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RESPONSE TO CEC STAFF DATA REQUEST SET 1 (1-92)

Sequoia Backup Generating Facility (19-SPPE-03)

SUBMITTED TO: CALIFORNIA ENERGY COMMISSION
SUBMITTED BY: **C1-Santa Clara, LLC**

October 2019

DAYZEN LLC

INTRODUCTION

Attached are C1-Santa Clara, LLC's (C1) responses to California Energy Commission (CEC) Staff Data Request Set No. 1 (1-92) for the Sequoia Backup Generation Facility (SBGF) Application for Small Power Plant Exemption (SPPE) (19-SPPE-03). Staff issued Data Request Set No. 1 (1-92) on September 13, 2019.

The Data Responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as Staff presented them and are keyed to the Data Request numbers (1-92). Additional tables, figures, or documents submitted in response to a data request (e.g., supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end each data response and are not sequentially page-numbered consistently with the remainder of this document, although they may have their own internal page numbering system.

For context the text of the Background and Data Request precede each Data Response.

GENERAL OBJECTIONS

C1 objects to all data requests that require analysis beyond which is necessary to comply with the California Environmental Quality Act (CEQA) or which requires C1 to provide data that is in the control of third parties and not reasonably available to C1. Notwithstanding this objection, C1 has worked diligently to provide these responses swiftly to allow the CEC Staff to prepare the Initial Study/Mitigated Negative Declaration (IS/MND).

AIR QUALITY

BACKGROUND: AIR QUALITY APPLICATION TO THE AIR DISTRICT

The proposed Sequoia Data Center (SDC or project) would require a permit from the Bay Area Air Quality Management District (District or BAAQMD). Therefore, staff will need copies of all correspondence between the applicant and the District in a timely manner in order to stay up to date on any issues that arise prior to completion of the initial study.

DATA REQUESTS

BAAQMD air permit application

1. Please provide copies of all substantive correspondence regarding the application to the District, including e-mails, within one week of submittal or receipt. This request is in effect until staff publishes the initial study.

RESPONSE TO DATA REQUEST 1

C1 will provide the CEC Staff with copies of all BAAQMD correspondence, including emails, within one week of submittal/receipt.

2. Please identify the current schedule for the BAAQMD permit application submittal. Please submit a copy of that application to the SDC docket when it is submitted to BAAQMD.

RESPONSE TO DATA REQUEST 2

C1 has not yet submitted the BAAQMD permit application for this the SBGF at this time but is planning to do so by October 4, 2019. The application will be docketed when it is submitted to BAAQMD. C1 notes that the CEC Staff does not require C1 to have submitted the BAAQMD application nor does CEC Staff require the BAAQMD analysis or permit to complete the IS/MND. The BAAQMD is the lead air permitting agency for the SBGF and CEQA clearly advises that the CEC should rely on that agency performing its regulatory duties in issuance of its permit. Cities and Counties in the Bay Area routinely require as a mitigation measure simply that the applicant obtain the required air permits which would take place after a CEQA document is properly completed.

3. Please confirm the BAAQMD will consider the Tier 2 engines proposed for SDC to be BACT for oxides of nitrogen (NOx) emissions. Please provide any official communication from BAAQMD to substantiate.

RESPONSE TO DATA REQUEST 3

In all previous projects involving emergency generators, including data centers with permits issued by BAAQMD, Tier 2 engines have been considered BACT for NOx. C1 will provide confirmation to CEC once BAAQMD makes the BACT determination for this project.

BACKGROUND: CONSTRUCTION AND OPERATION EMISSION CALCULATIONS

The small power plant exemption (SPPE) application Appendix F (Air Quality and Greenhouse Gas Technical Report), and its sub-appendix A (CALEEMOD® Construction and Operational Emission Outputs), are used to document emissions calculations. Staff needs the spreadsheet files of the emission estimates with live, embedded calculations to complete the review.

DATA REQUEST

4. Please provide the spreadsheet versions of the worksheets in Appendix F and sub-Appendix A of Appendix F with the embedded calculations live and intact.

RESPONSE TO DATA REQUEST 4

The working spreadsheet versions of the requested tables is contained on a CD (Air Quality Data Response CD) which is being delivered to the CEC Staff under separate cover.

BACKGROUND: SUB.APPENDIX A CALEEMOD® CONSTRUCTION AND OPERATIONAL EMISSSION OUTPUTS

In reviewing the sub-Appendix A CALEEMOD® outputs, staff noticed in Section 3.0 (Construction Detail) and Section 3.1 (Mitigation Measures Construction), all the tables contain no outputs, or zeros as outputs. Also, for the table under Section 3.0 (page 5 of 30), all of the construction phases show zero days of construction, and the table under Section 3.0 Construction Details (page 8 of 34) for the demolition phase shows twenty days, however the Project Description (Section 2.3) says demolition was completed in February 2019.

DATA REQUESTS

5. Please explain why some of the various CALEEMOD® construction emissions tables have no data or zeros as output values. Provide updated or corrected values as appropriate.

RESPONSE TO DATA REQUEST 5

Sub-Appendix A of the Air Quality and Greenhouse Gas Technical Report contains CalEEMod output in two parts – Operational-only CalEEMod output (used to estimate operational emissions for the facility) and Construction-only CalEEMod output (used to estimate construction emissions for the facility). CalEEMod runs for operational-only emissions are configured by zero-ing out construction parameters (hence outputs with zero or no values in sections 3.0 and 3.1 of the first set of CalEEMod output); similarly, CalEEMod runs for construction-only emissions are configured by zero-ing out operational parameters. To view the construction emissions estimated with CalEEMod, please refer to the second half of sub-Appendix A ("CyrusOne Construction" CalEEMod output).

6. Please explain whether demolition has been completed, and explain what factors are associated with the demolition phase associated with construction emission estimates for CALEEMOD.

RESPONSE TO DATA REQUEST 6

The City of Santa Clara issued a demolition permit to C1 on February 7, 2019 and at the time of the filing of the SPPE, demolition activities have been completed for every project feature except for piping and miscellaneous infrastructure associated with the former cogeneration facility. The site is currently vacant and unpaved. Demolition emissions are not used in the analysis.

BACKGROUND: CONSTRUCTION IMPACTS ANALYSIS

The applicant stated that it did not provide ground-level impacts analysis for criteria pollutants during construction of the project because the average daily emissions would not exceed the BAAQMD's significance thresholds. However, the significance thresholds do not ensure compliance with National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS), which are based on different averaging times. Staff needs ground-level impacts analysis using dispersion modeling to determine compliance with NAAQS and CAAQS during construction of the project. In addition, the application did not show the worst-case hourly or daily emission rates. In order to provide a conservative analysis of the project impacts during construction, the worst-case hourly and daily emission rates should be used, instead of average daily emission rates.

DATA REQUESTS

7. Please provide ground-level impacts analysis using dispersion modeling to show compliance with NAAQS and CAAQS of the criteria pollutants during construction

of the project. The worst-case hourly and daily emission rates should be used to provide a conservative analysis of the project air quality impacts during construction.

RESPONSE TO DATA REQUEST 7

As described in Response to Data Request 2, the SDC and SBGF are in the jurisdiction of the BAAQMD for air permitting. The BAAQMD has published CEQA Guidelines[1] that provide suggested thresholds of significance for impacts from projects. These thresholds are based on regionwide modeling for attainment and levels that are considered to not affect the region's attainment status. The BAAQMD's thresholds for construction impacts are average daily emission rates for pollutants. Projects with average daily construction emissions below this level are not expected to cause significant impacts. These emissions standards are relied upon by lead agencies throughout the Bay Area to determine significance when conducting their own CEQA review. Comparison with these thresholds alone should be enough to determine significance of construction CAP emissions, and an explicit analysis to show compliance with the NAAQS and CAAQS should not be necessary and the CEC should rely on the thresholds of significance adopted by the expert agency for Air Quality and Public Health for the SBGF.

However, in the interest of time and to be cooperative to the CEC, we have performed this analysis to be responsive to this request.

An air dispersion modeling analysis was completed to analyze potential air quality impacts from construction activities for the SDC. The modelling files are included on the Air Quality Data Response CD. Fugitive dust is addressed in Response to Data Request 9 below.

To estimate off-property ambient concentrations, version (18081) of the AERMOD modeling system was used. AERMOD is U.S. EPA's recommended air dispersion model for near-field (within 50 kilometers [km]) modeling analyses. AERMOD is appropriate for use in estimating ground-level, short-term ambient air concentrations resulting from non-reactive buoyant emissions from sources located in simple and complex terrain. This analysis was conducted using AERMOD's regulatory default settings, except for the NO_2/NOX in stack ratio for the NO_2 analysis.

Ambient concentrations were estimated using AERMOD in conjunction with information about the site, the locations of the emitting stacks, representative meteorological data, and nearby receptors. The North American Datum of 1983 (NAD83) of the Universal Transverse Mercator (UTM) Coordinate System (Zone 10) was used, which provides a

constant distance relationship anywhere on the map or domain. The units of the coordinates are in meters.

Construction emissions were estimated in CalEEMod. Maximum hourly emission rates were calculated using maximum daily emissions from CalEEMod and dividing by 8 hours per day.

Construction exhaust emissions were modeled as point sources and fugitive dust emissions were modeled as volume sources. Source parameters are described in Response to Data Request 8.

Terrain elevations and land use were incorporated consistent with discussions in the Modeling Report in Appendix G of the Application for Small Power Plant Exemption.

A representative meteorological data set was obtained from BAAQMD, which used a combination of surface data from the National Weather Service (NWS) station at the San Jose Airport (KSJC, located adjacent to the facility) and NWS upper air data from the Oakland Airport (KOAK, located approximately 50 km northwest of the facility).

Concentrations were calculated at receptors placed along the facility fence line and on a circular, Cartesian grid. For this analysis, receptors extending up to 1 km from the fence line, as needed, were modeled using the following resolutions:

- 10-meter resolution for fence line receptors;
- 20-meter resolution extending from the fence line to 1,000 meters;
- 100-meter resolution extending from 1,000 meters to 2,000 meters;
- 500-meter resolution extending from 2,000 meters to 5,000 meters; and
- 1,000-meter resolution extending from 5,000 meters to 10,000 meters.

Tier 3 Plume Volume Molar Ratio Method (PVMRM) was used for the NO_2 Significance Analyses and to demonstrate compliance with the NO_2 NAAQS and PSD Increment standards. As part of the recent Appendix W updates, U.S. EPA incorporated the PVMRM as a regulatory default method for NO_2 modeling.

Hourly ozone data from the San Jose AQS Monitoring Station was used (Jackson, 06-085-0005) with missing data substituted in two stages. If one or two consecutive hours were missing, the values were replaced by the larger value of the preceding or following hour. If three or more consecutive hours were missing, those values were replaced by

[1] BAAQMD. 2017. California Environmental Quality Act Air Quality Guidelines. May. http://www.baaqmd.gov/~/media/files/planning-and- research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

the maximum values of the month-by-hour data set (i.e., the highest monitored value of the five years of data categorized by month of year and hour of day).

For all other pollutants, a more conservative analysis that over estimates concentrations was performed to estimate concentrations. The maximum background concentration from the San Jose AQS Monitoring Station was added to the maximum modeled concentration and compared to the standard.

