24 hours a day, all year, with the electric grid as its backup power supply. Additionally, some data centers (i.e., Apple and Equinix) have supplemented their base load power demand (for 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 Knowledge 2013). However, SOFCs providing power for 100 percent base load demand are not yet industry standard for large-scale data centers.

Because it takes time to reach critical operating temperatures, SOFCs have slow startup times, sometimes up to 60 minutes (GenCell 2022). Data centers must have a constant electricity supply, with even a momentary outage risking the loss of data; therefore, they require fast startup from their backup power generators. SOFCs also have a slow response to electricity demand (GenCell 2022). This can pose a problem for data centers, as their IT and cooling load demands constantly fluctuate. Cooling must be able to keep the internal temperature of the data center buildings steady for the IT servers' optimal performance and must be able to respond quickly to changes in environmental conditions (such as ambient air temperature and humidity). The rapid changes in electricity demand could outpace the SOFCs' ability to provide the needed power supply to the data center.

Another constraint of SOFCs is that due to high operating temperatures, they require the use of costly durable materials. Also, the lack of a sufficient supply of fuel cell components is a concern for potential big users of SOFCs, such as data centers. According to the Clean Energy Institute, there is currently a limited production of SOFC components to meet the needs of major users (ZDNet 2021).

SOFCs would utilize the underground natural gas pipeline system for fuel. 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 has two nearby independent gas distribution lines available for connection.

PEM Fuel Cells Alternative

Another potentially suitable fuel cell technology for backup energy generation is PEM fuel cell technology (U.S. DOE 2022a). PEM fuel cells are typically used for low-power applications that require intermittent backup power, such as mobile services or small stationary applications, like 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 of 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 backup generation system, which is approximately the capacity needed for the LDC, the footprint required for the backup generation system itself would be approximately 32,000 square feet, or 0.73 acre. Should onsite fuel storage be needed, which would be likely, the footprint would further increase. (See the next section "Potential Feasibility Issues" for more discussion.)

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 genset requires. Hydrogen can either be piped into the site or made onsite 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 large amounts of CO (Fuel Cell Store 2019).

Potential Feasibility Issues

There are potential feasibility issues in using PEM fuel cells for LDC backup generation. Issues involving onsite fuel storage, the current pipeline infrastructure, and onsite generation of hydrogen would make it difficult to provide fuel to the PEM fuel cells, as discussed below.

Onsite Fuel Storage. A 1-MW PEM fuel cell consumes approximately 65 kilograms (kg) of hydrogen fuel per hour (Ballard 2022). The proposed project would need fuel for a backup duration of up to 24 hours. The amount of hydrogen needed per 1-MW fuel cell for 24 hours of operation would be approximately 1,560 kg.[1] Thus, the project would need approximately 156,000 kg of hydrogen for 100 MW of fuel cells to operate for 24 hours (not including redundant fuel cells).

The simplest way to store large volumes of hydrogen would be to compress it. Hydrogen can be compressed to less than 0.42 percent of its gas volume at atmospheric pressure. The gauge pressure of hydrogen stored as a high-pressure gas is approximately 3600 pounds per square inch (U.S. DOE 2001). Compressed hydrogen could be transported and stored onsite on a Type IV trailer, which is approximately 53 feet long, 8.5 feet wide, and 13 feet tall and would support eight 25-foot-long hydrogen cylinders with a total capacity of 1,152 kg (Catec 2022). The project would need approximately 136 trailers

1 Hydrogen fuel calculation: 65 kg per hour x 24 hours = 1,560 kg of hydrogen per 1-MW fuel cell

and 62,000 square feet, or 1.5 acres, of space onsite to store fuel for 100 MW of fuel cells for up to 24 hours of operation.

Alternatively, the project could construct a storage system that includes one to several pressure vessels to store such a large amount of compressed hydrogen. The project site would need storage for approximately 300,000 cubic feet,[2] or over 7 acre-feet of compressed hydrogen for 100 MW of fuel cells (not including redundant fuel cells). However, due to the amount of compressed hydrogen needed, the storage space required for this amount of compressed hydrogen is not available on the project site.

Hydrogen can also be stored in liquid form, known as liquid hydrogen gas (LHG), to reduce its volume and thus its storage footprint. LHG storage requires a smaller footprint than compressed hydrogen gas for the same hydrogen fuel capacity. LHG could be transported and stored on the same trailer type as compressed hydrogen. However, LHG would have a larger volume of hydrogen capacity, approximately 4,451 kg, stored in a single hydrogen cylinder (Cryogenic 2022). To store the fuel needed for 100 MW of fuel cell capacity for 24 hours of operation, the project would need approximately 36 trailers for LHG storage, which would require 17,000 square feet, or 0.5 acre, of space onsite. This amount of space may not be available on the project site.

Alternatively, as mentioned above, the project could construct a storage system that includes one to several pressure vessels to store a large amount of LHG. The project would need approximately 80,000 cubic feet, or 2 acre-feet, of liquid hydrogen gas (LHG) for 100 MW of fuel cells (as compared to 300,000 cubic feet, or over 7 acre-feet, for compressed hydrogen gas). However, this amount of space may not be available on the project site.

Although LHG has the benefit of requiring a smaller footprint than compressed hydrogen, problems exist with storing the liquid. 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, which requires a temperature of minus 423 degrees Fahrenheit. 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. The release in gas occurs at a rate of approximately 1 percent per day (Army Logistician 2000).

Other constraints exist for both compressed and liquified hydrogen storage systems. Safely managing these systems would require special expertise and equipment, which would add to the cost and complexity of 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.

2 Compressed Hydrogen fuel conversion calculation: 65 kg per hour x 24 hours x 1/240 compression ratio x 423.3 cubic feet per kg x 100 MW = 275,100 cubic feet for 100 MW fuel cell

Additionally, permits for the storage of hazardous materials would be needed pursuant to the City Code. The presence of such storage systems would also likely raise concerns of public safety (for example, due to the flammability of hydrogen) and introduce new impacts not found in the proposed project.

Pipeline Infrastructure. Supplying hydrogen to the project through pipelines is another possible way of providing fuel for the PEM fuel cells alternative. For large applications, such as the proposed project, hydrogen would need to be supplied through multiple pipelines to mitigate onsite storage challenges and increase reliability. However, according to the U.S. Department of Energy (U.S. DOE 2022b), 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 in the pipelines; the need to control hydrogen permeation 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 2022). 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 Store 2019). Methanol is a liquid, like conventional diesel, and can be stored onsite. 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), which is a greenhouse gas emission, that may be released into the atmosphere, leading to GHG impacts. 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 (U.S. DOE 2022c).

A 1.0-MW PEM electrolyzer, the size of a 40-foot ISO container[3], can generate 18 kg of hydrogen per hour. For a 100-MW system, the footprint required for the system would be 32,000 square feet, or approximately 0.73 acre. For every one kg of hydrogen produced, the electrolyzer would need 10 kg of water and 49.9 kWh of energy (GenFuel 2021). 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 onsite for future use during emergency generation. As discussed earlier under "Onsite Fuel Storage", onsite storage of hydrogen has feasibility issues including storage space, the need for specialized equipment, BOG, and concerns about public safety.

SOFC and PEM Fuel Cells Feasibility Conclusion. In summary, fuel cells for large-scale backup generation are not fully proven and have various feasibility constraints, including storage space, BOG, the need for specialized equipment, concerns about public safety, and undetermined reliability. 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 LDC's proposed use of diesel-powered gensets.

5.6.4 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

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

startup times and are therefore considered suitable for backup power for data centers. These large battery banks are called battery energy storage systems (BESS).

Data centers currently use smaller 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[4]. 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 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 (used as a single and primary backup generation system during grid outages) for a data center's load demands would require ample onsite storage space for long outage durations. To date, a 400-MW/1600 megawatt-hours (MWh) (supplying 400 MW continuously for 4 hours) BESS is the largest one successfully deployed (Energy Storage 2022). 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 that there was a proposal, the Gilroy Backup Generating Facility, 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 (GBGF 2021). The design of this proposal included 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. However, this project has since been canceled and the application has been withdrawn from the CEC proceedings.

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 onsite 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 needed. 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

4 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.

would then be subject to stricter building code fire protection requirements. Reducing the footprint would also increase the project cost.

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 possible and has happened in some 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 2022). There are extensive mitigations, codes and standards, and a comprehensive regulatory framework in place that apply to battery storage to ensure a standard level of reliability for facility operations. However, even with these mitigations in place, risks such as thermal runaway could affect the reliability of the data center and increase the chance that data could be lost. Loss of data would be very disruptive for an operation whose topmost goal is protecting data against loss and guaranteeing continuous and uninterruptable access to data. Furthermore, if a single cell or cluster of the battery system fails, the entire project may be shut down for investigation.

Another constraint of a standalone BESS is that once discharged, the batteries would require power to recharge. Further design considerations would be needed to make this happen. Finally, 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 (for a discharge duration of approximately 13 hours) along with the 45 gensets. The battery system would supply backup power for a duration of approximately 13 hours and once the batteries have been discharged, the 44 gensets would serve to back up the battery system 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 for a tandem BESS 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 the tandem BESS' 6,300 square feet of battery storage, as battery storage would not allow enough space around the building for an access road. 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 higher than the national average, costing $1,522 per kWh (U.S. EIA 2020). In addition, the required reliability of the tandem BESS would need to be ensured. The electrical and electronic interface between the batteries and gensets would need to be tested to ensure operational reliability, with many large-scale data centers requiring at least 99.999 percent reliability.

As previously mentioned, after the batteries are discharged for backup power, they need to be recharged when grid service is restored. Because 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 undesirable as it would require additional gensets onsite and fuel use, defeating the purpose of deploying batteries to reduce gensets and fuel consumption.

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 photovoltaic (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 (CEC 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 rather, providing 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.

5.6.5 Decision to Eliminate These Alternatives from Further Consideration

The applicant's objectives are to develop a data center using proven technology currently in use, that is considered industry standard or best practice, is technically feasible for the project, and is reliable. An alternative project site, biodiesel fuel, fuel cells, and battery storage alternatives were eliminated from further consideration as alternatives 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 and Comparison to the Proposed Project

The following alternatives were selected for full evaluation in this EIR:

- Alternative 1: No Project/No Build Alternative
- Alternative 2: Natural Gas Internal Combustion Engines

The No Project/No Build Alternative is required for analysis for every project according to CEQA Guidelines section 15126.6(e). The other project alternative listed above is one that appeared more feasible than the dismissed alternatives (discussed earlier) that could avoid or reduce the proposed project's potentially significant impacts. The following analysis includes a comparative analysis of the impacts of each alternative, as well as an assessment of each alternative's feasibility and ability to meet the project objectives. It is assumed that the project site location would remain the same under these alternatives.

The comparative analysis below 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 Alternative 2.

