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CALIFORNIA ENERGY COMMISSION

September 13, 2019

C1-Santa Clara, LLC
c/o Scott Galati
1720 Park Place Drive
Carmichael, CA 95608

Re: Data Requests for the Sequoia Data Center (19-SPPE-03)

Dear Mr. Galati:

Pursuant to Title 20, California Code of Regulations, sections 1941 and 1716, the California Energy Commission (CEC) staff is asking for the information specified in the enclosed Data Requests Set 1 necessary for a complete staff analysis of the Sequoia Data Center project.

Responses to the data requests are due to staff within 30 days. To facilitate an expedited review, staff requests written responses to the enclosed data requests on or before September 27, 2019.

If you are unable to provide the information requested, need additional time, or object to providing the requested information, please send written notice to me and the Committee within 20 days of receipt of this letter. Such written notification must contain the reasons for not providing the information, the need for additional time, or the grounds for any objections (see Cal. Code Regs., tit. 20, § 1716 (f)).

If you have any questions, please call me at (916) 651-0966, or email me at leonidas.payne@energy.ca.gov.

Leonidas Payne
Project Manager

Enclosure

Air Quality

Authors: Jacquelyn Record, Brewster Birdsall

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

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.

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.

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.

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.

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.

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®.

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.

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.

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.

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.

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 nearfuture.

DATA REQUESTS

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

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.

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) Permitted but not under construction; and,

    d) Permitted and under construction.

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

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 for the emergency generators that would be expected for the year.

16. Please estimate the duration, with the annual frequency and an estimated time for each maintenance event for the emergency generators.

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

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

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

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

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.

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

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 a description of the test cycle used for the EPA certifications and compare it against expected engine operations.

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

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

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.

BACKGROUND: AMBIENT AIR QUALITY IMPACT ANALYSIS SCOPE

The dispersion modeling results (on pp.4.3-24, Table 4.3-11 of the SPPE application) summarize analyses for 1-hour nitrogen dioxide (NO_2) and for the 1-hour and 8-hour carbon monoxide (CO) ambient air quality standards, and for health risks (pp.4.3-28, Table 4.3-12) due to toxic air contaminants (TACs). Modeling and ambient air quality impact analyses for other criteria pollutants (e.g., namely PM10, PM2.5, and sulfur dioxide (SO_2)) are also needed to show compliance with all the California Ambient Air Quality Standards and National Ambient Air Quality Standards.

DATA REQUEST

27. Please provide the analysis of impacts to ambient air quality for PM10, PM2.5 and SO_2.

BACKGROUND: AMBIENT AIR QUALITY IMPACT ANALYSIS FOR CONSTRUCTION

The applicant estimated construction-phase emissions (pp.4.3-12 to 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.

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 10×10^{-6}) the applicant should refine the modeling beyond a screening level of analysis.

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

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.

32. Please confirm whether the proposed engines would comply with the 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).

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.

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 m/s.

DATA REQUEST

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.

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.

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

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.

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.

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

BACKGROUND: COMMENTS ON DISPERSION MODELING OZONE ASSUMPTIONS

The dispersion modeling files for NO_2 impacts include hourly ozone data from a separate file of monitored data (called "O3.5y.dat"). The application (p.4.3-23) 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 for making this assumption, if the missing data replacement method was properly implemented (p.4.3-23).

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 B-6), indicate (in the table footnote) that "a background NO_2 value of 126.9 $\mu g/m^3$ (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 the 2018 data if available.

42. Please reconcile whether a single background NO_2 value or seasonal 1-hour NO_2 background concentrations were actually used, and if so, for which portions of the analyses.

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 B-6), find the maximum total modeled 1-hour NO_2 concentrations to be 185 and 325 $\mu g/m^3$, 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 B-6 with background NO_2, as in the 1-hour NO_2 modeling files appears to be 208.9 $\mu g/m^3$ on the daily maximum values averaged over five years (e.g., in file "c1.sc.no2.5Y.C1WEG019.100.1hr.out"). Similarly, dispersion modeling files for CO (e.g., in file "c1.sc.5y.100.hr.out") do not correlate with the CO results in Table 4.3-11 of the application.

DATA REQUEST

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.

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).

DATA REQUEST

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.

Public Health

Authors: Huei-An Chu (Ann), Ph.D., Brewster Birdsall

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.

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.

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.

BACKGROUND: OPERATION PHASE IMPACTS

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

DATA REQUESTS

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.

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

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.

Greenhouse Gases (GHGs)

Author: Jacquelyn Record

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.

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])?

53. Please provide an estimate of annual refrigerant leakage, reported as carbon dioxide equivalent (CO2e) emissions, from the cooling system proposed for SDC.

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 SF_6 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, please provide an estimate of the quantity used and the amount of annual SF_6 leakage.

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. Does the use of recycled water rather than fresh water increase or decrease GHG emissions associated with this project?

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?

Thermal Plumes

Author: Jacquelyn Record

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.

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

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

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

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)

Biological Resources

Author: Ann Crisp

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.g., 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.g., transient individuals, foraging, breeding, residents, dispersing individuals, etc.).

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.

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.

Cultural and Tribal Cultural Resources

Authors: Matthew Braun and Melissa Mourkas

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.

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.

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.

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

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.

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.

BACKGROUND

The application is not accompanied by a Cultural Resources Technical Report and does not include copies of the reports and records acquired from the NWIC or a survey and evaluation of adjoining properties containing built environment resources 45 years or older. The SPPE application suggests that 85 percent of the proposed project area has not been surveyed to determine the presence or absence of cultural or tribal cultural resources. The application also indicates that the buildings and structures once occupying the project area have recently been demolished. The application does not summarize a project-specific cultural resources inventory, nor did the application include a confidential cultural resources inventory report. This information is needed for cultural resources staff's independent analysis of the project and its potential for identifying impacts to the environment under CEQA.

DATA REQUESTS

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.

72. Please provide the results of an archaeological survey inclusive of the proposed project site boundaries, within an exterior perimeter of 200 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(A) forms and appropriate DPR 523 detail forms. Include new or updated DPR 523 (A) forms as needed to document identified archaeological sites.

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).

REFERENCES CITED

Circlepoint 2019—Circlepoint (TN 229419), *Application for Small Power Plant Exemption: Sequoia Backup Generating Facility.* Submitted to California Energy Commission, Sacramento. August 9, 2019.

OHP 1990—California Office of Historic Preservation. *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format.* February 1990.

Land Use and Planning

Author: Jeanine Hinde

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.

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.

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.

Paleontologic Resources

Author: Garry Maurath

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.

Population and Housing

Author: Ellen LeFevre

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)?

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)?

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

Substation and Interconnection

Author: Laiping Ng

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.

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.

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

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?

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.)?

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.

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.

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

Transportation

Author: Andrea Koch

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.

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.

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.

BACKGROUND: ESTIMATE OF DAILY TRIPS

In the Transportation section of the application, the applicant stated that using the Institute of Transportation Engineers (ITE) rate, the SDC would produce an estimated 695 daily trips, but that the ITE rate would be conservatively high for the project.

DATA REQUEST

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