For all pollutants except NO2, concentrations are modeled using the χ/Q ("chi over q") method, such that each phase has unit emission rates (i.e., 1 gram per second [g/s]), and the model estimates dispersion factors with units of [µg/m3]/[g/s]. Emission rates for the appropriate averaging period were combined with the corresponding dispersion factors.

More information on the methods and calculation tables are provided in Appendix AIR DR-7, attached.

The table below summarizes the modeling results for NAAQS and CAAQS, including the background concentrations.

NAAQS Analysis Summary

Pollutant	Averaging Period	Modeled Concentration (µg/m^3)	3-Year Average Background Concentrations (µg/m^3)	Total Concentrations	NAAQS (µg/m^3)
NO_2	5-year average of 1-Hour Yearly 98th%	115	N/A	115	188
	Annual	28	N/A	28	100
CO	1-Hour	31	2,443	2,474	40,000
	8-Hour	14	1,909	1,922	10,000
SO_2	5-year average of 1-Hour Yearly 99th%	0.076	6.1	6.2	196
	3-Hour	0.1	9.4	9.5	1,300
PM_{10}	24-Hour 6th highest over 5 years	0.32	56	56	150
PM_{25}	5-year average of 24-Hour Yearly 98th%	0.25	31	31	35
	5-year average of annual concentrations	0.058	9.7	9.8	12

CAAQS Analysis Summary

Pollutant	Averaging Period	Modeled Concentration (µg/m^3)	Maximum Background Concentrations (µg/m^3)	Total Concentrations	CAAQS (µg/m^3)
NO_2	1-Hour Maximum	43	128	171	339
	Annual Maximum	28	N/A	28	57
CO	1-Hour Maximum	31	2,748	2,779	23,000
	8-Hour Maximum	14	2,061	2,075	10,000
SO_2	1-Hour Maximum	0.080	9.4	9.5	655
	24-Hour Maximum	0.015	2.9	2.9	105
PM_{10}	24-Hour Maximum	0.40	69	69	50
	Annual Maximum	0.062	21.9	22	20
PM_{25}	Annual Maximum	0.058	10.6	11	12

Maximum modeled ambient concentrations, when combined with background concentrations are less than the NAAQS and CAAQS for all pollutants, except the 24-hour and annual PM_{10} CAAQS. The PM_{10} background concentrations exceed the CAAQS standard on its own. Therefore, the project concentration is compared against the significant impact level (SIL). As shown in the table below, the project concentrations are below the SIL and thus would not be considered significant. As a result, emissions from this project would not cause or contribute to an exceedance of the 24-hour and annual PM_{10} CAAQS.

Pollutant	Averaging Period	Modeled Concentration (µg/m^3)	SIL (µg/m^3)
PM_{10}	24-Hour Maximum	0.40	5
	Annual Maximum	0.062	1

8. Please justify the assumptions of the source parameters (e.g., initial dimension and release height of area/volume sources, or stack height, diameter, temperature, and velocity of point sources) used in the dispersion modeling.

RESPONSE TO DATA REQUEST 8

Combustion equipment exhaust emissions were modeled as a grid of point sources across the construction area, spaced 25 meters apart, for a total of 90 sources. The point source parameters are:

- Stack height: 3.048 m
- Temperature: 750 K
- Exit Velocity: 64.681 m/s
- Diameter: 0.1524 m

BACKGROUND: WINDBLOWN DUST

The application did not include emission estimates of fugitive particulate matter less than 10 microns (PM10) and fine particulate matter less than 2.5 microns (PM2.5) due to construction period windblown dust. The PM10 and PM2.5 emissions during construction of the project could be underestimated. Staff needs such information to complete the analysis of the project air pollutant emissions.

DATA REQUESTS

9. Please provide emission estimates of fugitive PM10 and PM2.5 due to construction period windblown dust for both daily and annual averaging periods.

RESPONSE TO DATA REQUEST 9

Emission estimates of fugitive PM_{10} and $PM_{2.5}$ due to construction period windblown dust for both daily and annual averaging periods are shown below. Supporting calculations are provided in attachments to this response.

Phase	**Fugitive PM_{10}**	**Fugitive $PM_{2.5}$**
Site Preparation	182	100
Grading	265	109
Building Construction	1,004	273
Paving	2.4	0.6
Architectural Coating	10.2	2.7
Total	**1,463**	**485**
Length of Construction (days)	559	
Average Daily Emissions (lb/day)	**2.6**	**0.9**

The BAAQMD CEQA Guidelines call for the use of its BMPs to reduce fugitive dust emissions to consider impacts from fugitive dust emissions less than significant. BAAQMD does not provide numerical thresholds for fugitive dust generated during

construction. The construction of the SDC and SBGF would implement the BMPs consistent with the BAAQMD recommended BMPs to reduce fugitive dust emissions. Therefore, consistent with the analysis for Laurelwood, the BMPs would cause the construction to avoid the potential for generating substantial pollutant concentrations due to fugitive dust.

10. Please justify the assumptions of soil type, moisture content, wind speed, control methods, and control efficiency, etc. Used for the emission estimates of fugitive PM10 and PM2.5 due to construction period windblown dust.

RESPONSE TO DATA REQUEST 10

As the level of detail of construction is not known at this time, CalEEMod defaults were used. The default values for fugitive dust in CalEEMod include the following:

- **Grading Equipment Passes**- Fugitive dust emissions from grading equipment depend on vehicle speed, equipment blade, and grading rates. CalEEMod assumes AP-42 defaults for mean vehicle speed (7.1 mph), $PM_{2.5}$ scaling factor (0.031), and PM_{10} scaling factor (0.6). A grading equipment blade default width of 12 ft is assumed. Equipment-specific grading rates include 0.5 acres/8hr-day for crawler tractors, graders and rubber-tired dozers and 1 acres/8 hr-day for scrapers.

- **Bulldozing**- Fugitive dust emissions from bulldozing vary depending on the type of material. CalEEMod assumes the following constants:
    - C_{TSP} (Total Suspended Particulates- arbitrary coefficient used by AP-42) - 5.7
    - C_{PM15} (arbitrary coefficient used by AP-42) - 1.0
    - M (material moisture content (%)) - 7.9%
    - s (material silt content (%)) - 6.9%
    - F_{PM10} (scaling factor) - 0.75
    - $F_{PM2.5}$ (scaling factor) - 0.105

- **Truck loading**- Fugitive dust emissions from truck loading depend on the material moisture content and mean wind speed. CalEEMod assumes the following constants:
    - K (particle size multiplier)- PM_{10} - 0.35 and $PM_{2.5}$ - 0.053.
    - U (mean wind speed)- the program selects wind speed based on the value listed on the Project Characteristics screen. It has been converted internally to miles per hour.
    - M (material moisture content (%)) – assumes moisture content of cover – 12%

- Throughput of loaded material - 1.2641662 tons per cubic yard based on a bulk density of 1.5 grams per cubic centimeter.
- Typical soil densities - 1.25 to 1.6
- Approximate density of a silty loam soil accounting for natural moisture and not watering to suppress dust – 1.5.

BACKGROUND: CUMULATIVE AIR QUALITY IMPACTS

During the status conference for the Walsh Data Center (19-SPPE-02) held on August 30, 2019, that Committee expressed interest in finding out more information regarding other data centers currently operating on the same Silicon Valley Power (SVP) 60-kilovolt (kV) loop that would supply the Walsh Data Center. The co-located data centers would be part of a potential cumulative impacts analysis. A cumulative analysis should include all reasonably foreseeable new projects with a potential to emit 5 tons per year or more and located on the same SVP 60-kV loop as SDC. This includes all projects that have received construction permits but are not yet operational and those that are either in the permitting process or can be expected to be in permitting in the near future.

DATA REQUESTS

11. Please provide a list of data centers that operate on the SVP 60-kV loop that would feed SDC.

RESPONSE TO DATA REQUEST 11

We agree that the Committee for the Walsh Backup Generating Facility requested interest in finding out more information regarding other new data centers that would be interconnected to the same electricity distribution transmission loop by Silicon Valley Power (SVP). However, the Committee clearly expressed interest in understanding if the new projects connecting to the loop would have a "***cumulative impact on reliability***"[2]. The Committee identified that a cumulative impact on reliability of the loop would impact air quality but did not request a cumulative impact analysis include all data centers on the same SVP transmission loop.

C1 will be receiving electricity via a new substation that SVP will interconnect to its 60 kV South Loop which is undergoing expansion. Therefore, C1 has requested that SVP assist in identifying which new data center applications would be delivered electricity on the by SVP South Loop. However, based on a map contained if SVPs responses to CEC Data Requests provided in Laurelwood Data Center (09-SPPE01) and which is

[2] 229861, Transcript of 08-29-2019 Committee Conference, Walsh Backup Generating Facility (09-SPPE-2), pages 30-31.

incorporated here as Appendix Air DR-11, it appears the new data centers that will be using the South Loop include:

- Sequoia Data Center
- Walsh Data Center
- Lafayette Data Center, SPPE Application not yet filed
- Memorex Data Center, SPPE Application not yet filed

C1 has requested that SVP specifically address that when these new data centers are interconnected to its South Loop transmission system, would such interconnection negatively affect SVP's electrical reliability in a way that would affect air quality. C1 will docket SVP's response. If the answer is SVP's reliability is not negatively affected, C1 believes cumulative impact modelling during a South Loop outage would be speculative and such speculation is neither warranted and is prohibited by CEQA.

However, as discussed in Response to Data Request 13, we will include the data centers identified above in our cumulative air quality analysis for routine maintenance testing.

12. Please provide clear identifying information on each data center including:

    a) Owner(s);

    b) Date of operation of each building or phase;

    c) Critical IT load;

    d) Building loads;

    e) Cooling technologies;

    f) Cooling unit plume characteristics;

    g) Uninterruptible power supply (UPS) type and sizing;

    h) Number of standby generation units, model number(s), sizing, emissions, scope of monthly and annual readiness testing and any use of the engines during emergency operations.

RESPONSE TO DATA REQUEST 12

C1 is attempting to obtain the information necessary to perform a cumulative air quality modelling analyses in accordance with the Responses to Data Request 11 and 13, but much of the information is within the control of third parties.

13. Please provide the list of sources to be considered in the cumulative air quality impact analysis:

    a) Within 6 miles of SDC and having greater than 5 tons per year of criteria air pollutants;
    b) In the planning phase;
    c) Permitting but not under construction; and,
    d) Permitted and under construction.

RESPONSE TO DATA REQUEST 13

C1 has requested this data from the BAAQMD and when received will file a supplemental response to this data request.

14. Provide cumulative impact modeling analysis, including SDC, existing data centers collocated on the SVP 60-kV loop and those sources identified above.

RESPONSE TO DATA REQUEST 14

See Responses to Data Requests 11-13.

BACKGROUND: Emergency Generator Engine Testing and Maintenance

On page 2-15 of the Project Description, the application states the maintenance and testing of each engine is rarely expected to exceed 10 hours annually. Staff needs a more refined schedule for the maintenance and testing events that would occur, including whether there would be any monthly, quarterly, or annual testing for the emergency generators.

Along with a better understanding of the maintenance events, staff would like to find out the duration, fuel consumption, and time frames for each event

DATA REQUESTS

15. Please list all maintenance events expected for the emergency generators that would be expected for the year.

RESPONSE TO DATA REQUEST 15

There are two types of testing that will be conducted to ensure the ongoing reliability of each emergency generator: (1) monthly testing and (2) annual testing. Testing on a monthly basis is conducted to ensure that each engine is still functioning and would be available in the event of an unanticipated emergency power loss. Monthly testing is conducted at a minimum (10%) operating level. Testing on an annual basis is conducted at a series of stepped loads up to 100% load. The details of these testing events are provided in responses below.