5.7.1 Alternative 1: No Project/No Build Alternative

The project site is comprised of two parcels. The main project parcel is currently developed with two 2-story office buildings, totaling 326,000 square feet, and paving for parking and loading. The second project parcel, where the project's substation is proposed for location, has an existing data center that is not part of the project. Under the No Project/No Build Alternative, 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** of this EIR, the project site has a General Plan land use designation of Heavy Industrial, which "allows primary manufacturing, refining and similar activities…(and) also accommodates warehousing and distribution, as well as data centers"(Santa Clara 2010). The project site is also zoned Heavy Industrial, which allows any manufacturing, processing, assembling, research, wholesale, or storage uses that do not result in objectionable hazards or nuisances (Santa Clara 2022). The Heavy Industrial zoning district also allows any land uses permitted in the Planned Industrial and Light Industrial zoning districts, including a variety of office, laboratory, testing, and repair facilities. The site could eventually be approved for such uses 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 the LDC, 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 objective of developing a data center would not be attained.

5.7.2 Alternative 2: 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 renewable diesel. Natural gas ICEs are available in capacities of up to 18 MW each. Their physical dimensions vary in size depending 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 diesel genset assembly for the project is 30.2 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 onsite fuel storage would be different. However, it is assumed under this alternative 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 while the ICEs start up. 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.

Air Quality and Public Health

Staff compared criteria air pollutant emissions and CO_2 emissions of natural gas ICEs against the proposed renewable diesel-fired engines for the LDC. The proposed project's

44 3.0-MW engines and one 1.0 MW engine would be equipped with SCR (selective catalytic reduction) and DPFs (diesel particulate filters) 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 ICE Alternative, information is primarily based on the data provided for the San José Data Center (SJDC) application (Jacobs 2021a) (Docket #19-SPPE-04). (The CEC adopted an order approving the small power plant exemption for the SJDC on July 13, 2022.) The natural gas ICEs for the SJDC will be equipped with a 3-way catalyst system to reduce emissions of NOx, CO, volatile organic compounds (VOCs), and air toxics. The applicant for the SJDC also assumed 15 minutes of operation with uncontrolled emissions and 45 minutes of operation with controlled emissions to estimate hourly emissions (Jacobs 2021b).

Staff compared the emission factors in pounds per megawatt-hour (lbs/MWe-hr) for diesel-fired engines similar to those proposed for the LDC and the natural gas ICEs proposed at the SJDC. Staff assumed the same 15-minute warm-up period for the SCRs of the diesel engines and the 3-way catalyst system of the natural gas ICEs. As shown in **Table C-3** of **Appendix C**, compared to diesel-fired engines, the emission factors in lbs/MWe-hr for natural gas ICEs would decrease by: more than 98 percent for NOx emissions; more than 79 percent for PM emissions; approximately 82 percent for VOC emissions; approximately 79 percent for CO emissions; and approximately 46 percent sulfur dioxide (SO_2) emissions.

It should be noted that the emission factors for the diesel-fired engines shown in **Table C-1** of **Appendix C** are based on the use of petroleum-based diesel. However, for the LDC, the applicant has proposed to use renewable diesel as the primary fuel for the engines, with ultra-low sulfur, petroleum-based diesel serving as a secondary fuel to be used only when renewable diesel is unavailable. The California Air Resources Board (CARB) 2021 testing report shows that for diesel engines with SCR and DPF, there are no statistically significant differences in NOx, PM, and total hydrocarbon emissions using renewable diesel when compared to ultra-low sulfur, petroleum-based diesel (CARB 2021). For CO emissions, depending on the testing cycle used, there are either no statistically significant differences (or emissions were already below background levels) between renewable diesel and ultra-low sulfur, petroleum-based diesel, or there are 5 to 44 percent decreases using renewable diesel compared to ultra-low sulfur, petroleum-based diesel. Ideally, this should be confirmed with testing under controlled conditions using the same size of engine proposed for this facility and employing the same test cycle used for engine certification. With this currently available information, staff expects the comparison of criteria air pollutant emissions from use of natural gas as fuel versus ultra-low sulfur, petroleum-based diesel as fuel, as shown in **Table C-1** of **Appendix C**, to be similar to the comparison of natural gas versus renewable diesel, as proposed for this project. However, the exact percent reduction in CO emissions using renewable diesel

versus ultra-low sulfur, petroleum-based diesel would be different depending on the testing cycle used.

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 for the proposed renewable diesel engines due to the reductions reported for VOCs and PM.

Staff acknowledges that the operational profile may be different for the natural gas ICEs than for the proposed project, and annual emissions for the natural gas ICEs may be higher because they may operate more based on other project applications, such as providing grid support services to offset cost differences. 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 assumes a similar operating profile when comparing the emission factors in lbs/Mwe-hour for the natural gas ICEs and those for the renewable diesel-fired engines for the proposed project. While staff does not assume any additional operational cost of the natural gas ICEs, the capital cost of natural gas ICEs may be more expensive.

Air quality impacts using natural gas ICEs are expected to be *much less* than those that would occur with the proposed renewable 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 renewable diesel-fired engines. These conclusions would remain the same regardless of whether the fuel used for the project was renewable diesel or conventional ultra-low sulfur, petroleum-based diesel.

Greenhouse Gas Emissions

As shown in **Table C-1** of **Appendix C**, natural gas-fueled ICEs would reduce GHG emissions by approximately 8 percent from conventional diesel-fired engines. However, the applicant has proposed to use renewable diesel as primary fuel in the proposed engines. Mitigation measure **GHG-1** would require the applicant to use renewable diesel for 100 percent of total energy use by the gensets, and only use ultra-low sulfur diesel as a secondary fuel in the event of supply challenges or a disruption in obtaining renewable diesel. CARB's 2021 testing report (CARB 2021) shows that the tailpipe CO_2 emissions would reduce about 3 to 4 percent using renewable diesel compared to ultra-low sulfur, petroleum-based diesel. Therefore, the tailpipe CO_2 emissions of natural gas ICEs would only be about 4 to 5 percent lower than those for the proposed engines using renewable diesel.

To have a more complete understanding of the impact of replacing diesel with natural gas, 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. As shown in **Table C-2** of **Appendix C**, when extending to the full fuel cycle, GHG emissions from natural gas ICEs fueled with pipeline natural gas produced from fossil feedstocks would be about 20 percent lower than those from conventional diesel as indicated by the carbon intensity

values. Moreover, natural gas feedstocks from some renewable feedstocks may have a much lower carbon intensity. The carbon intensity values of most renewable feedstocks are even negative, reflecting a net reduction in fuel cycle carbon emissions. However, **Table C-2** of **Appendix C** also shows that there are 61 to 83 percent reductions in carbon intensity values using renewable diesel in place of ultra-low sulfur, petroleum-based diesel. Therefore, for the natural gas ICEs to remain an environmentally superior alternative to the proposed diesel engines using renewable diesel, they would be required to use a certain percentage of renewable natural gas to reduce the fuel cycle GHG emissions. Since there are uncertainties regarding how much renewable natural gas would be used, the comparative impact is *likely similar* 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 carbon intensity 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 45 total backup gensets (including the life safety genset that would 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: onsite storage and pipeline connection.

Onsite Fuel Storage. Onsite 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 space, but the needed storage volume would still be substantially larger than that of diesel fuel.[6,7] LNG would also need to be stored and distributed with specialized equipment, including storage 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. To mitigate the loss of fuel and gas release into the atmosphere allowing the LNG to maintain its liquid state, BOG can be re-liquefied 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 also need to undergo a regasification process for the fuel to be used in natural gas

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

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 207 gallons per hour x 44 gensets x 24 hours = 218,592 gallons

ICEs. Both reliquefication and regasification would result in additional processes, equipment, and footprint.

In addition, 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. Also, permits for the storage of hazardous materials would be needed pursuant to the City Code.

Pipeline Infrastructure. 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. Based on PG&E's gas transmission pipeline map, the two closest locations for independent natural gas pipeline connections are one adjacent to the project site on Lafayette Street and one approximately 2.6 miles west of the project site on the Lawrence Expressway.[8] Under the pipeline infrastructure scenario, the project's primary pipeline would connect to the nearby gas line on Lafayette Street. Another pipeline connecting to the gas line at Lawrence Expressway could also be installed to provide added reliability. Convention dictates 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.

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 2.6 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.

The installation of natural gas pipelines could cause temporary impacts during construction. Staff assumes that 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 in the areas of Air Quality, Biological Resources, Cultural and Tribal Cultural Resources, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, and Transportation). These mitigation and project design measures would reduce any potential impacts from gas pipeline construction to less than significant levels.

However, for the LDC to provide the same level of reliability with ICEs as it would with diesel gensets, or a 99.999 percent availability factor, the ICE fuel delivery system must not be susceptible to any disruptions. Although two natural gas pipelines are available for the LDC and PG&E has verified that the project can connect to both pipelines, due to the pipelines' susceptibility to natural disasters (e.g., earthquakes) as well as accidents, the ICE fuel delivery and storage system may provide a slightly lower level of reliability than

8 Along Central Expressway to Lawrence Expressway.

has been demonstrated by the diesel fuel delivery and storage system for many data centers.

The CEC recently issued a Small Power Plant Exemption for the SJDC, mentioned earlier in this section. This project, which is owned by Microsoft but not yet in operation, will use natural gas ICEs for backup generation during grid outages and will be used for its own Microsoft-affiliated clients (Jacobs 2021b). The SJDC site contained two separate natural gas pipelines providing the necessary redundancy without the need for constructing a long pipeline as would be the case with the LDC. Therefore, the ICE technology for the LDC may be rendered infeasible due to the requirement for construction of a 2.6-mile gas pipeline through Santa Clara to support backup generators that would be infrequently used.

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 for the LDC because it would avoid the potentially significant impacts of the proposed project. However, Alternative 1 would not meet any of the project objectives.

Staff compared Alternative 2 to the proposed project and determined that it has some advantages in terms of reducing impacts. Staff also examined the potential for Alternative 2 to meet the project's basic objectives. Staff's conclusions are summarized below.

5.8.1 Alternative 2: Natural Gas Internal Combustion Engines

Criteria air pollutant emissions, and therefore 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. The GHG impacts of this alternative would *likely be similar* to those of the LDC due to uncertainties regarding how much renewable natural gas would be used.

Staff considers Alternative 2 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 onsite depending upon the MW sizing and physical dimensions. As discussed earlier, two gas pipeline connections are available and are likely needed if the ICE technology is implemented for LDC. Permitting and construction of the new pipelines would take time to complete, and natural gas would not factor as reliable as conventional diesel fuel due to the gas pipelines' susceptibility to natural disasters and accidents.

Table 5-1 (below) summarizes the environmental impacts of 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 alternative selected for analysis (Alternative 2).