16. Estimate the duration, annual frequency, and estimated time for each maintenance event.

RESPONSE TO DATA REQUEST 16

Each monthly testing event for each emergency generator would last for approximately 30 minutes. Each annual testing even for each generator would last for approximately 4 hours. Generators would each be tested independently, such that multiple generators would not be run simultaneously during monthly or annual testing events.

The estimate of 10 hours annually for testing per generator was developed based on 4 hours of annual testing, along with 30 minutes per month of monthly testing:

(4 hours/test * 1 test/year) + (0.5 hours/test * 12 tests/year) = 10 hours/year

17. Please identify the fuel consumption with a load factor and gallons per hour for each generator maintenance event.

RESPONSE TO DATA REQUEST 17

The fuel consumption by load is shown below.

Load	Fuel Consumption (gal/hr)
100%	163
75%	123
50%	86
25%	47
10%	24

The data for the 100%, 50% and 25% loads were obtained from the engine vendor specification sheet, which is attached. Fuel use for the 25% and 10% loads were determined assuming the same linear relationship between load and fuel use demonstrated by the higher operating loads.

Based on this data and the Response to Data Request 19 below, the monthly maintenance events will use approximately 12 gallons of fuel per generator during the 30-minute test. The annual maintenance events will use approximately 477 gallons of fuel per generator during each the 4-hour test.

18. Please identify the annual fuel consumption in gallons per event and hours per year for the annual operations of the emergency generators.

RESPONSE TO DATA REQUEST 18

Annual fuel consumption for each generator is estimated to be 621 gallons per year, which assumes twelve 30-minute tests at no load and 1 annual test at loads discussed in Response to Data Request 19, below.

(477 gal/test * 1 tests/year) + (12 gal/test * 12 tests/year) = 621 gallons/year

19. Please provide detailed (e.g., minute-by-minute) engine testing and maintenance profile for each event of the emergency generators.

RESPONSE TO DATA REQUEST 19

For monthly testing, each generator would be run at 10% operating load for 30 minutes. The load would not vary during this time.

For annual testing, testing would be conducted according to the following sequence:

- 45 minutes at 25% operating load
- 45 minutes at 50% operating load
- 45 minutes at 75% operating load
- 1 hour and 45 minutes at 100% operating load

20. Please provide impacts analysis of the engines at 50 percent load during the monthly testing events.

RESPONSE TO DATA REQUEST 20

The modeling that was submitted includes an analysis of engine operations at all loads, including 10%, 25%, 50%, 75% and 100%. Modeling at these loads is included on the Air Quality Data Response CD.

21. When conducting readiness testing and maintenance, what is the load served by the electricity generated by the standby generators? Please explain how the electricity produced during the testing or maintenance is going to be used.

RESPONSE TO DATA REQUEST 21

The engines are connected to load banks during annual testing. No electricity is generated during monthly testing.

22. Please provide emissions during startup and shutdown during a maintenance event, to compare with the standby operation emissions.

RESPONSE TO DATA REQUEST 22

The generators have startup and shutdown periods that typically each last for less than one minute. We have also evaluated emissions and modeled impacts for the 10%, 25%, 50%, 75% and 100% operating loads. So, emissions and air quality impacts have been evaluated for periods when the generator may be considered to be in startup or shutdown mode.

BACKGROUND: EMISSION CONTROL EFFICIENCY

Page 4.3-14 of the application indicates that each generator would be equipped with a Johnson Matthey CTR® Diesel Particulate Filter System, which is expected to control particulate matter by at least 85 percent. Staff needs to understand

whether the control efficiency drops at lower loads during the short periods of testing or maintenance. Staff needs to understand how control efficiencies are maintained with intermittent operations. These effects were not quantified in the application.

DATA REQUESTS

23. Please provide the EPA certificates for the Johnson Matthey CTR® Diesel Particulate Filter System and the oxidation catalyst. Include description of the test cycle used for the EPA certifications and compare it against expected engine operations.

RESPONSE TO DATA REQUEST 23

The California Air Resources Board (CARB) has certified the Johnson Matthey CTR+ DPF and oxidation catalyst to achieve the control efficiencies used in our calculations. The Executive Order for this control device is included in Appendix AIR DR-23. The MTU Model 16V4000G84S is on ARB's list of engines for which the Johnson Matthey CRT+ DPF has been certified.

CARB has adopted a regulation entitled "Verification Procedure, Warranty and in-Use Compliance Requirements for in-Use Strategies to Control Emissions from Diesel Engines" (see 13 CCR 2700 – 2711), which outlines the requirements for certifying diesel engine control technologies. This regulation specifies that emissions testing for certification of control technologies for non-road engines must be conducted when operating an engine in the Nonroad Transient Composite Cycle (NRTC), which is a specific cycle of operating loads, including varying speed and torque, developed by EPA for engine emissions testing purposes. The NRTC cycle contains a wider variety of operating loads, and more shifts between loads, than our expected engine operation. However, ARB has certified the Johnson Matthey CTR+ system to achieve the rated control efficiencies for all operating loads of the proposed engines, as described in Response to Data Request 24 below.

24. Please describe how post-combustion control efficiencies are maintained during intermittent operations, testing, and maintenance.

RESPONSE TO DATA REQUEST 24

The CARB Executive Order, provided in Appendix AIR DR-23, certifying the control efficiencies of the Johnson Matthey CTR+ system lists specific operating conditions for which this control device has been certified. These include a minimum exhaust temperature for filter regeneration, a minimum NOx/PM ratio in the exhaust, following the specified filter cleaning frequency, and use of California ultra-low sulfur fuel. The

MTU Model 16V4000G84S will meet the operating requirements for all engine loads, and we plan to follow the specified maintenance requirements, including those for filter cleaning.

25. Please explain whether the control efficiency during intermittent operations was considered in the emission rates shown in the application.

RESPONSE TO DATA REQUEST 25

The Johnson Matthey CTR+ system has been certified to achieve the listed control efficiencies for all operating scenarios. So, the emission rates shown in the application include the same control efficiencies for each engine operating load.

BACKGROUND: BAAQMD TITLE V APPLICABILITY

In the Air Quality Appendix, Table 9b titled "Emergency Generator Emissions - Testing, Maintenance, and Emergency Usage", the annual emissions for NOx is shown as above the 100 tons/year threshold for Title V applicability. Staff would like to find out whether the project would be applying for a title V permit with the BAAQMD.

DATA REQUEST

26. Please confirm whether the project would be applying for a Title V permit with the BAAQMD.

RESPONSE TO DATA REQUEST 26

Under its new policy, BAAQMD now requires emergency generators to include allowable non-emergency testing hours as well as 100 hours/year of emergency operation when determining potential to emit for Title V applicability. The calculated NOx emissions from the SBGF (including emissions during emergency and non-emergency operation) would be just over the Title V threshold of 100 tons/year. We anticipate that the project will request a Synthetic Minor Operating Permit (SMOP) limit from BAAQMD to keep NOx emissions under the Title V threshold. C1 will confirm this with CEC once this decision has been finalized.

Ambient Air Quality Impact Analysis Scope

27. Please provide the analysis of impacts to ambient air quality or PM10, PM2.5, and SO2.

RESPONSE TO DATA REQUEST 27

NAAQS and CAAQS analyses for PM_{10}, $PM_{2.5}$, and SO2 were completed. NO2 and CO concentrations were also re-analyzed using the meteorological data provided by BAAQMD. Appendix AIR DR-27 includes the results of the modeling analysis and the modeling files are included on the Air Quality Data Responses CD. The methods used in this analysis are consistent with the methods described in Appendix G of the Application for Small Power Plant Exemption, with the following exceptions:

- Meteorological data from BAAQMD for the same time period was used
- Receptor grid was expanded to include the following grids:
    - 100-meter resolution extending from 1,000 meters to 2,000 meters;
    - 500-meter resolution extending from 2,000 meters to 5,000 meters; and
    - 1,000-meter resolution extending from 5,000 meters to 10,000 meters.
- PM_{10}, $PM_{2.5}$, and SO2 modeling was added, consistent with the methodology used for CO analysis in Appendix G. Emissions were calculated using the same methods as were described in Appendix G. Background concentrations were obtained from the same station.

The table below summarizes the modeling results for NAAQS and CAAQS, including the background concentrations.

NAAQS Analysis Summary

Pollutant	Averaging Period	Modeled Concentration (µg/m^3)	3-Year Average Background Concentrations (µg/m^3)	Total Concentrations	NAAQS (µg/m^3)
NO_2	5-year average of 1-Hour Yearly 98th%	187	N/A	187	188
	Annual	13.2	22.8	36	100
CO	1-Hour	3,053	2,443	5,496	40,000
	8-Hour	1,967	1,909	3,876	10,000
SO_2	5-year average of 1-Hour Yearly 99th%	0.19	6.1	6.3	196
	3-Hour	0.18	9.4	9.6	1,300
PM_{10}	24-Hour 6th highest over 5 years	0.71	56	56	150
PM_{25}	5-year average of 24-Hour Yearly 98th%	0.58	31	32	35
	5-year average of annual concentrations	0.05	9.7	9.7	12

CAAQS Analysis Summary

Pollutant	Averaging Period	Modeled Concentration (µg/m^3)	Maximum Background Concentrations (µg/m^3)	Total Concentrations	CAAQS (µg/m^3)
NO_2	1-Hour Maximum	310	N/A	310	339
	Annual Maximum	13	24	37	57
CO	1-Hour Maximum	3,053	2,748	5,801	23,000
	8-Hour Maximum	1,967	2,061	4,029	10,000
SO_2	1-Hour Maximum	0.21	9.4	9.6	655
	24-Hour Maximum	0.08	2.9	3.0	105
PM_{10}	24-Hour Maximum	0.76	69	71	50
	Annual Maximum	0.05	22	22	20
PM_{25}	Annual Maximum	0.05	11	11	12

Maximum modeled ambient concentrations, when combined with background concentrations are less than the NAAQS and CAAQS for all pollutants, except the 24-hour and annual PM_{10} CAAQS. The PM_{10} background concentrations exceed the CAAQS standard on its own. Therefore, the project concentration is compared against the significant impact level (SIL). As shown in the table below, the project concentrations are below the SIL and thus would not be considered significant. As a result, emissions from this project would not cause or contribute to an exceedance of the 24-hour and annual PM_{10} CAAQS.

Pollutant	Averaging Period	Modeled Concentration (µg/m^3)	SIL (µg/m^3)
PM_{10}	24-Hour Maximum	0.76	5
	Annual Maximum	0.05	1

BACKGROUND: AMBIENT AIR QUALITY IMPACT ANALYSIS FOR CONSTRUCTION

The applicant estimated construction-phase emissions (pp.4.3-12to 4.3-14) and concluded the discussion of construction-phase impacts without quantifying criteria pollutant ambient air quality impacts.

Similarly, the application (p.4.3-26) indicates that "construction health impacts are expected to be minimal," and the attached Air Quality and Greenhouse Gas Technical Report (in Section 5 of Appendix F) includes no analysis for construction-phase impacts within the project health risk assessment (HRA).

Regarding age sensitivity factors within the project HRA (in Section 4.5 of SPPE application Appendix F), the construction-phase impacts should reflect the fact that health impacts are non-linear with age. The construction-phase impact for a young child would be much higher than for an adult for the same modeled concentration.

DATA REQUESTS

28. Please confirm that the construction-phase criteria pollutant emissions would comply with the California Ambient Air Quality Standards and the National Ambient Air Quality Standards.

RESPONSE TO DATA REQUEST 28

Please see Response to Data Request 7.

29. Please complete a short-term screening level HRA for construction-phase emissions of diesel particulate matter (DPM). The applicant should use a duration starting in the 3rd trimester of pregnancy to determine a maximum cancer risk to the most sensitive receptor. Then, if the risk is still above a significance threshold (almost always $10x10^{-6}$) the applicant should refine the modeling beyond a screening level of analysis.

RESPONSE TO DATA REQUEST 29

A construction health risk assessment is provided in the Appendix Air DR-29, “Construction Health Risk Assessment for the CyrusOne Sequoia Data Center in Santa Clara, California”. The modelling files are included on the Air Quality Data Response CD. Health impacts are below thresholds as shown in the table below.

Receptor Type	Cancer Risk (in a million)	Non-cancer Chronic Hazard Index (unitless)	Non-cancer Acute Hazard Index (unitless)	Max $PM_{2.5}$ Concentration (ug/m^3)
Residential	0.1	9.08E-05	1.28E-05	4.2E-04
Soccer Child	0.1	1.19E-04	1.68E-05	2.2E-04
Childcare	0.1	4.66E-05	6.58E-06	5.6E-04
Worker/PMI	0.22	1.18E-02	1.67E-03	0.06

30. Please update the HRA to include construction and operation together, not separately, particularly since the risk driver is DPM for both.

RESPONSE TO DATA REQUEST 30

The table below presents the risks associated with construction and operation together for all receptors types. As shown in the table below, combined risks for construction and operation are still below thresholds. This assessment is conservative because it assumes overlapping impacts of construction and operation in the 0-2 age bin, which is physically impossible. Even with these conservative assumptions, the combined impact of construction and operation are well below thresholds.

Receptor Type	Phase	Cancer Risk Impact (in a million)	Non-cancer Chronic Hazard Index (unitless)	Non-cancer Acute Hazard Index (unitless)	Max $PM_{2.5}$ Concentration (ug/m^3)
Residential	Construction	0.11	9.08E-05	8.84E-05	4.25E-04
	Operation	0.19	5.13E-05	0.10	2.56E-04
	Total	**0.30**	**1.42E-04**	**0.10**	**6.81E-04**
Soccer Child	Construction	0.10	1.19E-04	1.16E-04	5.59E-04
	Operation	0.002	6.24E-05	0.11	3.12E-04
	Total	**0.10**	**1.81E-04**	**0.11**	**8.71E-04**
Childcare	Construction	0.10	4.66E-05	4.54E-05	2.18E-04
	Operation	0.05	3.25E-05	0.06	1.63E-04
	Total	**0.15**	**7.91E-05**	**0.06**	**3.81E-04**
Worker	Construction	0.22	0.012	1.15E-02	0.06
	Operation	2.18	7.04E-03	0.54	0.04
	Total	**2.40**	**0.02**	**0.55**	**0.10**

BACKGROUND: COMMENTS ON EMISSIONS ASSUMPTIONS

The dispersion modeling files indicate that each of the engines could emit 5.9 g/sec NOx. The Air Dispersion Modeling Report (Table B-3) indicates that this NOx emission rate corresponds with a load-specific emission factor of 8.5 g/kWh NOx. This appears to exceed the Tier 2 exhaust emissions standard for this type of engine. The basis for PM10 and PM2.5 emissions assumptions and effectiveness of the diesel particulate filter control device is not well documented.

DATA REQUESTS

31. Please confirm whether the proposed engines would comply with the Tier 2 emissions standard for NOx (6.4 g/kWh) and revisit the dispersion modeling with NOx emissions rates that would comply, if necessary.

RESPONSE TO DATA REQUEST 31

The proposed engines would comply with the Tier 2 emissions standards. The engines are certified as engine family KMDDL95.4GTR. As shown in USEPA's Non-road Compression Ignition Engine database,[3] this engine is a Tier 2 engine. The USEPA certification for this engine family is included in the Appendix AIR DR-31.

Compliance with the EPA emission rate standards are based on testing conducted over a specific load cycle, so emissions at some individual loads may not be below the standard. For our modeling, we have obtained emission rates and exhaust parameters for 10%, 25%, 50%, 75% and 100% operating loads from the engine manufacturer. We then modeled each of these to ensure that we have evaluated worst-case air quality impacts.

32. Please confirm whether the engines would comply with Tier 2 emissions standard for PM10 (0.2 g/kWh) prior to considering the diesel particulate filter (DPF), and please provide manufacturer or vendor information guaranteeing DPF effectiveness that supports use of the proposed targeted PM10 and PM2.5 emission factor of 0.02 g/kWh (Appendix F, Table 9a & Table 9b).

[3] USEPA. 2019. Non-road Compression Ignition Engine database. Available at: https://www.epa.gov/sites/production/files/2019-02/nonroad-compression-ignition-2011-present.xlsx. Accessed September 24, 2019.

RESPONSE TO DATA REQUEST 32

Please see Response to Data Request 31. The engine complies with Tier 2 emissions standards prior to consideration of the DPF. The engine is rated to meet an uncontrolled PM10 emission rate of 0.16 g/kWh. ARB has certified the Johnson Matthey CRT+ DPF to achieve at least 85% control pf PM10 emissions (See Appendix AIR DR-23). The MTU Model 16V4000G84S is on ARB's list of engines for which the Johnson Matthey CRT+ DPF has been certified. Applying an 85% control efficiency to the 0.16 g/kWh uncontrolled emission factor, the resulting controlled emission factor is 0.024 g/kWh. This was presented as 0.02 g/kWh in our tables due to rounding. But the exact value was used in our calculation of modeled emission rates.

BACKGROUND: COMMENTS ON DISPERSION MODELING SOURCE CONFIGURATION

The proposed 54 emergency generator engines appear to each be modeled as "point" sources in the electronic modeling files. The staff analysis needs to confirm that the exhaust stacks would have a vertical, unobstructed release, as in the electronic copies of modeling files. One drawing that appears in the application (in Appendix C: Manufacturer Specification Sheet) shows a raincap covering the point of release for the engines' emissions. To be consistent with the modeling files, the stacks should not have horizontal releases or raincaps.

DATA REQUEST

33. Please confirm that no engine exhaust stack would have horizontal releases or rain-caps. If these exhaust stacks could be horizontal or capped, please update the dispersion modeling to include the appropriate feature as a modeled stack parameter.

RESPONSE TO DATA REQUEST 33

The engine exhaust stacks would have hinged rain caps that do not restrict flow when the engines are on. The stack release points are all vertical.

BACKGROUND: COMMENTS ON STACK PARAMETERS

Within the SPPE application's attached Air Dispersion Modeling Report (in attachments to Appendix G), Table B-3 shows modeled NOx emission rates and

stack parameters for different load cases. However, electronic modeling files (for example: c1.sc.5y.period.out) show slightly inconsistent modeled "chi/Q" stack parameters. Table B-3 shows stack temperature of 774.15 K and stack velocity of 42.94 m/s for the 100 percent load case while the modeling files for "chi/Q" show the stack temperature of 778.15 K and stack velocity of 41.20 mls.

34. Please address why these two sets of stack parameters are a little different from each other and which set of parameters are more representative of the engines being proposed.

RESPONSE TO DATA REQUEST 34

The stack parameters in the updated modeling files are consistent with the stack parameters in the tables. The modeling files are also consistent across different pollutants and are included on the Air Quality Data Response CD.

BACKGROUND: COMMENTS ON DISPERSION MODELING RECEPTORS

The SPPE application (p.4.3-21) and the Air Quality and Greenhouse Gas Technical Report (on p.10 of Appendix F of the application) describes the receptor grid and shows that the applicant modeled receptors extending up to 1 km from the fence line.

The receptor grid data in the electronic modeling files includes "flagpole" receptors at 1.8 meters, which is in contrast with staff's intent to determine ground-level concentrations (at 0 meters above ground).

DATA REQUESTS

35. Please expand the modeling receptor domain to 10 km (6 miles) from the fence line just in case further analysis is needed later.

RESPONSE TO DATA REQUEST 35

Modeling domain was expanded to 10 km. The receptor resolution was 20 m extending from facility to 1.0 km, 100 m from 1.0 km to 2.0 km from the facility, 500 m from 2.0 km to 5.0 km from the facility, and 1000 m from 5.0 km to 10.0 km from the facility.

36. Please confirm the "flagpole" setting of 1.8 m provides conservative (high) ground-level concentration results, when compared with using no flagpole receptors.

RESPONSE TO DATA REQUEST 36

A “flagpole” height of 1.8m brings the receptor height closer to the centerline of the plume and the source of emissions than a receptor at the ground level. Plumes would trend toward the 1.8m height and would tend to be more disperse when reaching lower levels. So, the use of a flagpole receptor height is more conservative.

BACKGROUND: COMMENTS ON TREATMENT OF METEOROLOGY

The SPPE application (p.4.3-20, under Meteorological Data) describes how the meteorological data was processed. However, the BAAQMD provided AERMOD-ready meteorological data for another project.

The application (p.4.3-20, under Meteorological Data) describes the use of AERMET (Version 18081) to process the meteorological data. However, the electronic modeling files indicate that a prior version of AERMET (16216) was used.

Additionally, the profile data in the electronic modeling files indicate that meteorological data was obtained from a measurement height of 10.0 meters. However, this contrasts with profile data reviewed by CEC staff for other recent projects, which show a measurement height of 7.9 m for this location.

DATA REQUESTS

37. Please confirm that the applicant checked with BAAQMD to request AERMOD-ready meteorological data and discuss any reasons for rejecting the use of data provided by the BAAQMD.

RESPONSE TO DATA REQUEST 37

We can confirm that the modeling submitted in this data request uses the AERMOD-ready meteorological data provided by BAAQMD, as shown in the modeling files included on the Air Quality Data Response CD.

38. Please confirm that the BAAQMD would accept use of the prior version of AERMET (16216) in the current modeling for this project or revise the meteorological data processing using the current version of AERMET.

RESPONSE TO DATA REQUEST 38

The meteorological data provided by BAAQMD uses version 18081 of AERMET. Since this was processed and provided by BAAQMD, this should be accepted.

39. Please confirm with the BAAQMD that the correct metrological data measurement height appears in the profile data or revise the metrological data.

RESPONSE TO DATA REQUEST 39

Meteorological data was revised with AERMOD-ready data supplied by BAAQMD for the years 2013-2017. These data were processed using AERMET v.18081 and employed the ADJ_U* option. According to the meteorologist for the BAAQMD, the anemometer tower height at KSLC is 15.5 meters.

BACKGROUND: COMMENTS ON DISPERSION MODELING OZONE ASSUMPTIONS

The dispersion modeling files for NO_2 impacts include hourly ozone data from a separate fib of monitored data (called "O3.5y.dat"). The application (p.a.3-23) describes the replacement method for missing ozone data. However, the NO_2 modeling files also indicate through the use of AERMOD keyword 'OZONEVAL" that an ozone level of 53 parts per billion (ppb) was used to substitute where missing ozone data could occur.