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

Environmental Topics and Impacts	Proposed Project	No Project/No Build	Natural Gas ICEs
Criteria air pollutants	LTS with Mitigation	No Impact	LTS with Mitigation (Much Less)
Toxic Air Contaminants (TACs)	LTS	No Impact	LTS (Likely Less)
GHG emissions	LTS with Mitigation	No Impact	LTS with Mitigation (Likely Similar)

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

Army Logistician 2000 – *Hydrogen as an Alternative Fuel*. By Peter Kushnir. Army Logistician: Professional Bulletin of United States Army Logistics, PB 700-00-3. Vol. 32, Issue 3, May/June 2000. Accessed June 2022. Available online at: https://web.archive.org/web/20080808053811/http://www.almc.army.mil/alog/issues/MayJun00/MS492.htm

Biodiesel Magazine 2021 – *Renewable Diesel's Rising Tide*. By Tom Bryan. Biodiesel Magazine, January 12, 2021. Accessed September 2022. Available online at: http://www.biodieselmagazine.com/articles/2517318/renewable-diesels-rising-tide

Catec 2022 – Composite Advanced Technologies (Catec). Gas Transport & Storage Solutions: Compressed Hydrogen Specifications. Accessed June 2022. Available online at: https://www.catecgases.com/_files/ugd/4c0a17_ecc5679f3d6c49bc831ad8be64916231.pdf

CEC 2021 – California Energy Commission (TN 237776). Building Energy Efficiency Measure Proposal to the California Energy Commission for the 2022 Update to the California Energy Code, Title 24, Part 6; Building Energy Efficiency Standards, Nonresidential PV and Battery Storage (Docket 21-BSTD-01). Section 3.2.2 Battery Systems. January 2021. Prepared by NORESCO and E3. Energy Code Measure Proposal – 2022-NONRES-PV-D. Accessed July 21, 2022. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-BSTD-01

Cryogenic 2022 – Cryogenic Industrial Solutions. New Generation Liquid Hydrogen Large Trailer. Accessed June 2022. Available online at: https://www.cryoindsolutions.com/hydrogen

Data Center Knowledge 2013 – *eBay Goes Live With its Bloom Powered Data Center*. By Rich Miller. Data Center Knowledge, September 26, 2013. Accessed September 2022. Available online at: https://www.datacenterknowledge.com/archives/2013/09/26/ebay-goes-live-with-its-bloom-powered-data-center

Energy Storage 2022 – *Expansion plan to take the world's biggest battery storage project to 3GWh capacity*. By Andy Colthorpe. Energy Storage News, January 2022. Accessed June 2022. Available online at: https://www.energy-storage.news/expansion-plan-to-take-worlds-biggest-battery-storage-project-to-3gwh-capacity/

Farm Energy 2019 – *Biodiesel Fuel Quality*. By Dev Shrestha, Associate Professor of Bioenergy, Department of Biological and Agricultural Engineering, National Biodiesel Education Program, University of Idaho. Farm Energy, April 3, 2019. Accessed September 2022. Available online at: https://farm-energy.extension.org/biodiesel-fuel-quality/

Fuel Cell Store 2019 – *Processing Alternative Fuels for Fuel Cells*. By Dr. Colleen Spiegel. Fuel Cell Store, posted March 26, 2019. Accessed September 2022. 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 2022 – GenCell (GenCell). Comparing Fuel Cell Technologies. Accessed May 2022. Available online at: https://www.gencellenergy.com/news/comparing-fuel-cell-technologies/

GenFuel 2021 – GENFUEL (Plug Power). The 1MW Electrolyzer. May 20, 2021. Accessed June 2022. 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. August 20, 2021. Accessed May 2022. Available online at: https://www.plugpower.com/wp-content/uploads/2020/08/GenSureHP_082021_R2.pdf

Jacobs 2021a – 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

Jacobs 2021b – 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

Microsoft 2014 – *Fuel Cells for Data Centers: Power Generation Inches from the Server*. By L. Zhao, J. Brouwer, J. Liu, S. James, J. Siegler, A. Kansal, and E. Peterson. Microsoft Research Technical Report MSR-TR-2014-37, March 2014. Accessed September 2022. Available online at: https://www.microsoft.com/en-us/research/wp-content/uploads/2016/02/FCDC-TechReport.pdf

Mitsubishi 2022 – Mitsubishi Electric. Thermal Runaway, What Is It and How to Prevent It. Accessed September 2022. Available online at: https://www.mitsubishicritical.com/resources/blog/thermal-runaway/

NREL 2019 – National Renewable Energy Laboratory. *A Comparison of Fuel Choice for Backup Generators*. By Sean Ericson and Dan Olis. Technical Report NREL/TP-6A50-72509. March 2019. Accessed January 2021. Available online at: https://www.nrel.gov/docs/fy19osti/72509.pdf

Santa Clara 2010 – City of Santa Clara (Santa Clara). City of Santa Clara 2010-2035 General Plan. Adopted on November 16, 2010. Accessed June 2022. https://www.santaclaraca.gov/our-city/departments-a-f/community-development/planning-division/general-plan

Santa Clara 2022 – City of Santa Clara (Santa Clara). Santa Clara City Code. Current through Ordinance 2040, passed January 11, 2022. Accessed June 2022. Available online at: https://www.codepublishing.com/CA/SantaClara/

UNESCO 2009 – United Nations Educational, Scientific, and Cultural Organization. World Water Assessment Programme (UNESCO WWAP), 2009 data. Accessed September 2022. 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 2001 – U.S. Department of Energy (U.S. DOE). U.S. DOE Office of Energy Efficiency and Renewable Energy. Hydrogen Fuel Cell Engines and Related Technologies, Module 1: Hydrogen Properties. College of the Desert, Revision 0, December 2001. Accessed April 2022. Available online at: https://www1.eere.energy.gov/hydrogenandfuelcells/tech_validation/pdfs/fcm01r0.pdf

U.S. DOE 2022a – U.S. Department of Energy (U.S. DOE). U.S. DOE Office of Energy Efficiency and Renewable Energy. Types of Fuel Cells. Accessed May 2022. Available online at: https://www.energy.gov/eere/fuelcells/types-fuel-cells

U.S. DOE 2022b – U.S. Department of Energy (U.S. DOE). U.S. DOE Office of Energy Efficiency and Renewable Energy. Hydrogen Pipelines. Accessed June 2022. Available online at: https://www.energy.gov/eere/fuelcells/hydrogen-pipelines

U.S. DOE 2022c – U.S. Department of Energy (U.S. DOE). U.S. DOE Office of Energy Efficiency & Renewable Energy. Hydrogen Production: Electrolysis. Accessed June 2022. Available online at: https://www.energy.gov/eere/fuelcells/hydrogen-production-electrolysis

U.S. DOE 2022d – U.S. Department of Energy (U.S. DOE). U.S. DOE Office of Energy Efficiency and Renewable Energy. Alternative Fuels Data Center. Accessed June 2022. Available online at: https://afdc.energy.gov/fuels/emerging_hydrocarbon.html

U.S. EIA 2020 – U.S. Energy Information Administration (U.S. EIA). *Utility-scale battery storage costs decreased nearly 70% between 2015 and 2018*. Principal contributors: Sara Hoff and Alexander Mey. October 23, 2020. Accessed June 2022. Available online at: https://www.eia.gov/todayinenergy/detail.php?id=45596

U.S. EIA 2022 – U.S. Energy Information Administration (U.S. EIA). Biofuels Explained. Updated on: March 2022. Accessed May 2022. Available online at: https://www.eia.gov/energyexplained/biofuels/

ZDNet 2021 – *Data centers want to be a lot greener – One big problem is holding them back*. By Daphne Leprince-Ringuet. January 25, 2021. Accessed April 2022. 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

Lead Agency—California Energy Commission

Technical Staff / Section Authors

Abdel-Karim Abulaban (Wildfire, Utilities/Service Systems, Hydrology/Water Resources)
Andrea Koch, Brett Fooks, Ken Salyphone, Joey Hughes, Shahab Koshmashrab, Brewster Birdsall (Alternatives)
Ann Chu (Air Quality, Environmental Justice)
Ann Crisp, Tia Taylor (Biological Resources)
Ashley Gutierrez (Transportation)
Brett Fooks (Hazards and Hazardous Materials)
Ellen LeFevre (Environmental Justice, Mandatory Findings of Significance, Public Services, Recreation, Population and Housing)
Gabriel Roark, Cameron Travis (Cultural and Tribal Cultural Resources)
Garry Maurath (Minerals, Geology/Soils (including Paleo))
Jacquie Record, with Brewster Birdsall (Air Quality, Greenhouse Gas Emissions)
Jeanine Hinde (Agriculture/Forestry, Land Use)
Kenneth Salyphone, Shahab Koshmashrab (Energy/Energy Resources, Alternatives, Noise, MFOS, Appendix A, Appendix B)
Mark Hamblin (Aesthetics)
Mark Hesters and Laiping Ng (Appendix B, Project Description)
Wenjun Qian (Appendix C)

Supervision and Management

Joseph Hughes, Air Quality Unit Supervisor
Steven Kerr, Community Resources and CEQA Unit Supervisor
Gabriel Roark, Cultural Unit Supervisor
Shahab Koshmashrab, Engineering Branch Manager
Brett Fooks, Facility Design and Inspections Unit Supervisor
Abdel-Karim Abulaban, Geo Sciences Unit Supervisor
Mark Hesters, Infrastructure Planning Unit
Eric Knight, Siting and Environmental Branch Manager
Elizabeth Huber, Division Director—Siting, Transmission and Environmental Protection Division

Project Management/Legal/Administrative

~~Eric Veerkamp~~ Lisa Worral, Project Manager
Jared Babula, Staff Counsel
Marichka Haws, Administrative Specialist

Section 7

Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM

Lafayette Backup Generating Facility
20-SPPE-02
~~April~~ October 2023

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 ~~Draft~~ Final Environmental Impact Report prepared for the Lafayette 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 ~~Draft~~ 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				
	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? Impact 4.3-c Expose sensitive receptors to substantial pollutant concentrations?					
AQ-1: To ensure that fugitive dust impacts are less than significant, the project will implement BAAQMD-recommended Best Management Practices (BMPs) during the construction phase. The project owner also 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 require the project owner to do or ensure the following: • 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	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)

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
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. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. • Post a publicly visible sign with the telephone number and person to contact at the Lead Agency and the on-site job superintendent dust complaints. • Install vegetative ground cover in disturbed areas as soon as possible and water appropriately until vegetation is established.					