DATA REQUEST

40. Please describe the rationale for choosing 53 ppb as the assumption for missing ozone data, and review the need to make this assumption, if the missing data replacement method was properly implemented. (p.4.3-23)

RESPONSE TO DATA REQUEST 40

53 ppb is the 98th percentile value of all available (non-missing) ozone data. A substitution procedure was implemented to replace all missing data and the OZONEVAL was simply included for redundancy.

BACKGROUND: COMMENTS ON DISPERSION MODELING NO_2 ASSUMPTIONS

The Refined Analysis for 1-hour NO_2 (pp.4.3-22 and 4.3-23) describes the assumptions for the in-stack NO_2/NOx ratio and background ozone data. However, the basis for the NO_2 background data does not appear. Within the Air Dispersion Modeling Report (Appendix G of the SPPE application, Section 2.1.1), the NO_2 background data appears to be from January 2013 to December 2017. Results for 1-hour NO_2 CAAQS concentrations, within the Air Dispersion

Modeling Report (Appendix G, Table 8-6), indicate (in the table footnote) that "a background NO_2 value of 126.9 pg/m3 (or 67.5 ppb) is added to all modeled concentrations." This conflicts with the electronic modeling files that indicate seasonal 1-hour NO_2 background concentrations were included in modeled NO_2 totals.

DATA REQUESTS

41. Please update the NO_2 background data to include 2018 data if available

RESPONSE TO DATA REQUEST 41

2018 NO_2 background data was not included in the modeling analysis. Meteorological data used in this analysis is for the period from 2013-2017. So, NO_2 monitoring data for the same period was used to ensure that the NO_2 background data is consistent with the meteorological data used in our modeling.

42. Please reconcile whether a single background NO_2 value or seasonal 1-hour NO_2 background concentrations were actually used (as stated in report vs. shown in electronic modeling files), and if so, for which portions of the analyses.

RESPONSE TO DATA REQUEST 42

Season-by-hour values were used for NO_2 background for the NAAQS analysis, whereas the CAAQS analysis used the overall 1-hour maximum background concentration, consistent with guidance from EPA and CARB on how to compare modeling results to the respective air quality standards.

BACKGROUND: COMMENTS ON DISPERSION MODELING RESULTS

Results for 1-hour NO_2 CAAQS concentrations, within the application (pp.4.3-24, Table 4.3-11) and in the Air Dispersion Modeling Report (Appendix G, Tables B-5 and 8-6), find the maximum total modeled 1-hour NO_2 concentrations to be 185 and 325 ug/m3, respectively for NAAQS and CAAQS. During discovery, staff remains unable to identify the electronic modeling files that correlate with these results. The model output file for the worst-case single engine from Tables B-5 and 8-6 with background NO_2, as in the 1-hour NO_2 modeling files appears to be 208.9 Ug/m3 on the daily maximum values averaged over five years (e.g., in file"c1.sc.no2.sY.C1WEG019.100.1hr.out"). Similarly, dispersion modeling files for CO (e.9., in file"c1 .sc.Sy.1O0.hr.out") do not correlate with the CO results in Table 4.3-11 of the application.

43. Please identify the specific electronic files by filename that include each of the CO and NO_2 modeling results presented in the application Table 4.3-11, and Table B-6 of the Air Dispersion Modeling Report.

RESPONSE TO DATA REQUEST 43

The modeling filenames are in the format of C1.sc.**[Pollutant]**.5Y.**[Generator ID]**.**[Load]**.**[Averaging Period]** For example, the filename C1.sc.[no2].5Y.[C1SWEG01].[100].[1hr].out contains NO_2 1-Hour modeling results for genset C1SWEG01 operating at 100% load.

All models for the NAAQS and CAAQS analysis have been updated and re-run. The result tables can be found in Appendix AIR DR-27 and are included on the Air Quality Data Response CD. The values in the .out and .plot files match the supporting analysis results.

BACKGROUND: OPERATION SCENARIOS ANALYZED

The operational impacts related to the ambient air quality standards shown in the application include a note that the applicant: "...would not operate any of the backup generators at the same time for maintenance and testing activities" (p.4.3-24, Table 4.3-11).

44. Please confirm that the applicant proposes to accept a District permit condition that prohibits concurrent operation of standby engines during all maintenance and testing scenarios.

RESPONSE TO DATA REQUEST 44

We can confirm that C1 expects to have a BAAQMD permit condition that prohibits concurrent operation of standby engines during all maintenance and testing scenarios. C1 will accept such a condition.

PUBLIC HEALTH

BACKGROUND: COMMENTS ON HEALTH RISK ASSESSMENT RESULTS

The information in the electronic modeling files to support the health risk assessment (HRA) seems limited to "chi/Q" results, without tables to document how post-processing the concentrations leads to the resultant health risk impacts summary that appears in the application Table 4.3-12 (p.4.3-28) and in Appendix F Section 5.1 and Table 17.

DATA REQUESTS

45. Please provide documentation supporting the work necessary to translate the "chi/Q" results, for each source or source group and each pollutant, from the reported ambient concentrations to the health risk impacts summarized in the application Table 4.3-12 (p.4.3-28) and identify the specific electronic files by filename that include these results.

RESPONSE TO DATA REQUEST 44

To translate the “Chi/Q” results for each source group and pollutant to risks, please refer to the methodology below:

Cancer risk:

Step #1: Multiply the period dispersion factor for each source group from the plot files with the emissions rate for DPM (same as PM10) in g/s provided in Table 9a in the AQTR in Appendix F. The emissions rate should be converted from tons/year to g/s; the emissions rate is the same for each engine. The dispersion factor plot files follow the naming convention as c1.sc.5Y.C1xxEGyy.plot where ‘xx’ is the location of the generator, and yy is the generator number. There is one plot file for each source group. A sample calculation for the cancer risk impact at receptor location 593040, 4135660.

Sum of all dispersion factors at the MEIR for period averaging time = 2.995 (ug/m^3)/(g/s)

DPM emissions rate per generator for period averaging time = 8.561E-05 g/s

Concentration at receptor from all generators = 2.9956*8.561E-05 = 2.564E-04 ug/m^3

Step #2: The resulting term is the concentration (in units of ug/m^3), which is multiplied by the speciation rate for diesel from Table 14 in the AQTR in Appendix F. The speciation value for diesel is 1.

Speciation value for DPM = 1

Concentration at receptor * Speciation = 2.564E-04*1 = 2.564E-04 ug/m^3

Step #3: The resulting term from above is then multiplied by the cancer potency factor for diesel particulate matter (DPM) in Table 15 in the AQTR in Appendix F. A factor of 1000 is used to convert microgram (ug) to milligrams (mg).

Cancer potency factor for DPM = 1.1 $(mg/kg\text{-}day)^{-1}$

Cancer potency factor * Concentration at receptor = 2.564E-04*1.1/1000 = 2.821E-07 $(kg\text{-}day/m^3)$

Step #4: The term from above is then multiplied by the Intake factor for the appropriate receptor category from Table 13 and the respective age sensitivity factor from Table 16 in the AQTR in Appendix F.

Total Intake Factor for residential receptor (including age sensitivity factor) = 0.6766 $(m^3/kg\text{-}day)$

Term from Step #3*Total intake factor = 0.6766*2.8212E-07 = 1.9088E-07 (unit less)

Step #5: The resulting term is multiplied by a conversion factor of 1,000,000 to get the cancer risk impact in units of risk per million people.

Term from Step #4*1 million = 1.9088E-07*1,000,000 = 0.19 in a million

Cancer risk on receptor (MEIR) = 0.19 in a million

Chronic HI:

Step #1: Same as cancer risk impact. Chronic HI also uses the period averaging time.

Step #2: Divide the concentration term by the Chronic Reference Exposure Level (cREL) for DPM from Table 15 in AQTR in Appendix F. A sample calculation for the cancer risk impact at receptor location 593040, 4135660.

Concentration at MEIR from all generators = 2.9956*8.56164E-05 = 2.5647E-04 ug/m^3

cREL for DPM = 5 ug/m^3

Chronic HI at receptor = 2.5647E-04/5 = 5.129E-05 (unit less)

Chronic HI on receptor (MEIR) = 5.129E-5

Acute HI:

Step #1: Multiply the 1-hour dispersion factor for each source group from the plot files with the emissions rate for ROG in g/s provided in Table 9a in the AQTR in Appendix F. The emissions rate should be converted from tons/year to g/s; the emissions rate is the same for each engine. A sample calculation for the cancer risk impact at receptor location 593040, 4135660.

Sum of all dispersion factors at receptor location for 1-hour averaging time = 575.44305 $(ug/m^3)/(g/s)$

TOG emissions rate per generator for 1-hour averaging time = 0.0501 g/s

Concentration at receptor from all generators = 575.44*0.0501 = 28.865 ug/m^3

Step #2: The resulting term is the concentration (in units of ug/m^3), which is multiplied by the speciation rate for ROG from Table 14 in the AQTR in Appendix F. The speciation value is different for different compounds that constitute ROG. A sample calculation for formaldehyde is shown here.

Speciation value for formaldehyde = 0.15 (unitless)

Concentration at receptor = 28.865 ug/m^3

Concentration*speciation value = 28.865*0.15 = 4.2460 ug/m^3

The above formula is applied for all compounds.

Step #3: The resulting term is then divided by the respective Acute Reference Exposure Level (aREL) found in Table 15 in the AQTR in Appendix F. A sample calculation for formaldehyde is shown here.

aREL for formaldehyde = 55 (ug/m3)

Term from Step #3/aREL = 4.246/55 = 0.0772 (unitless)

The above step is applied for all compounds of TOG, and then added together to get the Acute HI

Acute HI on receptor (MEIR) = 0.103

$PM_{2.5}$ Concentration:

Step #1: Same as cancer risk impact. $PM_{2.5}$ concentration also uses the period averaging time. The dispersion factors are multiplied by the emission factors for $PM_{2.5}$ in

g/s, which is equal to the emission factor for DPM. Sample calculation for PM2.5 concentration at receptor location 593040, 4135660 is the same as what is shown for Cancer risk.

Max. $PM_{2.5}$ concentration on receptor (MEIR) = 2.564E-04 $\mu g/m^3$

46. Please provide a map showing the locations of the sensitive receptors mentioned in the application (p.4.3-32) and locations of health risk impacts summarized in the application Table 4.3-12 (p.4.3-28), in relation to the proposed stacks, the facility boundaries, and include on the map a line showing a radius of 1,000 feet from the facility property line.

RESPONSE TO DATA REQUEST 46

Please see figure entitled “Figure for Data Request Response #46, Set 1” in Appendix PH DR-46.

BACKGROUND: CONSTRUCTION PHASE IMPACTS

On page 4.3-26 of the application (TN# 229419-1), the applicant states: 'Since construction emissions are below the BAAQMD thresholds and the closest receptors are 1,500 feet away, construction health impacts are expected to be minimal and therefore a refined construction HRA was not performed." However, since the construction would last 18 months, staff believes a quantitative HRA is necessary to make sure impacts from construction would be less than significant.

DATA REQUEST

47. Please provide a quantitative health risk impact assessment (including cancer risk, chronic non-cancer health index, and UTM coordinates) for the 18-month construction period. These impacts should include the following receptors: the maximally exposed individual resident (MEIR), maximally exposed individual worker (MEIW), maximally exposed soccer child receptor (MESCR), maximally exposed childcare receptor (MECR) and the point of maximum impact (PMI). Please also provide the HRA files.