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
• 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 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. • As a condition of contract, require all on-road heavy-duty trucks to be zero emissions or meet the most stringent emissions standard, such as model year (MY) 2024 to 2026, as available. Use grid power for construction activities whenever possible; if grid power is not available, use alternative power such as battery storage, hydrogen fuel cells, or renewable fuels. If no other options are available, use Final Tier 4 diesel generators. • 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. • Sandbags or other erosion control measures shall be installed to prevent silt runoff to public					

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
roadways from sites with a slope greater than one percent. • All contractors use equipment that meets CARB's most recent certification standard for off-road heavy-duty diesel engines. 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.					
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, The project will incorporate the following to reduce impacts to nesting birds: • If possible, construction activities, including removal of trees and vegetation clearing shall take place between September and January. If construction activities, including tree removal and vegetation clearing, must occur during the nesting season (February 1 through August 31) a preconstruction 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. Between February 1 through August 31 (inclusive) pre-construction surveys shall be conducted no more than 14 days prior to the initiation of construction activities, including tree removal or vegetation clearing. Surveys will be repeated if project	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~~,~~ permit by the city arborist~~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 permit by the city arborist~~, demolition, or grading activity~~

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
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 State of California, Department of Fish and Wildlife (CDFW), designate a construction-free buffer zone around the nest. The size of all buffer zones will initially be a 250-foot radius around the nest of non-raptors and a 500-foot radius around the nest for raptors. 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 will commence until the ornithologist and the City of Santa Clara, in consultation with CDFW, verify that the nest(s) are no longer active. If an active bird nest is discovered during construction, then a buffer zone shall be established under the guidelines specified.					
• The ornithologist shall submit a copy of the pre-construction nest survey report(s) indicating the results of the survey and any designated buffer zones to the City of Santa Clara's Director of Community Development prior to the start of construction activities or the issuance of permit (s) for tree removal, demolition or grading. The report(s) will contain maps showing the location of all nests,	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

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**
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 will be provided within 10 days of completing a pre-construction nest survey.					
Impact 4.4-e Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?					
BIO-2: Avoid and Minimize impacts to trees through the following: • Remove trees #1-25, 30-32, 42-97, 99-273,275-313, 316-328, 330-332, 335-354, 411, 414, 420-433, 440-442, 446-448, 450-453, 456-470, 475, and 476 upon approval from the city of Santa Clara. • Remove deadwood from remaining Callery pears and Raywood ashes. This will benefit both tree health and worker safety. • All tree work must be completed by trained tree care personnel under the direction of an International Society of Arboriculture Certified Arborist. • The Applicant shall alert the Project Arborist when new drawings are available showing grading, utilities, retention area details, or material changes to project features. • Tree protection fencing shall be installed prior to any demolition equipment entering the site. ○ Fencing shall be installed at or outside the tree protection areas of all trees to be retained.	Obtain tree removal permits from the City's department of Community Development 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	Prior to the removal of any trees To coincide with demolition activities	Director of Community Development Director of Community Development	Approved permits, including tabulation of final tree mitigation numbers Retain final tally of trees retained and indicate said trees on final landscape plans	Prior to tree removal work At the conclusion of construction

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
○ Where existing pavement is within tree protection zones, install tree protection fencing at the edge of pavement. After demolition, relocate tree protection fencing to the edge of the tree protection area. ○ Install tree protection fencing at the edge of the project features. ○ For areas where no construction will occur, tree protection fencing will be installed at the perimeter of the area instead of around each tree individually. ○ Spread wood chips at least four inches thick within tree protection fencing. • For existing hardscape to be demolished within tree protection zones: ○ Demolish the area nearest the tree first and work outwards. ○ Do not operate machinery on unpaved areas within tree protection zones. ○ Upon completion of demolition, relocate tree protection fencing to at or outside the tree protection area. • Minimize grading near trees. Do not complete any grading inside tree protection fencing. • If live roots over one inch in diameter are encountered at any time, in any location, they must be pruned with a sharp saw or bypass pruners, as close to the edge of the excavation as possible. If roots over three inches in diameter are encountered, do not prune, but					

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**
instead contact the Project Arborist to determine the best course of action. • Irrigate all trees to be retained on a monthly basis with potable water, in the absence of heavy rain. ○ Irrigate using a soaker hose placed as close to the tree driplines as practical. Irrigate for 2-4 hours at a very low flow. If this causes runoff, reduce the flow rate. If this is impractical for any tree for any reason, contact the Project Arborist.					
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? Impact 4.5-e, (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-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 grading of native soil once all pavement is removed from the project site. The project applicant shall submit the name and qualifications of the selected archaeologist and Native American Monitor to the Director of Planning and Inspection prior to the issuance of a grading permit. Preference in selecting	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 of Community Development)	Review and approve the archaeologist and Native American monitor's qualifications	Before issuance of permits for any ground disturbing activities (trenching, grading, excavation)

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
Native American monitors shall be given to Native Americans with: o Traditional ties to the area being monitored. o Knowledge of local historic and prehistoric Native American village sites. o Knowledge and understanding of Health and Safety Code, Section 7050.5 and Public Resources Code, Section 5097.9 et seq. o Ability to effectively communicate the requirements of Health and Safety Code, Section 7050.5 and Public Resources Code, Section 5097.9 et seq. 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. o Ability to travel to project sites within traditional tribal territory. o Knowledge and understanding of Title 14, California Code of Regulations, Section 15064.5. o Ability to advocate for the preservation in place of Native American cultural features through knowledge and understanding CEQA mitigation provisions. o Ability to read a topographical map and be able to locate site and reburial locations for future inclusions in the Native American					

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**
Heritage Commission's Sacred Lands Inventory. ○ Knowledge and understanding of archaeological practices, including the phases of archaeological investigation.					
• After 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. The archaeologist will monitor full-time all grading and ground disturbing activities in native soils associated with 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 Director of Planning and Inspection. Department of Recreation 523 forms shall be submitted along with the report for any cultural resources encountered over 50 years old.	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)
	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)
• In the event that 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 Director of Planning and Inspection 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	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	Director of Community Development; Secretary of the Interior-qualified archaeologist	Review monitoring logs as needed	During grading and ground disturbing 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**
Department of Parks and Recreation 523 Primary Record form. The archaeologist shall make a recommendation 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 Director of Planning and Inspection has concurred with the recommendations. Within 30 days of the completion of 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 Director of Planning and Inspection. Once finalized, this report shall be submitted to the Northwest Information Center at Sonoma State University.	Request for reduction in monitoring based on results	During ground disturbing activities	Director of Community Development	Review and approve request to reduce monitoring	During grading and ground disturbing activities
	Work shall be stopped if cultural resources are encountered within a 50' radius	During ground disturbing activities	Director of Community Development	Review and approve work stoppage	During grading and ground disturbing activities
	Examination of the find and recordation on DPR 523 forms along with a determination of eligibility and recommendation for data recovery or curation	While ground disturbing activities are halted and prior to returning to work	Secretary of the Interior-qualified archaeologist	Record on DPR forms with eligibility and curation recommendations	During grading and ground disturbing activities
	A final report shall summarize the findings documenting any cultural resources found during construction	Within 30 days of completion of construction or cultural resources monitoring	Director of Community Development	Review and approve final report	Within 30 days of completion of construction or cultural resources monitoring
• 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 applicable laws and penalties under the laws; samples or visual aids of 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 resources discovery, and	Submittal of the final report to the NWIC	Upon finalization of the report	Director of Community Development Secretary of the Interior-qualified archaeologist	Obtain proof of submittal to NWIC	Upon finalization of the report
	WEAP training shall be provided for all existing and new employees	Prior to and during ground disturbing activities		Review and approve WEAP submitted by archaeologist and	Prior to and during ground disturbing 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**
notify the city-approved archaeologist and Native American cultural resources monitor.				Native American monitor	
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? Impact 4.5-c, Disturb any human remains, including those interred outside of dedicated cemeteries? Impact 4.5-e, (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: • In the event that human remains are discovered during on-site construction activities, all activity within a 50-foot radius of the find shall be stopped. The Santa Clara County Coroner shall be notified and shall make a determination as to 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 shall notify the Native American Heritage Commission. All actions taken under this mitigation measure shall comply with Health and Human 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-f Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?					
GEO-1: The project proposes to implement the following measures to ensure impacts to paleontological resources are reduced to less than significant.	The contractor shall require training in recognition of fossils/artifacts. The contractor shall stop work	Prior to any subsurface excavations	Director of Community Development or director's designee of the	Receive copy of excavation and salvage plan AND final paleontological	First, if and when fossils are discovered AND second, following

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**
• 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. • 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 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	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		City of Santa Clara	mitigation plan/report Review and approve final plans/reports and ensure the findings of the report are integrated into the final recommendations	completion of construction

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**
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? 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: The project owner shall use renewable diesel for 100 percent of total energy use by the gensets, and only use ultra-low sulfur diesel (ULSD) as a secondary fuel in the event of supply challenges or disruption in obtaining renewable diesel. The City of Santa Clara Community Development Department (CDD) may grant temporary relief from the 100 percent renewable diesel requirement if the project owner can demonstrate a good faith effort to comply with the requirement and that compliance is not practicable. 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 CDD demonstrating compliance with the mitigation measure.	Use renewable diesel as the primary fuel and ULSD as a secondary fuel in the event of supply challenges or disruptions	During project operation	Director of Electric Utility Department	The project owner shall provide an annual report of renewable diesel supply and distribution	Annually
GHG-2: The project owner shall participate in SVP's Large Customer Renewable Energy (LCRE) Program or other renewable energy program that accomplishes the same objective as SVP's LCRE	Ensure that 100 percent of the renewable electricity purchased is	Prior to local approval of project entitlements and	Director of Electric Utility Department	The project owner shall provide proof of enrollment in SVP's LCRE or	Annual or other proof of recurring enrollment

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**
Program for 100 percent carbon-free electricity, or (2) purchase renewable energy credits or similar instruments that accomplish the same goals of 100 percent carbon-free electricity. During Operation, the project owner shall provide documentation to the director, or director's designee, of the city of Santa Clara Electric Utility Department of initial enrollment and shall submit annual reporting to the director, or director's designee, of the city of Santa Clara Electric Utility Department documenting either continued participation in SVP's LCRE Program of documentation that alternative measures continue to provide 100 percent carbon-free electricity as verified by an independent third-party auditor specializing in greenhouse gas emissions.	covered by carbon-free resources	during the operational phase		other acceptable instrument and annual report, with verification by a qualified third-party auditor specializing in greenhouse gas emissions	
HAZARDS AND HAZARDOUS MATERIALS					
Impact 4.9-b 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 of 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. • 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	The project owner shall 1) take soil samples in accordance with an approved soil sampling plan, 2) document the results of the sampling, and 3) develop a Site Management Plan to establish handling and management practices	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 Hazardous Materials Division	Prior to the issuance of grading permits

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
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. • 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. • 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: • 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: 1) a detailed discussion of the site background,					

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
2) a summary of the analytical results, 3) a Health and Safety Plan prepared by an industrial hygienist, 4) protocols for conducting earthwork activities in areas where impacted soil and/or groundwater are present or suspected, 5) a description of worker training requirements, health and safety measures and soil handing procedures, 6) protocols to characterize/profile soil suspected of being contaminated so that appropriate mitigation, disposal or reuse alternatives, if necessary, can be implemented, 7) a notification procedure if previously undiscovered significantly impacted soil or groundwater is encountered during construction, 8) a notification procedure if previously unidentified hazardous materials, hazardous waste, or underground storage tanks are encountered during construction, 9) on-site soil reuse guidelines; 10) sampling and laboratory analyses of excess soil requiring disposal at an appropriate off-site waste disposal facility, 11) soil stockpiling protocols; and,					

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**
12) 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. • 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.					
HYDROLOGY AND WATER QUALITY					
Impact 4.10-a Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?					
HYD-1: The Lafayette Data Center will incorporate the following into the design and these measures should be treated as mitigation incorporated into the project. The following will reduce construction-related water quality impacts.	The project owner shall determine the level of existing contamination on site via testing of water samples (and soil as	Prior to the issuance of demolition permits	Director of Community Development or director's designee of the	Submit summary of placement of material/measure, amounts of water applied, and a list of plantings	At commencement of demolition and throughout until completion of construction

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**
• Burlap bags filled with drain rock shall be installed around storm drains to route sediment and other debris away from the drains. • Earthmoving or other dust-producing activities shall be suspended during periods of high winds. • All exposed or disturbed soil surfaces shall be watered at least twice daily to control dust as necessary. • Stockpiles of soil or other materials that can be blown by the wind shall be watered or covered. • All trucks hauling soil, sand, and other loose materials shall be required to cover all trucks or maintain at least two feet of freeboard. • All paved access roads, parking areas, and staging areas adjacent to the construction sites shall be swept daily (with water sweepers). • Vegetation in disturbed areas shall be replanted as quickly as possible.	necessary), establishing a baseline		city of Santa Clara		
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. • 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.	Implement the City's municipal code and measures to reduce noise levels. Use best available noise control technologies.	During the construction phase 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 Review and approve the schedule of	During the construction phase Prior to the start of demolition and

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**
• 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. If the project coordinator and complainant cannot reach consensus on a noise complaint, the project coordinator shall notify the City's Director of Planning or director's designee of the Santa Clara Department of Planning, Building and Code Enforcement. • 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. • Prior to the start of construction, notify, in writing, the residents within 800 feet from the center of the project site of the construction schedule and provide a written schedule of "noisy" construction activities to the adjacent land uses. • Include the telephone number for the disturbance coordinator construction of the site in the above notice regarding the construction schedule sent to the community. • The project owner shall orient construction equipment and locate construction staging	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	construction activities		"noisy" construction activities	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**
areas within the project site away from its neighbors as much as practicable. 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 traveled (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: • The operations workforce at the project shall work a 4-40 work schedule (40 hours in 4 days). 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 conducting of driveway traffic counts annually to	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
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. 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 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, 4.4-c, 4.5-a, 4.5-b, 4.5-c, 4.5-e, and 4.7-f~~					
~~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-4, CUL-1**, **CUL-2, GEO-1, GHG-1, GHG-2**, **HAZ-1**, **NOI-1, TRANS-1**. See impact 4.3-b, 4.3-c, 4.4-a, 4.4-c, 4.5-a, 4.5-b, 4.5-c, 4.7-f, 4.8-a, 4.8-b, 4.9-b, 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?~~					

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
~~**AQ-1**, **GEO-1, HAZ-1, HYD-1, NOI-1** See impact 4.3-b, 4.3-c, 4.7-f, 4.9-b, 4.10-a, and 4.13-a~~					

Source: California Energy Commission. ~~Draft~~ Final Environmental Impact Report for Lafayette Data Center/Backup Generating Facility. ~~April~~ October 2023.

Section 8

Responses to Comments

8 Response to Comments

8.1 Introduction

This section presents responses to the comments received during the 45-day public review period for the Draft Environmental Impact Report (DEIR) (April 7, 2023 through May 22, 2023). Additionally, staff received an Airport Land Use Commission (ALUC) consistency determination for the project after the public comment period on July 21, 2023. In that determination, ALUC staff included comments on the project to refine some of the section language. These language refinements have been incorporated into **Section 4.9 Hazardous and Hazardous Materials**, **Section 4.11 Land Use and Planning**, and **Section 4.17 Transportation**. None of the comments from the ALUC impact or alter the facts underlying staff's analysis and determination of project impacts on the environment and energy resources.

A Notice of Availability of the Draft Environmental Impact Report was sent out to the project's mailing list. The California Energy Commission (CEC) received one comment letter from the Santa Clara Valley Water District.

The individual comments are numbered in the comment letter, 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 Environmental Impact Report (FEIR) shown as ~~strikeout~~ for deletions of text, and as underline for new text. The response references the general location of the revisions. All revisions made to the EIR clarify or amplify existing analysis and information or make other insignificant modifications. No significant new information has been added requiring the recirculation of the EIR as set forth in California Code of Regulations, title 14, section 15088.5.

8.2 Comment Letter and Responses

Staff's response follows the comment letter.

Comments: Santa Clara Valley Water District

Comment Received From: Valley Water
Submitted On: 5/15/2023
Docket Number: 20-SPPE-02

Valley Water File 34935 - NOA of DEIR for Lafayette Backup Generating Facility Project

The Santa Clara Valley Water District (Valley Water) has reviewed the Draft Environmental Impact Report (DEIR) for the Lafayette Backup Generating Facility located at 2825 Lafayette Street in Santa Clara, received on April 7, 2023.

Based on our review, we have the following comments:

1. The discussion on inundation zones on page 4.10-7 notes the site is within the inundation area of 2 reservoirs but only identifies Lexington reservoir. The document should note the site is not only within the Lenihan Dam inundation zone but also the Leroy Anderson Dam Inundation Zone.
2. Page 4.10-2 notes the site is located in Flood Zone AH with depths of flooding of one to three feet. However, according to the Federal Emergency Management Agencyâ€™s (FEMA) Flood Insurance Rate Map (FIRM) 06085C0227H, effective May 18, 2009, only a portion of the project site is located in Zone AH, a special flood hazard area (SFHA) with a base flood elevation of 40 feet, and the remaining portion of the site is located in Zone X, an area with reduced flood risk due to a levee.
Page 10.10-7 also incorrectly notes the flooding expected would be one to three feet instead of identifying the base flood elevation of 40 feet identified on the FIRM panel. The discussion of flooding on both pages needs to be updated for accuracy.
Additionally, the flood discussion on Page 4.10-7 notes though the site is located near the Guadalupe River and San Tomas Creek â€œthese waterways do not pose a likely flood risk.â€ This statement appears to contradict the fact that at least a portion of the site is located within a SFHA with flooding from the Guadalupe River. Please revise the flood discussion for accuracy.
3. Valley Water records indicate that 2 active wells are located within the project site; one on each APN: 224-04-093 and 224-04-094. If the wells will continue to be used following the permitted activity, they need to be protected so that it does not become lost or damaged during completion of permitted activity. If the wells will not be used following permitted activity, they must be properly destroyed under permit from Valley Water, in accordance with Valley Water Ordinance 90-1. While Valley Water has records for most wells located in the County, it is always possible that a well exists that is not in Valley Waterâ€™s records. If previously unknown wells are found on the subject property during development, they must be properly destroyed under permit from Valley Water or registered with Valley Water and protected from damage.
4. Valley Water does not have any right of way or facilities at the project site; therefore, in accordance with Valley Watersâ€™ Water Resources Protection Ordinance, a Valley Water encroachment permit is not required for the work.

Please let me know if you have any questions regarding the comments. This has been

assigned to Valley Water File 34935. Please reference this number on future correspondence regarding this project.

Thank you,
Matthew Sasaki

Responses to Comments: Santa Clara Valley Water District

These comments identify minor technical details that improve the technical accuracy of the analysis. However, these details do not impact or alter the facts underlying staff's analysis and determination of project impacts on the environment and energy resources. New information added clarifies or makes insignificant modifications to the EIR. The EIR will be revised to address these items as noted below:

Response to Comment 1. According to the Santa Clara Valley Water District (SCVWD) publication; *Inundation Map for the Hypothetical Fair Weather Failure of Leroy Anderson Dam*, sheet 24 of 69 (SCVWD 2019), the subject site is outside of the hypothetical inundation zone. The inundation area shown adjacent to the project site's northeast corner is within the Central Expressway right of way and outside of APN 244-04-093. Revisions to, the EIR are not necessary.

Response to Comment 2. It is noted that based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) 06085C0227H, Zone AH only covers the eastern and southeast edges of the site (FEMA 2009). With respect to the description of Zone AH on pages 4.10-7, the FIRM defines Zone AH as flood depths of 1 to 3. Using Google Earth, elevations within the depicted special flood hazard area Zone AH are 27 feet or greater, so given the flood elevation of 40 feet, the statement in the EIR is still valid. A minor revision to the EIR was made to note the location of Zone AH on the project site, as shown below and in **Section 4.10 Hydrology and Water Quality**, page 4.10-4.

4.10.1 Environmental Setting

…

Flooding

The average elevation of the existing project site is approximately 40 feet above the 1988 North American Vertical Datum (NAVD88) (USGS 2018). According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) 06085C0227H, effective May 18, 2009, the eastern and southeastern edges of the project site ~~is~~are located within Zone AH. Zone AH is a special flood hazard area subject to inundation by the one percent annual chance of flood (100-year flood). Flood depths of one to three feet would be expected during the 100-year flood.

The project site is not within an area mapped as vulnerable to sea level rise in the National Oceanic and Atmospheric Administration's Digital Coast, Sea Level Rise Viewer (NOAA 2021).

The reference to Guadalupe River and San Thomas Aquino Creek waterways should be noted as a possible, instead of an unlikely, flood risk. The EIR was revised accordingly as shown below and in **Section 4.10 Hydrology and Water Quality**, page 4.10-7.

c. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces in a manner which would:

…

iv. Impede or redirect flood flows?

Construction and Operation

Less Than Significant Impact. ~~The~~Though the site is located near the Guadalupe River and San Tomas Aquino Creek, ~~these waterways do not~~ which pose a ~~likely~~possible flood risk. According to FIRM 06085C0227H, effective May 18, 2009, the project site is located within Zone AH. Zone AH is a special flood hazard area subject to inundation by the 100-year flood. Flood depths of one to three feet would be expected during the 100-year flood.

Response to Comment 3. Based on Valley Water's comment regarding the two wells, identified as M-3 and M-4, staff researched the issue further and obtained additional clarifying information from the applicant. While well M-4 is active, the well is not on the project site and would not be lost or damaged due to the project (DayZen 2023h). Thus, no updates to the EIR are necessary. Regarding well M-3 the EIR was updated to reflect that while the location of well M-3 was lost sometime during 2004 or 2005, the applicant has since located the well beneath the pavement. The applicant will be working with Santa Clara Valley Water District to properly abandon the well if it has not already been decommissioned. The text below and in **Section 4.10 Hydrology and Water Quality**, page 4.10-7 notes the edits made to the EIR.

a. Would the project violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Construction and Operation

…

The applicant proposed a mitigation measure to reduce potential impacts to water quality. Staff evaluated this mitigation measure in the context of the potential impacts and concludes that the mitigation measure is sufficient. Staff proposes mitigation measure **HYD-1** which outlines implementation of best management practices (BMPs) included in the SWPPP. With implementation of **HYD-1**, the project would not be expected to violate water quality standards or waste discharge requirements during construction and operation, and impacts would be less than significant.

A records search has revealed the presence of a monitoring well (M-3) from a former contaminated groundwater investigation at the project site (SWQCB 2023). The location of this monitoring well was lost sometime during 2004 or 2005. However, the applicant has since investigated the location and discovered that the well was beneath the pavement. The applicant will be working with Santa Clara Valley Water District to properly abandon the well if it has not already been decommissioned. (DayZen 2023h). The proper abandonment of the well consistent with the requirements of the Santa Clara Valley Water District will ensure there will be no impacts to ground water from project construction.

Response to Comment 4. It is noted that an SCVWD encroachment permit will not be necessary to properly destroy wells. Revisions to the EIR are not necessary.

8.3 References

DayZen 2023h – Digital Realty Comments on the DEIR Regarding Monitoring Well 3 (TN 252347), September 22, 2023. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=20-SPPE-02

FEMA 2009 – Federal Emergency Management Agency (FEMA). FEMA's National Flood Hazard Layer (NFHL) Viewer, Panel No. 06085C0227H effective May 18, 2009. Accessed on: November 23, 2022. Available online at: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd&extent=-121.9026729380225,37.39865747819159,-121.88739507547326,37.40718029041653

SCVWD 2019 – Santa Clara Valley Water District (SCVWD). Inundation Map for the Hypothetical Fair Weather Failure of Leroy Anderson Dam, Federal Dam ID: CA00294, State Dam ID: 72-009. 69 Sheets. November 2019. Accessed on September 23, 2022. Available online at: https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2.