RESPONSE TO DATA REQUEST 47

A construction health risk assessment is provided in Appendix AIR DR-29, which contains a Memorandum entitled “Construction Health Risk Assessment for the CyrusOne Sequoia Data Center in Santa Clara, California”. Please see Response to

Data Request 29. We have included a summary table in the construction HRA memo that summarizes health risk impacts for project construction along with the UTM coordinates of the receptor locations (see Table 6). The Point of Maximum Impact (PMI) occurs at the Maximally Exposed Individual Worker (MEIW).

BACKGROUND: OPERATION PHASE IMPACTS

The applicant conducted the HRA for project operation. However, staff needs more information to verify the HRA.

DATA REQUEST

48. Please provide the input files of data (i.e. the "*.ROU" files) for AERMOD and HARP, which contain the information of sensitive receptors and residence receptors, including grid identification numbers (i.e. HARP receptor numbers), type (ex: day care centers, nursing homes, schools) and corresponding locations (UTMs), so that staff can differentiate them from all other grid receptors.

RESPONSE TO DATA REQUEST 48

We did not use HARP for risk assessment purposes, so we do not have the HARP generated output files. We are providing a “sens.rec” file (supported by AERMOD) which identifies the sensitive and residential receptors along with their UTM coordinates on the Air Quality Data Responses CD.

Please also see Appendix PH DR-46 for a map of locations for the list of receptors that are considered sensitive.

49. If HRA was conducted using HARP2 (as stated in page 4.3-26), please provided all the modeling files.

RESPONSE TO DATA REQUEST 49

The HRA was not conducted using HARP2. The HRA was conducted using calculations of concentration, toxicity, and exposure, depending on receptor type.

50. Please provide all other related HRA files to enable staff to replicate the health risk assessment. Staff especially need the files and formulas generating the results of Table 4.3-12, Table 4.3-13, and Table 17 in Appendix F. Please keep all the cells and formulas live.

RESPONSE TO DATA REQUEST 50

Please see Air Quality Data Responses CD and Response to Data Request 4 for the files from the tables in Appendix F. Please also see Response to Data Request 45 for detailed information on our calculations of health risk. We have also provided our AERMOD files on the Air Quality Data Responses CD.

GREENHOUSE GASES

BACKGROUND: BUILDING SERVER ROOMS COOLING

The applicant indicates that the data center to house the servers requires electricity and cooling for 24 hours per day to operate. The building loads include the mechanical systems to provide cooling for the server rooms.

DATA REQUESTS

51. Appendix D, "Equipment Specs" section 2.04 Refrigerant Circuit Components states that the proposed cooling system refrigerant is HFC-134a (aka R-134a). Later in the section, R-410A is described as the refrigerant to be used in the cooling system. Please clarify which refrigerant is proposed.

RESPONSE TO DATA REQUEST 51

SDC will use HFC-134a as its refrigerant.

52. If HFC-134a is being proposed, and with the likelihood that this refrigerant will be phased out/banned for this type of use in the near future, could the cooling system be redesigned to use a replacement refrigerant with a different global warming potential, such as that being used in most of the European Union (HFO refrigerant R-1234YF [2,3,3,3 -Tetrafluoropropene])?

RESPONSE TO DATA REQUEST 52

We recognize that 134A may be phased out in the future however it is the refrigerant being utilized in a majority of the air-cooled chiller market. Typically, refrigerant is not required to be recovered and replaced as a function of it being phased out. Should the need to recover the refrigerant arise, it will be incumbent upon the equipment manufacturer to identify a “drop in” refrigerant compatible with their equipment. A system design is not anticipated to accommodate future refrigerants.

53. Provide an estimate of annual refrigerant leakage, as CO2e, from the cooling system.

RESPONSE TO DATA REQUEST 53

Estimate of annual refrigerant leakage as carbon dioxide equivalent (CO2e) emissions for (1) unit is 11,583 lb CO2 emissions per unit.

BACKGROUND: SULFUR HEXAFLUORIDE (SF6} LEAKAGE RATE

The project would include electrical equipment such as circuit breakers and transformers. Staff needs an estimate of leakage of SF6 from the electrical equipment to include in the GHG analysis.

DATA REQUEST

54. Will SF_6 be used as the electrical insulator for any of SDC's electrical equipment? If yes, provide an estimate of the quantity used and the amount of annual SF_6 leakage.

RESPONSE TO DATA REQUEST 54

C1 is working on this response and will provide a response under separate cover when complete.

BACKGROUND: CONSISTENCY WITH GHG REDUCTION STRATEGY

The application concludes the GHG impacts from the project's standby generators would be less than significant by comparing the GHG emissions from the standby generators with the BAAQMD's threshold of 10,000 metric tons of CO_2e per year (MT CO_2e/yr). To evaluate the GHG impacts from all other project-related emission sources, the application states that these GHG impacts would be considered to have a less-than-significant impact if the project is consistent with the Santa Clara Climate Action Plan (CAP) and applicable regulatory programs and policies adopted by the California Air Resources Board (ARB) or other California agencies.

However, the application does not demonstrate consistency with the following control measures or policies from City of Santa Clara CAP and City of Santa Clara General Plan.

a. **City of Santa Clara CAP:**
   Measure 6.1 Transportation demand management program

   Require new development located in the city's transportation districts to implement a TDM [transportation demand management] program to reduce drive-alone trips.

   The CAP states that the City of Santa Clara will require all new developments

greater than 25 housing units or more than 10,000 nonresidential square feet to draft and implement a vehicle miles traveled (VMT) reduction strategy that reduces drive-alone trips. The total project building square footage would be 702,114 square feet (shown in Figure 2, on page1-3 of the application). The application did not discuss whether the project would comply with Measure 6.1.

Solar panels

The City of Santa Clara adopted a reduction target for the year 2035 of 834,400 VMT CO_2e/yr, to be met by additional measures beyond those proposed for the year 2020. These include 10,000 kilowatt (kW) of customer-installed solar panels on about 2,000 residential homes, nonresidential buildings, parking garages, parking lots, and other feasible areas (Page 59 of the CAP).

Page 4.8-18 of the application states that the project, if required by the City as a design review condition, would install solar panels at the SDC. However, the application did not identify how much capacity could be installed or commit to a timeline for the solar panel installation that would help the City meet its 2035 GHG reduction target.

b. City of Santa Clara General Plan:

Energy Policy 5.10.3-P1

Promote the use of renewable energy resources, conservation and recycling programs.

Page 4.8-19 of the application states that the project could "reduce GHG emissions associated with the generation of electricity". Staff needs to know whether there is any contract or agreement between the applicant and SVP to purchase all of its electricity from Santa Clara Green Power.

Energy Policy 5.10.3-P3

Maximize the efficient use of energy throughout the community by achieving adopted electricity efficiency targets and promoting natural gas efficiency, consistent with the CAP.

Staff needs detailed description showing how the project would be consistent with the Energy Policy 5.10.3-P3 in the City's General Plan.

Water Policy 5.10.4-P6

Maximize the use of recycled water for construction, maintenance, irrigation and other appropriate applications.

Since the use of recycled water for construction, maintenance, and irrigation is part of the Santa Clara General Plan, staff is required to evaluate this policy as it relates to air quality. As stated on Table 4.8-6 on page 4.8-20 of the application the potential availability of recycled water is still being determined. Staff needs to confirm whether recycled water would be used for construction as well.

DATA REQUESTS

55. Please provide detailed analysis of the effectiveness and likely implementation for each component of the control measures/policies listed above.

RESPONSE TO DATA REQUEST 55

a. City of Santa Clara CAP

Measure 6.1 Transportation demand management program.

Response: Please refer to Section 2.7 and page 4.17-5 in Section 4.17, Transportation. As discussed in the permit application, the City's CAP requires all new developments greater than 10,000 nonresidential square feet to draft and implement a VMT reduction strategy that reduces drive-alone trips. As a condition of approval, C1 will develop a Transportation Demand Management Program for the SDC, as required by the City. The Transportation Demand Management Program would reduce individual vehicle trips to and from the SDC site.

Solar panels:

Response: If required by the City as a design review condition, solar panels would be installed at the SDC. At this time, solar panel installation is not planned for the SDC. Therefore, it is not possible to provide details on possible future capacity. Evaluation of the SDC's consistency with the City's CAP is under the purview of the City but is provided in the SPPE application for informational purposes.

b. City of Santa Clara General Plan:

Energy Policy 5.10.3-P1.

Response: There is no agreement in place with SVP to purchase all electricity from Santa Clara Green Power.

Energy Policy 5.10.3-P3

Response: Please refer to Section 3.0, Energy Resources, and Section 4.6, Energy, for a detailed discussion of project energy consumption. Section 4.6 provides a detailed analysis of the project's consistency with Policy 5.10.3 (Table 4.6-4 Project Consistency with Plans for Renewable Energy and Energy Efficiency). As described in the SPPE application, the SBGF would not require SVP service to operate, but would in fact provide backup electricity to the SDC only in the event electricity cannot be supplied from SVP and delivered to the SDC building. An analysis of the SDC's energy efficiency and consistency with the CAP is provided for informational purposes.

Water Policy 5.10.4-P6

Response: BAAQMD construction-period BMPs would be implemented to reduce GHG emissions during construction, as feasible and applicable. The list of possible BMPs provided in BAAQMD's CEQA Guidelines does not list the use of recycled water during construction.

56. Please explain how the GHG control measures/policies would be enforced for this project. Does the applicant plan on submitting building design plans to City of Santa Clara for review and approval before construction begins? If not, when would these be finalized?

RESPONSE TO DATA REQUEST 56

All project design measures would be incorporated into the project either inherently as a part of the design or as a condition of approval placed on the project by the City. The project is subject to planning review and approval by the City, including review by the Architectural Review Committee. Mitigation measures would be documented in a mitigation monitoring and reporting program and would be enforced by the City. Project planning review and approval by the City is required prior to any construction activity and C1 has already submitted for Project Clearance Committee review on September 24, 2019.

THERMAL PLUMES

BACKGROUND: THERMAL PLUMES

According to the SPPE application, the project would have emergency generators and air cooled chillers and the project site is located east and immediately adjacent to the Norman Y. Mineta San Jose International Airport. Therefore, staff will require the following information in order to complete its evaluation of thermal plumes from the proposed Sequoia Backup Generating Facility (SBGF) and the Sequoia Data Center (SDC) building/server chilling units to ensure air traffic safety and analyze any potentially significant impacts from such plumes.

DATA REQUESTS

57. Please perform a thermal plume modeling of the project's emergency generators for the SBGF.

RESPONSE TO DATA REQUEST 57

Please see Appendix TP DR-57 which contains the report entitled, "Plume Assessment CyrusOne Sequoia Data Center and Backup Generating Facility" for the thermal plume modeling of the project's emergency generators.

58. Please perform thermal plume modeling of the equipment used to cool the building and data servers at the SDC.

RESPONSE TO DATA REQUEST 58

Please see Appendix TP DR-57 which contains the report entitled, "Plume Assessment CyrusOne Sequoia Data Center and Backup Generating Facility" for the thermal plume modeling of the project's chillers.