Appendix A

Project's Jurisdictional and Generating Capacity Analysis

Appendix A: Project's Jurisdictional and Generating Capacity Analysis

The Lafayette Backup Generating Facility and Data Center (LDC or project) proposed by Digital Realty would include 45 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 LDC (the distribution line would only allow power to flow in one direction—from PG&E electrical transmission line to the project.

There are other Digital Realty-owned data centers in the city of Santa Clara. The nearest one is located approximately four miles from the LDC project site. There would be no common facilities between LDC and any other Digital Realty's data center. Therefore, the project is considered an independent data center for the purpose of jurisdictional determination.

Forty-four gensets would have a nameplate output capacity of 3.0 megawatt (MW) and continuous steady-state output capacity of 2.25 MW. In addition, one life safety genset would have a capacity of 800-kilowatts. The maximum total facility load requirements would not exceed 99.8 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 LDC 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 45 gensets should be aggregated and considered as one thermal power generating facility with a generation capacity of greater than 50 MW.

3. While the project has an apparent installed generation capacity greater than 100 MW (44 gensets, each with 3.0 MW peak capacity, and one 0.8 MW admin/life safety genset), the "extra" MW installed are redundant. In no case would the maximum facility-wide load demand exceed 99.8 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 LDC load requirement would be 99.8 MW.
5. The gensets would be exclusively connected to the LDC 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 LDC facility with more than 99.8 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. LDC 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.) LDC'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 LDC.

LDC's 45 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

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

gensets would operate to provide backup electricity to the project when its connection to the grid is lost. The gensets system includes a 4-to-make-3 design configuration, meaning that for every three gensets that would support load in the event of a utility failure, there is one redundant genset. The 45 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 LDC 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 99.8 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 LDC, 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 LDC, 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,

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 LDC, 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 "LDC grid" does. If the breakers between the LDC 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 99.8 MW IT and building demand.

4. LDC's capacity would not exceed 99.8 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 99.8 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 99.8 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 LDC data center. The LDC 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 99.8 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 LDC 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. LDC 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 LDC is at full load, its worst-case day combined IT and building load[6] would not exceed 99.8 MW. The project proposes gensets that total more than 99.8 MW for purposes of redundancy. The combined generating capacity of the installed operational gensets is autonomously determined by the electrical equipment in the LDC server bays and building equipment in use at the time of an emergency. LDC has been designed with one generation yard, configured as 11 data center suites or lineups. Each lineup would consist of four gensets, one of which would be redundant. The emergency operation of each of the data center lineups is fully automated. Once LDC loses connection to the local grid, the transfer switch isolates LDC from the local electrical transmission grid, and all the gensets assigned to a server bay set initiate startup. As the gensets start, synchronize,

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

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 LDC customers' data servers from the grid to the gensets. If a genset or two fail to start or synchronize, the remaining genset in the 4-to-make-3 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 LDC 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 LDC server bays and building equipment.

Combined output would be limited by sizing the electricity handling equipment to throttle transfer capacity to no more than 99.8 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 99.8 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, Related Pacific Gas and Electric Company's Transmission System and Emergency Operation

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

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 Lafayette Data Center (LDC). 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 LDC. There are essentially five conditions that might result in the operation of the gensets:

1. A fault occurs (power supply interruption) or planned maintenance is required on the equipment interconnecting LDC to the SVP 60 kV loop system, and LDC's electricity needs cannot be met.
2. 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 LDC.
3. A Public Safety Power Shutoff (PSPS) impacts the utility transmission system, and LDC is not able to receive power from SVP.
4. An energy shortage crisis similar to the one in late Summer 2020 where there are electric supply shortages and LDC's operators voluntarily disconnect from the utility and rely on gensets to provide the needed electricity.
5. The Generators could also run when the utility/The California Independent System Operator (California ISO) declared a grid emergency calls for participants in the Emergency Load Reduction Program (ELRP) or Demand Side Grid Support (DSGS) programs to reduce loads.

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 LDC, 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. Two broadly implemented PSPSs in the PG&E service territory during the fall of 2020 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 LDC's electricity needs and LDC 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 data centers 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.

Similarly, like the ELRP program, data centers may participate in the DSGS Program. The DSGS program offers incentives to electric customers that provide load reduction and backup generation to support the state's electrical grid during extreme events, reducing the risk of blackouts. According to the Energy Commissions website, the DSGS program was created by Assembly Bill (AB) 205 (Ting, Chapter 61, Statutes of 2022) as part of the Strategic Reliability Reserve, the DSGS program would provide incentives to reduce customer net energy load during extreme events with upfront capacity commitments and per-unit reductions in net load (CEC 2023).

The ELRP and DSGS programs do 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 LDC 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 or DSGS programs to have any effect on the likelihood of the LDC gensets operating outside of testing and maintenance.

Still, staff expects the LDC 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. Also, LDC gensets would not be interconnected to the transmission or distribution grid and would not provide power to the grid.

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 Digital Realty's Lafayette Backup Generating Facility (LBGF). 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 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 LDC 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 as part of the proceeding from CA3 (DayZen 2021), to discern how redundant features allow SVP's system to provide greater reliability to data centers when compared with average SVP customers.

Project-specific design factors include the site-specific substation that would connect LDC to the SVP looped 60 kV system, a limited number of commercial customers on the looped 60 kV system, redundant transformers to supply LDC, and LDC'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 a 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

Comments as part of the proceeding from CA3 (21-SPPE-01) 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 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.

CEC 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)

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

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 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 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; 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 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 was started in May 2021 according to the CPUC website. (CPUC 2023a)[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 LDC would be operational until after the summer of 2023, based on these factors: 1) estimated construction schedule of 24 months to the initial occupancy of the building; 2) estimated completion of CEC exemption proceeding in mid to late 2023; 3) additional time needed for the city and BAAQMD to permit the project. Thus, LDC would not be online in time to be part of the first phase of ELRP. 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.

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

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 Lafayette gensets 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

The following questions were directed towards the CA3 Data Center (CA3DC) proceeding but descriptions of the overall SVP system as well as historical outage data would apply to any data centers, including the proposed LDC connecting to the SVP 60 kV system.

A. VDC Supplemental Responses to Data Requests 17-20 – 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. A schematic diagram of the SVP 230 kV, 115 kV and 60 kV transmission system, SVP System Map, and

C. 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 17-20 – CA3BGF on June 22, 2021 to staff's questions (including a table listing SVP system outages between January 1, 2009 to June 16, 2021)

17. 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 SPPE Application 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.

e. 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 remove balloons	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

DATE	LINE (S)	CAUSE	DURATION	CUSTOMERS OUT OF POWER
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
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

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.

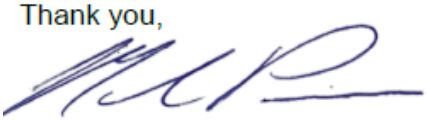
The specific details of this service and SVP system modifications required to provide this capacity for 2590 Walsh will be worked out in a Substation Service Agreement at a future date. The City is also in the process of reviewing and updating its load development fee, which will be applicable for any 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

881 Martin Avenue • Santa Clara, CA 95050 • 408-615-6600 • Fax 408-249-0217
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.

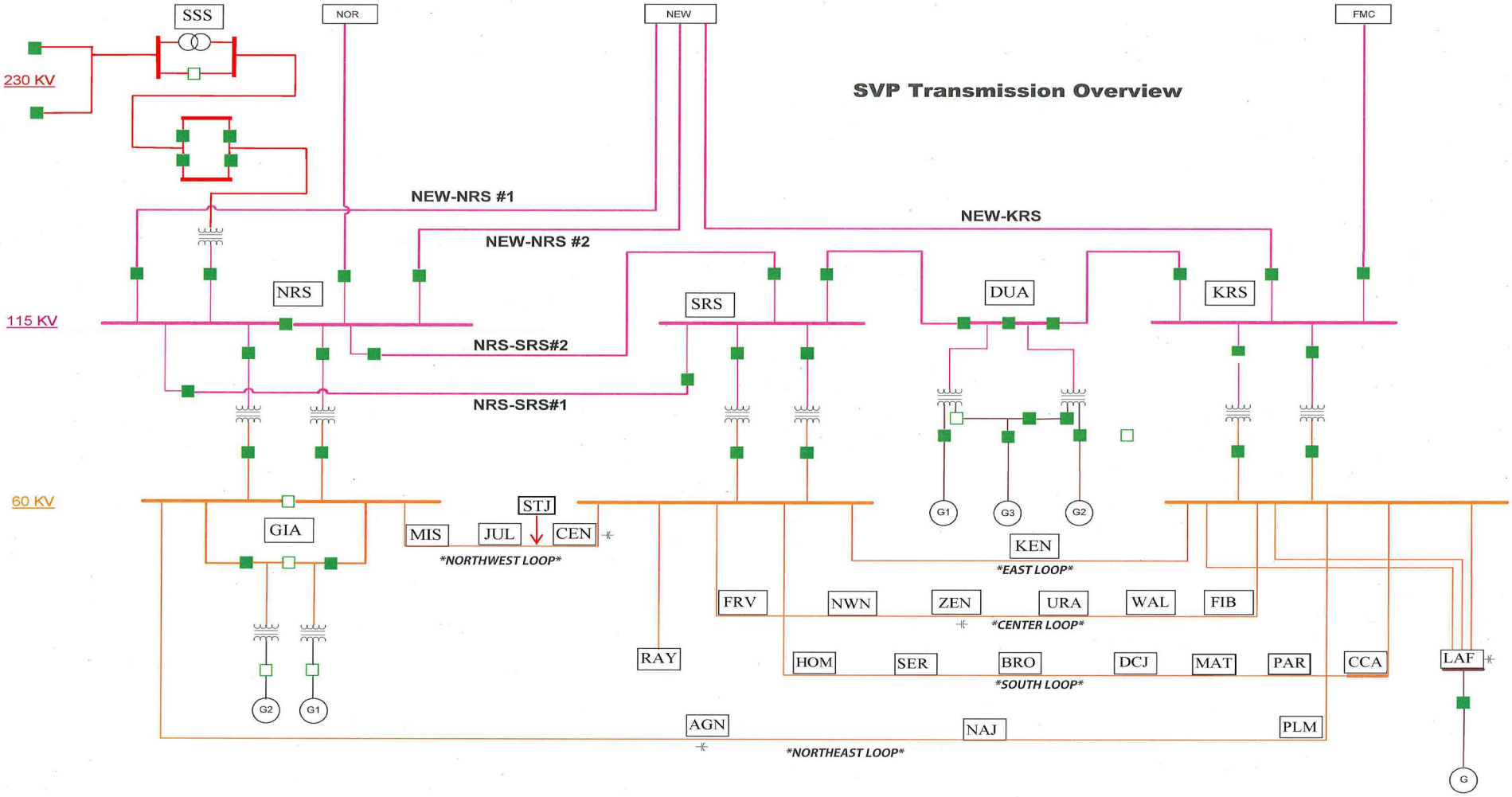
Thank you,

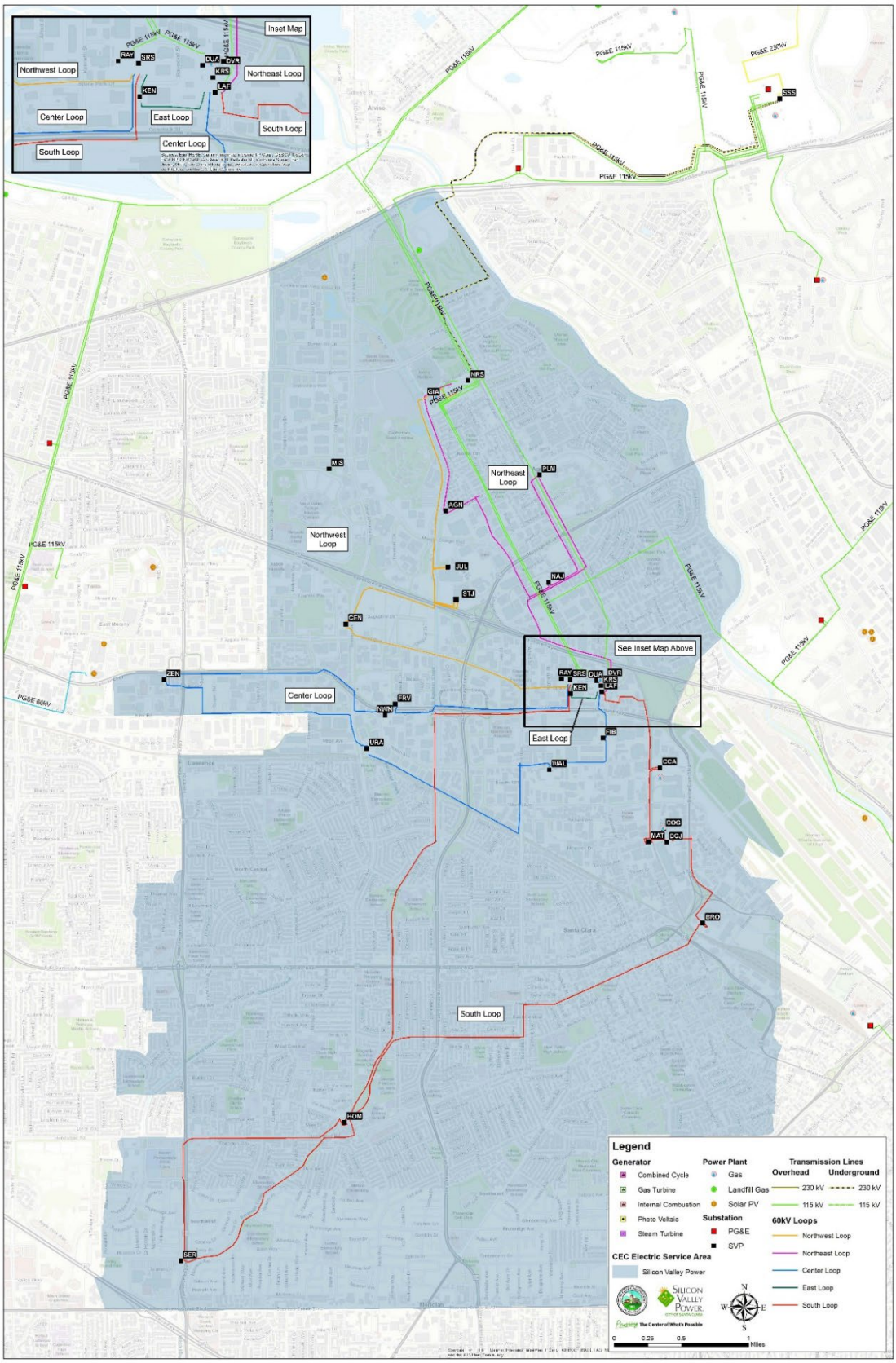


Manuel Pineda
Chief Electric Utility Officer
City of Santa Clara – Silicon Valley Power

cc: Michael Stoner

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


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
G1
G3
G2
KEN
EAST LOOP
FRV
NWN
ZEN
URA
WAL
FIB
CENTER LOOP
RAY
HOM
SER
BRO
DCJ
MAT
PAR
CCA
LAF
SOUTH LOOP
G2
G1
AGN
NAJ
PLM
NORTHEAST LOOP
G


Inset Map
Northwest Loop
Northeast Loop
Center Loop
East Loop
South Loop
Center Loop
South Loop
RAT
SRS
DUA
DVR
KRS
LAF
KEN
PG&E 115kV
PG&E 230kV
SSS
NRS
GIA
MIS
PLM
AGN
JUL
NAJ
STJ
GEN
See Inset Map Above
ZEN
FRV
NWN
URA
WAL
FIB
CCA
COG
MAT
SCI
BRO
SER
NOM
Legend
Generator
Combined Cycle
Gas Turbine
Internal Combustion
Photo Voltaic
Steam Turbine
Power Plant
Gas
Landfill Gas
Solar PV
Substation
PG&E
SVP
CEC Electric Service Area
Silicon Valley Power
Transmission Lines
Overhead
Underground
230 kV
115 kV
60kV Loops
Northwest Loop
Northeast Loop
Center Loop
East Loop
South Loop
Silicon Valley Power
Powering The Center of What's Possible
N
W
E
S
0
0.25
0.5
1
Miles

C. 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 hardware/software 2
Uranium	Center	Property Management1	Mission	Northwest	Real Estate7
Uranium	Center	Datacenter9	Mission	Northwest	Datacenter27
Uranium	Center	Datacenter10	Mission	Northwest	Software1
Uranium	Center	Datacenter11	Mission	Northwest	Computer hardware/software 3
Uranium	Center	Property Management2	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/Mfg	Raymond	Northwest	Datacenter32
Walsh	Center	Mfg9	Raymond	Northwest	Telecommunications3
Walsh	Center	Telecommunications1	Raymond	Northwest	Datacenter33
Walsh	Center	Datacenter13	Raymond	Northwest	Gaming/AI/Semiconductors5
Walsh	Center	Education6	Raymond	Northwest	Datacenter34
Walsh	Center	Datacenter14	Brokaw	South	Government3

SVP Loop Customers and Loading Peak - Substation

Substation	Loop	Customer/Industry	Substation	Loop	Customer/Industry
Zeno	Center	Education7	Brokaw	South	Education15
Zeno	Center	Education8	Brokaw	South	Education16
Zeno	Center	Semiconductor3	Brokaw	South	Education17
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/Mfg	Brokaw	South	Education18
Agnew	Northeast	Security1	Brokaw	South	Education19
Agnew	Northeast	Property Management3	CCA	South	Mfg12
Agnew	Northeast	Property Management4	DCJ	South	Datacenter35
Agnew	Northeast	Entertainment1	Homestead	South	Education20
Agnew	Northeast	NFL1	Homestead	South	Education21
Agnew	Northeast	Property Management5	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 Management6	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/ Semiconductors4	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 hardware/software 2	Education23
Property Management1		Cyber Security 1	Real Estate7	Education24
Datacenter9		Hotel2	Datacenter27	Education25
Datacenter10		Property Management6	Software1	Education26
Datacenter11		Mfg11	Computer hardware/software 3	Healthcare1
Property Management2		Datacenter/software/cloud computing	Cyber Security 2	Telecommunications 4
Education1		NFL2	Conventions 2	Education27
Education2		NFL3	Hotel3	Education28
Education3		NFL4	Medical3	Datacenter36
Education4		Education9	Cyber Security 3	Datacenter37
Semiconductor/ Telecommunications		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	

Center 141MW	East Loop 15MW	Northeast Loop 28MW	Northwest Loop 112MW	South Loop 65MW
Datacenter12		Semiconductor5	Telecommunications2	
Education5		Computer hardware/software 1	NFL5	
Government1			Datacenter29	
Government2			Datacenter30	
Semiconductor2			Datacenter31	
Semiconductor/R&D/Mfg			Datacenter32	
Mfg9			Telecommunications3	
Telecommunications1			Datacenter33	
Datacenter13			Gaming/AI/Semiconductors5	
Education6			Datacenter34	
Datacenter14				
Education7				
Education8				
Semiconductor3				
Datacenter15				
Bio Tech 1				
Semiconductor/Telecommuni				
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

CEC 2023 – California Energy Commission (CEC). Demand Side Grid Support (DSGS) Program, First Edition: accessed 2/22/2023 https://www.energy.ca.gov/publications/2022/demand-side-grid-support-dsgs-program-first-edition

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

CPUC 2023a – Public Utilities Commission Emergency Load Reduction Program website, accessed 2/21/2023. Available online at: https://www.cpuc.ca.gov/ELRP

DayZen 2021l – 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

DayZenL 2021v – DayZenLLC. (TN 239485). VDC Responses to CEC Data Request Set 3 – CA3BGF, dated August 26, 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

Natural Gas Supplemental Information

Appendix C: Natural Gas Supplemental Information

Natural Gas Internal Combustion Engines

Introduction

CEC staff (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 (gensets) 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 gensets 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.[1]

Cost Difference Between Natural Gas and Petroleum Diesel Emergency Backup Generators (Gensets)

The reliability of a system is an important consideration when selecting a genset. 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.

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 gensets 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 45

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

engines proposed at the project site as approximately 1 acre for 133 MW (peak power) or approximately 133 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 larger 44, 3.0-MW engines and 1 smaller 1-MW engine, or 45 engines total, 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 C-1 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.

It should be noted that the emission factors for the proposed larger Cummins C3000 engines shown in **Table D-1** are based on the use of petroleum-based diesel. However, the applicant has proposed to use renewable diesel as the primary fuel for the engines, with ultra-low sulfur diesel serving as a secondary fuel when renewable diesel is unavailable. The California Air Resources Board's (CARB) 2021 testing report (CARB 2021) shows that for diesel engines with SCR and DPF, there are no statistically significant differences in NOx, particulate matter (PM), and total hydrocarbon emissions using renewable diesel when compared to using ultra-low sulfur petroleum-based diesel. For CO emissions, there are either no statistically significant differences (or emissions were already below background levels) between renewable diesel and ultra-low sulfur petroleum-based diesel or 5 to 44 percent decrease using renewable diesel compared to ultra-low sulfur petroleum-based diesel, depending on the testing cycle used. Ideally, this should be confirmed with testing under controlled conditions in the same size of engine proposed for this facility and using the same source test cycle used for engine

certification. With the currently available information, staff expects the comparison results of criteria air pollutant emissions of the natural gas ICEs alternative to the proposed diesel engines using renewable diesel would be similar to those shown for conventional ultra-low sulfur diesel in **Table D-1**, except that the exact reduction percentage in CO emissions may be a little different depending on the testing cycle used.