59. Please describe in detail the HVAC equipment, including the chiller units, with enough details to confirm the thermal plume modeling.

RESPONSE TO DATA REQUEST 59

Please see attached schematics and the Appendix TP DR-57 for detail on HVAC equipment.

60. Please provide a schematic, showing all mechanical equipment on the roof of the SDC.

RESPONSE TO DATA REQUEST 60

Please see Appendix TP DR-60, which includes schematics of the mechanical equipment.

61. Please provide the following to support the thermal plume analysis (provide equivalent data if necessary):
    a) Stack Height (m) for the SDC chiller units and SBGF emergency engines
    b) Exhaust Temp (K) for both the chiller units and emergency engines
    c) Exit Velocity (m/s) for both the SDC chiller units and the emergency engines at the SBGF
    d) Stack Diameter (m) for the chiller units and the emergency engines
    e) Number of chiller unit stacks
    f) Distance between the chiller unit stacks (m)

RESPONSE TO DATA REQUEST 61

There are 52 chiller units that are 30 meters apart. See table below for release parameters.

	SDC Chiller Units	SBGF Emergency Engines
Stack Height (m)	28.9	See response to question 8
Exhaust Temp (K)	325.9	
Exit Velocity (m/s)	9.11	
Stack Diameter (m)	4.1	

BIOLOGICAL RESOURCES

BACKGROUND

The SPPE application lacks specific details regarding how the preparer made the determination in the impact discussion that "there is some possibility that individual [western burrowing] owls could occur at the site". CEC staff requires additional information to analyze the project's potential impacts on western burrowing owl (Athene cunicularia).

DATA REQUESTS

62. Please clarify the basis for the determination on page 4.4-6, paragraph 2, line 3, that western burrowing owls may occur on the project site (e.9., presence of burrows or burrow surrogates, fossorial mammal dens, cast pellets, prey remains, owl white wash, and other distinguishing indicators). Please also specify under what circumstances western burrowing owl could potentially occur on site (e.9., transient individuals, foraging, breeding, residents, dispersing individuals, etc.).

RESPONSE TO DATA REQUEST 62

The Application for SPPE conservatively assumes that burrowing owls may be present on site based on the proximity of the site to unpaved areas adjacent to runways at the San Jose International Airport that serve as habitat for burrowing owls. The likelihood of this occurring is believed to be low, not only as a result of intervening development but because the SDC site lacks suitable wildlife habitat or natural areas. However, to ensure the proposed development would not result in any impact to burrowing owl, mitigation has been incorporated into the project as described in Section 2, Project Description. Given that the analysis assumes individuals of the species could occur at the site, this impact is treated as potentially significant and mitigation is incorporated into the project. This ensures that impacts to the species are avoided if individuals are encountered on the project site. Further, a biological resources technical study has been commissioned and will include a reconnaissance-level site visit. The results of the technical study will be documented in a memorandum and submitted to the CEC separately when available.

63. Please provide the results of any biological resource surveys conducted for the project site that were used to determine the potential for western burrowing owl to occur on site.

RESPONSE TO DATA REQUEST 63

A biological resources technical study has been commissioned and will include a reconnaissance-level site visit. The results of the technical study will be documented in

a memorandum and submitted to the CEC separately within two weeks. However, as discussed above, the analysis presented in the application for SPPE conservatively assumes burrowing owls may occur on the project site and mitigation has been incorporated into the project to address this potential impact.

BACKGROUND

The applicant would remove 66 of the 72 trees on the perimeter of the site. The SPPE application lacks specific details on page 4.4-8, paragraph 2, regarding which trees would be retained and which would be removed. The applicant's arborist report recommends tree protection zones for the trees to be retained; however, these measures were not included in the impact discussion related to tree removal. Staff requires additional information to analyze the project's potential impacts on tree species included in the arborist report and determine if tree protection zones would be required for the trees to be retained.

DATA REQUEST

64. Please provide the Tree ID from the inventory matrix of the arborist report for each tree that would be removed.

RESPONSE TO DATA REQUEST 64

Please see Appendix BIO DR-64, which includes the proposed tree removal schedule with tree IDs from the tree inventory report.

CULTURAL AND TRIBAL CULTURAL RESOURCES

BACKGROUND

The proposed project would include construction of a new electrical substation but the application is unclear about some important characteristics of the electrical interconnection. In addition, staff seeks clarification regarding the design of structural foundations and the location of construction staging and lay-down.

DATA REQUESTS

65. Please describe the type of electrical interconnection between the substation and data center and backup generating facilities. The description must identify the number of transmission poles (if applicable), number of trenches (if applicable), and the expected dimensions of all required excavations.

RESPONSE TO DATA REQUEST 65

Please see Appendix CUL CR-65 which provides an overall diagram of the proposed electrical layout for the SBGF and SDC. As described in Section 2, Project Description, the generation yard would be electrically interconnected to the SDC building through above-ground cables to a location within the building that houses electrical distribution equipment.

Construction of the SDC would require excavation for grading, utility trenching, and building foundations. The depth of such excavations would be an average of 2 to 3 feet with a maximum of 5 feet. The precise location of trenching and other ground disturbing activities was not detailed in the permit application and will be finalized prior to construction. However, to ensure that all potential impacts associated with ground disturbance and buried cultural and tribal cultural resources were addressed, mitigation has been incorporated into the project. This mitigation assumes that all areas of the project site may have sensitivity for buried resources and provides for on-site monitors during ground disturbing activities. Please refer to page 4.5-3 and page 4.18-4 for the full text of these measures.

66. Please describe the transmission line route to the first point of connection with SVP facilities. Indicate the route on a map and include pole locations.

RESPONSE TO DATA REQUEST 66

There is no transmission route to the first point of connection between the SDC and the SVP facilities. There are distribution cables that will interconnect the new substation to the SDC. Please See Appendix TSE DR-81 which includes an onsite utility plan.

67. Please clarify whether the foundations for the data center building or backup generators would rest on piles. If applicable, please disclose the dimensions of excavation required to install the piles, as well as the number and distribution of piles for each structure.

RESPONSE TO DATA REQUEST 67

At this time, piles are not anticipated for the SDC foundation. However, mitigation incorporated into the project addresses ground-disturbing activities regardless of depth and ensures that appropriate monitors would be present on-site. Additionally, a supplemental cultural resources technical report has been prepared to further assess the sensitivity of the project site. This technical report has been submitted under a Request For Confidential Designation.

68. Please describe how construction staging and laydown would be handled and map the locations to be used for these purposes.

RESPONSE TO DATA REQUEST 68

All construction staging and laydown is anticipated to occur within the project site. The analysis presented in the permit application takes a conservative approach in assuming the potential for various construction activities to take place throughout the site and assumes sensitive soils may also occur throughout the site. Mitigation has been incorporated into the project accordingly, to ensure that impacts to any unanticipated buried resources are reduced to less than significant.

BACKGROUND

The cultural resources and tribal cultural resources sections of the SPPE application (Circlepoint 2019, sections 4.5, 4.18) indicate that the applicant requested a records search from the Northwest Information Center (NWIC) of the California Historical Resources Information System. The cultural resources section of the SPPE application states that a previous cultural resources study

covered approximately 15 percent of the project area. A map depicting the area searched at the NWIC did not accompany the SPPE application, leaving staff unable to determine which 15 percent of the project area has been covered or the extent of the study area for the records search. Staff needs this information to evaluate the proposed project's potential to affect cultural and tribal cultural resources.

DATA REQUESTS

69. Please provide a map of the area searched at the NWIC. The map should use U.S. Geological Survey topographic imagery for the base map and be set to a scale of 1 inch = 2,000 feet. The records search map shall depict the limits of the records search area, locations of previous cultural resource studies, and locations of known cultural resources. The map shall be submitted to the CEC's Docket Unit under request for confidential filing.

RESPONSE TO DATA REQUEST 69

The map will be included in the report discussed in Responses to Data Requests 71 and 72

70. Please provide copies of the reports and records acquired from the NWIC. The results shall be submitted to the CEC's Docket Unit under request for confidential filing.

RESPONSE TO DATA REQUEST 70

The copies of reports and records acquired form the NWIC have been provided to the CEC under a Request For Confidential Designation on October 2, 2019.

71. Please provide the results of a built environment survey completed within the last five years, extending to no less than one parcel's distance from all boundaries of the proposed project site, and a windshield survey conducted along any proposed linear routes to identify all buildings, districts, structures, sites, or objects that are 45 years or older. Those properties identified as 45 years or older within a one-parcel buffer surrounding the project site shall be documented and evaluated on Department of Parks and Recreation (DPR) 523(A) forms and appropriate DPR 523 detail forms. The results of the windshield survey of the linear routes shall identify, inventory and characterize structures and districts that appear to be 45 years or older, or that are exceptionally significant, whatever the age.

RESPONSE TO DATA REQUEST 71

The work identified above has been commissioned and C1 expects to file a comprehensive report responsive to this data request under Request For Confidential Designation in October 2019.

72. Please provide the results of an archaeological survey inclusive of the proposed project site boundaries, within an exterior perimeter of 1200 feet of those boundaries and within 50 feet to either side of any linear routes. Those resources or sites identified as 45 years or older within a one-parcel buffer surrounding the project site shall be documented and evaluated on DPR 523(4) forms and appropriate DPR 523 detail forms. lnclude new or updated DPR 523 (A) forms as needed to document identified archaeological sites.

RESPONSE TO DATA REQUEST 72

The work identified above has been commissioned and C1 expects to file a comprehensive report responsive to this data request under Request For Confidential Designation in October 2019.

73. Please provide a technical report with the results of new surveys and summarizing the results of the records search conforming to the Archaeological Resource Management Report format (OHP 1990).

RESPONSE TO DATA REQUEST 73

The work identified above has been commissioned and C1 expects to file a comprehensive report responsive to this data request under Request For Confidential Designation in October 2019.

LAND USE AND PLANNING

BACKGROUND

The SPPE application states that the proposed project site encompasses 15 acres and that it is located on assessor's parcel number (APN) 230-03-105. The city's zoning map indicates that APN 230-03-105 covers 24.27 acres. The plan view in the application shows the parcel outline within which development would occur (Figure 2, Proposed Improvements). Staff assumes the entire 24.27-acre parcel is under the applicant's control.

DATA REQUEST

74. Staff requests information on what the applicant proposes to do with the remaining 9.27 acres on APN 230-03-105. Please include information on all uses during project construction and operation.

RESPONSE TO DATA REQUEST 74

The entire 24.27 acre parcel is under C1 control but has no plans for the development of the remaining 9.27 acres at this time.

BACKGROUND

Floor area ratio (FAR) is calculated by dividing the building square footage by the lot size. The SPPE application states that the FAR would be 0.97 (page 4.11-2). To confirm the FAR for the proposed project, staff divided the total floor area of 702,114 square feet (sq. ft.) by the applicant's stated project site area of 653,400 sq. ft. (i.e., the 15-acre project site). Using the applicant's project site area, staff calculates the FAR as 1.07.

As discussed under item 1, above, staff assumes a probable total lot size of 24.27 acres, which converts to 1,057,201 sq. ft. Under this assumption, the FAR calculation would be 0.66.

DATA REQUEST

75. Staff requests confirmation of the correct value for FAR and an explanation of the calculation method.

RESPONSE TO DATA REQUEST 75

The building square footage identified in the SPPE Application was incorrect. The correct total square footage of the SDC is 703,450. The correct methodology to

compute FAR is to divide the total square footage of the SDC building by the square footage of the 15-acres proposed for the project. The FAR is 703,450/653,400 or 1.08.

BACKGROUND

The SPPE application states that a planning application will be filed with the city in August (page 4.1-4).

DATA REQUEST

76. Staff requests the name and contact information for the planner who will oversee the city's application process.

RESPONSE TO DATA REQUEST 76

The planning application was filed on September 24, 2019 and the planner assigned for the City of Santa Clara is Ela Kerachian.

PALEONTOLOGIC RESOURCES

BACKGROUND

Information about the depth of excavation planned is necessary to evaluate the impact that ground disturbing activities may have on paleontological and mineralogical resources. The SPPE application [section 4.7(a) (iii)] states that all recommendations outlined in the site-specific geotechnical investigation performed by Kleinfelder in October 2018 will be incorporated into the SDC and SBGF. The Kleinfelder geotech report (section 6.10 Deep Foundations) suggests that either drilled displacement or driven precast concrete piles, constructed as deep at 80 feet below grade, may be necessary to stabilize the portions of the data center that are susceptible to settlement. However, there is no indication in the project description or the geology section of the SPPE application that piles will be used to support the slab foundation proposed for the SDC, and the SPPE application [section 4.7(f)] suggests excavation and grading will extend to a depth of up to 5 feet to allow for the placement of slab foundations.

DATA REQUEST

77. Please confirm the maximum depth of excavation planned for the proposed site and if piles will be used to support the proposed slab foundations. If planned excavations will extend more than five feet below existing grade, please provide a detailed map depicting the grading plan and maximum depths of excavation.

RESPONSE TO DATA REQUEST 77

Construction of the SDC would require excavation for grading, utility trenching, and building foundations. The depth of such excavations would be an average of 2 to 3 feet with a maximum of 5 feet. At this time, piles are not anticipated for the SDC foundation.

POPULATION AND HOUSING

BACKGROUND: PROJECT CONSTRUCTION

Staff needs to know more about the construction of the SDC and SBGF, collectively "the project." The SPPE application notes on page 2-8 that construction of the SBGF would take 6 months and require 10-15 construction workers including one crane operator. The SPPE application notes on page 2-10 that SDC construction would take place from February 2020 through March 2021, but there is no indication of the number of construction workers necessary for project as a whole. Staff has the following associated questions and requests:

DATA REQUEST

78. What is the estimated number of construction workers during peak activities and on average for the whole project (SBGF and SDC)?

RESPONSE TO DATA REQUEST 78

As described in Section 2, construction of the generation yard and placement of the generators is expected to take 6 months. Construction personnel are estimated to range from 10 to 15 workers including one crane operator.

For the SBGF and SDC together the total construction workforce is estimated at a monthly peak of 300 and a monthly average of approximately 125. These are very rough estimates as C1 has not yet engaged a contractor that would determine the actual construction workforce.

BACKGROUND: PROJECT CONSTRUCTION AND OPERATION WORKFORCE

Staff needs to know about the assumptions used for the construction and operations workforce for the project. No assumptions were discussed in the SPPE application.

DATA REQUESTS

79. From where are the project construction and operation workforce estimate to be derived locally within the Greater Bay Area or non-locally (beyond a two-hour commute of the project site)?

RESPONSE TO DATA REQUEST 79

C1 requested information from the Building and Trades Council representative and was assured that all of the construction workers for the SDC and the SBGF would be sourced locally within the Greater Bay Area. All of the SDC operation workers are also anticipated to be derived locally within the Greater Bay Area.

80. What portion of the construction and operation workforce does the applicant anticipate would be local and what portion would be non-local?

RESPONSE TO DATA REQUEST 80

See Response to Data Request 79.

SUBSTATION AND INTERCONNECTION

BACKGROUND

Section 2.0 of the SPPE application indicated that SDC includes an onsite 60-kV substation with an electrical supply line that would connect to an- SVP 60-kV line. Understanding the proposed interconnection to SVP would assist staff in determining the likelihood that back-up generators would be operated and thus any potential impacts on the environment from their operation. Staff needs more detailed information on the 60-kV substation, 60-kV interconnection line, and transmission poles than was provided in the project description section.

DATA REQUESTS

81. Please provide a complete one-line diagram for the new 60-kV SDC substation. Show all equipment ratings including bay arrangement of the breakers, disconnect switches, buses, redundant transformers or equipment, etc. that would be required for interconnection of the SDC project.

RESPONSE TO DATA REQUEST 81

C1 has requested the information contained in Data Requests 81 through 84 as the information is not within C1's control. If SVP provides the information, we will provide it the CEC as soon as we receive it. However, we note that the CEC can complete its IS/MND without the specific information requested in these data requests.

The new substation would be interposed on SVP's South Loop between the 115-kV receiving station and an adjacent 60 kV substation. The new conductor that would interconnect the new substation to the bulk electrical system will be an aluminium conductor composite reinforced type, size 715 double bundle with a carrying capacity of 310 MVA. SVP's general practice is to use tubular steel transmission poles for the two dead end structures. While SVP has not yet designed the 60 kV transmission lines that interconnect the new substation, the transmission line that currently passes near the western property line on the railroad right-of-way will be intercepted and rerouted into the new substation to form a loop on the SVP 60 kV transmission system.

Please see Appendix TSE DR-81 which includes a map of the electric utility plan for the SDC.

82. Please provide a one-line diagram showing how the SDC would be connected to the existing SVP system. Please label the name of the lines and provide the line voltages.

RESPONSE TO DATA REQUEST 82

Please see Response to Data Request 81.

83. Please provide for the 60-kV loop on the SVP system that would serve the SDC:

    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 industrial 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 83

Please see Response to Data Request 81.

84. Please provide a description of the SVP system in general and the existing 60-kV loops that serve data centers.

    a. Could you provide a one-line diagram and a "*.shp" file of the 60-kV and above lines serving the Silicon Valley Power System? Would you have any concerns with us using either of these in a public document?

    b. Are each of the 60-kV loops designed similarly or do some of them have features that make them more or less reliable than the others?

RESPONSE TO DATA REQUEST 84

Please see Response to Data Request 81 and SVP's Responses to CEC Data Requests in the Laurelwood SPPE proceeding (TN 229381 and TN 229557).

85. Please describe any outages or service interruptions on the 60-kV systems that serve existing data centers:

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

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

c. How long were any 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 data centers to the outage (i.e., initiated operation of some or all back up generation equipment, data off-shoring, data center planned shutdown, etc.)?

RESPONSE TO DATA REQUEST 85

Please see Response to Data Request 84.

86. Please provide the conductor name, current carrying capacity in Ampere, and conductor size for the transmission lines that would be required for interconnecting the SDC to the SVP 60- kV system.

RESPONSE TO DATA REQUEST 86

Please see Response to Data Request 81.

87. Please provide the pole configurations that would be used to support the transmission lines from the SVP 60-kV system to the SDC. Show proposed pole structure configurations and measurements.

RESPONSE TO DATA REQUEST 87

Please see Response to Data Request 81.

88. Please provide a map showing the proposed transmission line route. Please provide a detailed description and drawing of the proposed 60-kV transmission line route, possible interconnection points to the existing SVP system, and possible pole locations. Please provide a legend and label the drawing to show the proposed line route, pole locations and existing transmission facilities

RESPONSE TO DATA REQUEST 88

Please see Response to Data Request 81.

TRANSPORTATION

BACKGROUND: CITY ANALYSIS OF PROJECT CONFORMANCE WITH CLUP

The project is located within the Turning Safety Zone and Inner Safety Zone of the San Jose International Airport, as designated by the Santa Clara County Comprehensive Land Use Plan (CLUP) for the airport. According to Policy S-4 of the CLUP, above-ground fuel storage and hazardous materials facilities are not permitted in these zones. The project has above-ground diesel storage tanks (total capacity 367,200 gallons).

In the Hazardous Materials section of the application, the applicant states: "The City, in their authority as the agency with jurisdiction over the project with relation to the CLUP, has reviewed this element of the SBGF and concluded that the SBGF conforms to General Plan policies implementing the CLUP, because it does not involve stand-alone storage tanks of diesel fuel or any other above-ground fuel storage (Appendix L)." However, Appendix L is a Phase I Environmental Site Assessment and does not discuss the City's review.

DATA REQUEST

89. Please provide the City's comments on and/or analysis of the project's conformance with the CLUP.

RESPONSE TO DATA REQUEST 89

The information provided in the SPPE Application was based on a personal conversation with City of Santa Clara Planning. C1 is filing its formal Planning Application with the City on September 24, 2019 and this filing will allow the City Planning Department to address this data request in a more formal and written manner.

BACKGROUND: COMMUNICATIONS WITH UNION PACIFIC RAILROAD

Union Pacific Railroad tracks run in a north-south direction adjacent to the western side of the project site. There is also an apparently abandoned railroad spur adjacent to the south side of the project site.

DATA REQUEST

90. Please state:

a) Whether Union Pacific has been notified of the project;

b) Methods of notification used and person contacted; and

c) Any comments received from Union Pacific.

RESPONSE TO DATA REQUEST 90

C1 has not had any contact with Union Pacific as it does not require any easements or use of the Union Pacific property to construct and operate the SDC or SBGF.

BACKGROUND: TRANSPORTATION DEMAND MANAGEMENT PROGRAM

In the Transportation section of the application, the applicant states: "…[T]he City's CAP [Climate Action Plan] requires all new developments greater than 10,000 nonresidential square feet to draft and implement a VMT [vehicle miles traveled] reduction strategy that reduces drive-alone trips. As a condition of approval, C1 will develop a Transportation Demand Management Program for the SDC, as required by the City. The Transportation Demand Management Program would reduce individual vehicle trips to and from the SDC site."

DATA REQUEST

91. Please provide the draft Transportation Demand Management Program, or at least, the exact measures that would be included as part of the program to reduce VMT.

RESPONSE TO DATA REQUEST 91

The SBGF would not result in trip generation or otherwise contribute directly or indirectly to notable increases in VMT. Trip generation associated with the SDC is provided in the permit application for informational purposes. Review and approval of the TDM program would occur as a part of the City of Santa Clara's planning approvals for the project. Therefore, specific TDM strategies have not yet been developed. Example TDM strategies provided by BAAQMD include parking pricing strategies; parking maximums; mandated parking spaces for car-sharing programs; the provision of transit passes in residential, commercial and office developments; charging stations for electric vehicles; bicycle lockers or racks; teleworking policies; and bicycling improvements. Given the project type, not all of the examples are applicable or relevant, such as parking pricing or teleworking.

92. Please provide an estimate of the actual number of daily trips that would be generated.

RESPONSE TO DATA REQUEST 92

Using the ITE rate, the SDC would produce an estimated 695 daily trips. However, a maximum of 25 full-time employees would occupy the site over each 24-hour period, making the ITE rate conservatively high in this case. Accounting for 25 employees

arriving and departing from the site over each 24-hour period, approximately 50 trips would be generated by regular employees per day. In addition to regular employees, customers or their representatives would visit the site from time to time. The number and frequency of these visits is dependent on the customer and cannot be reliably predicted at this time but would reasonably not exceed the number of regular employees based on C1's experience in data center operation. As noted in the SPPE Application, the conservatively high ITE trip generation rate is used to ensure that regular employee and visitor trips are robustly accounted for.