TABLE C-1 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	4.75	0.09	-4.66	-98.2
PM	Lbs/MWe-hr	0.05	0.01	-0.04	-78.9
VOC	Lbs/MWe-hr	0.57	0.10	-0.47	-82.0
CO	Lbs/MWe-hr	8.23	1.68	-6.56	-79.6
SO_2	Lbs/MWe-hr	0.02	0.009	-0.01	-46.0
CO_2	Lbs/MWe-hr	1,564	1,440	-124	-7.9

Sources: (TN 233041-2), (TN 238218), 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

Table D-1 shows that the tailpipe CO_2 emissions of natural gas ICEs would be about 8.4 percent lower than those for the proposed engines with the use of ultra-low sulfur petroleum-based diesel. However, the applicant has proposed to use renewable diesel as primary fuel in the proposed engines. CARB's 2021 testing report (CARB 2021) shows that the tailpipe CO_2 emissions would reduce about 3 to 4 percent using renewable diesel compared to ultra-low sulfur petroleum-based diesel. Therefore, the tailpipe CO_2 emissions of natural gas ICEs would only be about 4 to 5 percent lower than those for the proposed engines using renewable diesel. Ideally, this should be confirmed with testing under controlled conditions in the size of engine proposed for this facility. However, to have a more complete understanding of the impact of replacing renewable diesel with natural gas, it is necessary to examine the full fuel-cycle of each fuel from origin to use. This is because greenhouse gas emissions (GHG) have a global impact rather than a local impact.

To compute full fuel-cycle GHG emissions, a model called GREET[2] is commonly used to evaluate full fuel-cycle GHG emissions for transportation. Although staff has not

2 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

computed fuel-cycle emissions using GREET, we can estimate the relative change in GHG emissions using carbon intensity values from the Low Carbon Fuel Standard (LCFS) program. Carbon intensity values obtained from the program[3] can be used to estimate the expected GHG emissions reductions associated with switching from ultra-low sulfur petroleum-based diesel to renewable diesel and natural gas in this project. CARB staff use a version of GREET called CA-GREET to compute carbon intensity values for the LCFS program.[4] 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.

Table D-2 shows the carbon intensity values of renewable diesel and natural gas compared to ultra-low sulfur petroleum-based diesel. For renewable diesel, the data shown 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 carbon intensity values include the feedstock and transport to California via oceangoing tanker. For comparison purposes, the carbon intensity for ultra-low sulfur petroleum-based diesel/CARB diesel has a value of 100.45, as shown at the bottom of the table. **Table D-2** shows that there are 61 to 83 percent reduction in carbon intensity values using renewable diesel in place of ultra-low sulfur petroleum-based diesel. However, renewable diesel still has some carbon associated with the fuel-cycle, as evidenced by the carbon intensity values in **Table D-2** not being zero, so additional measures would be needed before the project could be considered a carbon-free facility.

Carbon intensity values shown in **Table D-2** indicate that natural gas ICEs fueled with pipeline natural gas produced from fossil feedstocks have a carbon intensity about 20 percent lower than petroleum diesel. Natural gas feedstocks from renewable feedstocks have a carbon intensity 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-2** below reflect this outcome. Converting these feedstocks

---

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.

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

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

into a fuel would provide substantial societal benefits since the feedstock would otherwise be contributing directly to global warming. For the natural gas ICEs to remain an environmentally superior alternative to the proposed project using renewable diesel for GHG, it would be required to use certain percentage of renewable natural gas to reduce the fuel cycle GHG emissions.

A recent study done for the State Water Resources Control Board by Carollo Engineers[5] 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 to 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 ($MTCO_2e$) 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 C-2 CARBON INTENSITY VALUES COMPUTED FROM CA-GREET MODEL

Feedstock	Carbon intensity (CI)	Percent Reduction From Petroleum Diesel (%)
Renewable Diesel		
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
Natural Gas		
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
Ultra-Low Sulfur Diesel/CARB Diesel	100.45	0

5 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.

While renewable natural gas would result in a net reduction in fuel-cycle carbon emissions, 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*.[6] 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.

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 C-2**, *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 the project would be considered a carbon-free facility.

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

References

CARB 2021 – California Air Resources Board (CARB). Low Emission Diesel (LED) Study: Biodiesel and Renewable Diesel Emissions in Legacy and New Technology Diesel Engines, Final Report – November 2021. Accessed July 2022. Available Online at: https://ww2.arb.ca.gov/resources/documents/low-emission-diesel-led-study-biodiesel-and-renewable-diesel-emissions-legacy

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 Lafayette Data Center project.

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

- Bay Area Air Quality Management District
- California Department of Transportation, District 4 (DOT)
- California Natural Resources Agency
- California Public Utilities Commission (CPUC)
- California Regional Water Quality Control Board, San Francisco Bay Region 2 (RWQCB)
- Department of Toxic Substances Control
- 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)
- Air Resources Board
- California Department of Conservation
- Delta Protection Commission
- Department of Parks and Recreation
- San Francisco Bay Conservation and Development Commission
- State Lands Commission

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

Table D-2 presents the list of agencies, including responsible and trustee agencies and libraries.

TABLE D – 1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE				
Name	**Mail Address**	**City**	**State**	**Zip**
651 WALSH PARTNERS LLC	14573 BIG BASIN WAY	SARATOGA	CA	95070
WITKIN PROPERTIES LP	188 TWIN OAKS DR	LOS GATOS	CA	95032
DIGITAL BH 800 LLC	16600 WOODRUFF AVE	BELLFLOWER	CA	90706
OWENS CORNING INSULATING	13155 NOEL RD	DALLAS	TX	75240
OWENS CORNING INSULATING	960 CENTRAL EXPY	SANTA CLARA	CA	95050
DOLLINGER LAFAYETTE ASSOCIATES	555 TWIN DOLPHIN DR	REDWOOD CITY	CA	94065
LAPTALO JAKOV (TRUSTEE)	12125 HILLTOP DR	LOS ALTOS	CA	94024
MONTALBANO ROSALIE (TRUSTEE)	3804 BAYVIEW DR	MODESTO	CA	95355
SANTA CLARA PROPCO LLC,	400 WATER ST	EXCELSIOR	MN	55331
WATSON JOYCE J (TRUSTEE)	2104 FALLEN LEAF LN	LINCOLN	CA	95648
ZIMMERMAN LEAH F (TRUSTEE)	1010 HEWITT DR	SAN CARLOS	CA	94070
ALBANESE PARKER I LLC	851 MARTIN AVE	SANTA CLARA	CA	95050
NAPOLI BILL M (TRUSTEE); NAPOLI KATHERINE C (TRUSTEE)	1590 EDMUNDSON CT	MORGAN HILL	CA	95037
SOUTHERN PACIFIC TRANSPORTATION CO	65 CAHILL ST	SAN JOSE	CA	95110
PSB NORTHERN CA INDUSTL PORTFOLIO LLC	701 WESTERN AVE	GLENDALE	CA	91201
SAN JOSE CITY OF	801 N 1ST ST	SAN JOSE	CA	95110
SOUTHERN PACIFIC TRANSPORTATION CO	65 CAHILL ST	SAN JOSE	CA	95110
@CENTRAL PROPERTY OWNER LLC	260 CALIFORNIA ST	SAN FRANCISCO	CA	94111

TABLE D – 2 AGENCIES AND LIBRARIES							
First	**Last**	**Title**	**Business/Agency**	**Mail Address**	**City**	**St**	**Zip**
WENDY	GOODFRIEND	AIR QUALITY PLANNING MANAGER	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
ARIANA	HUSAIN	PERMIT ENGINEER	BAY AREA AIR QUALITY MANAGEMENT DISTRICT	375 BEALE STREET, SUITE 600	SAN FRANCISCO	CA	94105
CRAIG	WEIGHTMAN	ENVIRONMENTAL PROGRAM MGR. WATER RIGHTS	CA. DEPT. OF FISH AND WILDLIFE, BAY DELTA REGION (REGION 3)	2825 CORDELIA ROAD SUITE 100	FAIRFIELD	CA	94534
GERRY	HAAS	PROGRAM MANAGER	SANTA CLARA VALLEY HABITAT AGENCY	535 ALKIRE AVENUE	MORGAN HILL	CA	95037

TABLE D – 2 AGENCIES AND LIBRARIES

First	Last	Title	Business/Agency	Mail Address	City	St	Zip
ELAINE	SISON-LEBRILLA	MANAGER-CEQA AND FERC BRANCH	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
DAN	RIVAS	SUPERVISING TRANSPORTATON ENGINEER	IGR, CALTRANS, DISTRICT 4	P.O. BOX 23660	OAKLAND	CA	94623-0660
KEITH	LICHTEN	DIVISION CHIEF	SAN FRANCISCO BAY RWQCB, REGION 2	1515 CLAY SUITE 1400	OAKLAND	CA	94612
JULIE	PETTIJOHN	BRANCH 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	CALIFORNIA 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
JAMES	BOOTH	DISTRICT CONVSERVATIONIST	NATURAL RESOURCES CONSERVATION SERVICES	2337 TECHNOLOGY PKWY., SUITE C	HOLLISTER	CA	95023-2544
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
REBECCA	FANCHER	STAFF AIR POLLUTION SPECIALIST	CALIFORNIA AIR RESOURCES BOARD	1001 I ST	SACRAMENTO	CA	95814

TABLE D – 2 AGENCIES AND LIBRARIES

First	Last	Title	Business/Agency	Mail Address	City	St	Zip
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
BEN	AGHEGNEHU	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
WENDY	STONE	KEY CUSTOMER SERVICE REPRESENTATIVE	SILICON VALLEY POWER	1500 WARBURTON AVENUE	SANTA CLARA	CA	95050
COLLEEN	HAGERTY		SANTA CLARA VALLEY WATER DISTRICT--COMMUNITY PROJECTS REVIEW UNIT	5750 ALMADEN EXPRESSWAY	SAN JOSE	CA	95118
REBECCA	BUSTOS	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
ALI	FAIYAZ	DEPUTY DIRECTOR, AIRPORT DEPARTMENT	NORMAN Y. MINETA SAN JOSÉ INTERNATIONAL AIRPORT	1701 AIRPORT BOULEVARD, SUITE B-1130	SAN JOSE	CA	95110-1206

TABLE D – 2 AGENCIES AND LIBRARIES

First	Last	Title	Business/Agency	Mail Address	City	St	Zip
		ENVIRONMENTAL REVIEW, PLANNING DIVISION	SAN JOSE 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
DANIEL	WELSH	DEPUTY FIELD SUPERVISOR	SAN FRANCISCO BAY-DELTA FISH AND WILDLIFE	650 CAPITOL MALL, SUITE 8-300	SACRAMENTO	CA	95814
			COUNTY OF SANTA CLARA COUNTY ROADS AND AIRPORTS DEPARTMENT	101 SKYPORT DRIVE	SAN JOSE	CA	95110
			CEC - ENERGY LIBRARY	715 P STREET, MS-10	SACRAMENTO	CA	95814-5504
		GOV PUBLICATIONS	FRESNO COUNTY FREE LIBRARY	2420 MARIPOSA ST	FRESNO	CA	93721-2204
			HUMBOLDT COUNTY MAIN LIBRARY	1313 3RD STREET	EUREKA	CA	95501-0553
		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 PUBLICATIONS	STANLEY MOSK LIBRARY & COURTS BLDG	914 CAPITOL MALL, 3RD FLOOR	SACRAMENTO	CA	95814
			JOYCE ELLINGTON LIBRARY	491 EAST EMPIRE STREET	SAN JOSE	CA	95112
			NORTHSIDE BRANCH LIBRARY	695 MORELAND WAY	SANTA CLARA	CA	95054