

DOCKETED	
Docket Number:	19-SPPE-03
Project Title:	Sequoia Data Center
TN #:	233095
Document Title:	CEC Staff Responses to Committee Questions
Description:	CEC Staff Supplemental Testimony responsive to the Committee Questions on potential air quality, greenhouse gas emissions, and public health impacts. Additional staff declarations and resumes are included.
Filer:	Steve Kerr
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	5/22/2020 2:12:10 PM
Docketed Date:	5/22/2020

Memorandum

To: Commissioner Karen Douglas, Presiding Member
Commissioner Patty Monahan, Associate Member

Date: May 22, 2020

From: **California Energy Commission**
1516 Ninth Street
Sacramento, CA 95814-5512

Leonidas Payne
Project Manager
(916) 651-0966

Subject: **CEC STAFF RESPONSES TO COMMITTEE QUESTIONS REGARDING THE SEQUOIA
BACKUP GENERATING FACILITY (19-SPPE-03) APPLICATION FOR SMALL POWER
PLANT EXEMPTION (SPPE) PROCEEDING**

In accordance with the Committee's NOTICE OF PREHEARING CONFERENCE AND EVIDENTIARY HEARING, REVISED SCHEDULING ORDER, AND FURTHER ORDERS docketed May 8, 2020 (TN 232957), California Energy Commission staff (staff) submits its responses to the Committee's questions regarding Air Quality, Public Health, and Greenhouse Gas Emissions (Attachment A).

Staff additionally submits a set of revised declarations covering this new testimony and associated resumes (Attachment B).

ATTACHMENT A: STAFF RESPONSES TO COMMITTEE QUESTIONS

Subject Area: Air Quality Pertaining to Criteria Pollutants

AQ-1: Is Staff's analysis in the Initial Study/Proposed Mitigated Negative Declaration (IS/PMND) of impacts from criteria pollutant emissions consistent with the BAAQMD CEQA Guidelines? Explain. If not, is the analysis nonetheless CEQA compliant? Explain.

Yes. In conducting the air quality and public health analyses, staff followed the guidance recommended in the BAAQMD CEQA Air Quality Guidelines (BAAQMD Guidelines) document. For criteria pollutants, staff compared the mass emissions of all 54 engines proposed at the Sequoia Backup Generating Facility to the daily and annual emissions thresholds established in the BAAQMD Guidelines and in the Initial Study Table 5.3-4 BAAQMD Thresholds of Significance on page 5.3-13. Staff assumed 50 hours per year for maintenance and testing of each emergency engine; actual operation is likely to be far less than this.

Staff's analysis complies with CEQA and even goes beyond what is necessary in the BAAQMD CEQA Guidance document for criteria pollutants.

Subject Area: Public Health Pertaining to Toxic Air Contaminants (TACs)

PH-1: Does the analysis of TACs included in Appendix F of the SPPE application apply the methodology set forth in Section 5.3 of the BAAQMD's CEQA Guidelines for assessing cumulative impacts of TACs? Explain.

Yes. The cumulative health risk assessment (HRA) conducted by the Sequoia applicant in Table 18 of Appendix F is consistent with the BAAQMD methodology contained in Section 5.3 of the BAAQMD's CEQA Guidelines. The Sequoia applicant conducted the cumulative HRA by including all the emission sources within 1,000 feet of the Sequoia project. However, BAAQMD's comment letter dated Feb 27, 2020¹ recommended that the analysis include sources within the San Jose International Airport boundary in the cumulative HRA.

In order to further address BAAQMD's comments and concerns, staff decided to augment the HRA analysis. After consulting with the BAAQMD and discussing various methodologies for a cumulative HRA including the treatment of existing sources, staff selected emissions from existing sources within 1,000 feet of the project plus the portion of the airport emission sources located within 2,000 feet of the project. Based on this approach, incorporating BAAQMD suggestions, staff performed a supplemental cumulative HRA. (See response to PH-2).

¹ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=232242&DocumentContentId=64226>

PH-2: *If the analysis of TACs included in Appendix F does not apply the methodology set forth in Section 5.3 of the BAAQMD's CEQA Guidelines for assessing cumulative impacts of TACs, is the analysis nonetheless CEQA compliant and consistent with the BAAQMD methodology? Explain.*

As discussed above, CEC technical staff have been working with BAAQMD staff to ensure a consensus HRA analytical approach that is CEQA compliant and consistent with BAAQMD guidelines. The Initial Study contained a robust HRA to determine whether the project would expose sensitive receptors to substantial pollutant concentrations; the HRA met the requirements of CEQA. Section 2.3 of the BAAQMD Guidelines recommend a 1,000-foot cumulative assessment, though sources outside this radius may also be considered if they are unusually large. The BAAQMD suggested in this case the CEC staff go beyond 1,000 feet to capture the potential emissions from a larger emitter. Staff updated its analysis, described below, to include emission sources within 1,000 feet from the project property line, plus emissions from sources in the northwest portions of the San Jose International Airport (i.e., those within 2,000 feet of the project property line).

The BAAQMD did not identify any new or in-permitting sources within the 1,000 or 2,000 feet but staff included data center projects in licensing or under construction. The results of staff's cumulative HRA are compared to the BAAQMD CEQA cumulative thresholds of significance in Tables 1, 2 and 3, below. The staff's cumulative HRA includes four major types of sources: (1) San Jose International Airport emissions sources located within 2,000 feet of the boundaries proposed for the Walsh (19-SPPE-02) and Sequoia (19-SPPE-03) projects combined; (2) existing stationary sources; (3) surrounding highways, major streets, and railways; and (4) the proposed Sequoia project, the proposed Walsh project, and the approved McLaren project (17-SPPE-01).

1) San Jose International Airport

The majority of the Norman Y. Mineta San Jose International Airport, and TAC sources therein, is more than 1,000 feet away from the Sequoia project boundary. The November 2019 Draft Environmental Impact Report (EIR), published by the City of San Jose, for the airport master plan update is available on the city's website². Staff obtained the modeling files for the airport from the City of San Jose.

Based on the modeling files from City of San Jose for baseline year 2018, staff performed an independent HRA of the airport sources located within 2,000 feet of Walsh and Sequoia combined, since the analysis would be used for both projects. Staff

² <https://www.sanjoseca.gov/your-government/department-directory/planning-building-code-enforcement/planning-division/environmental-planning/environmental-review/active-eirs/sjc-airport-master-plan-update>

excluded data beyond 2,000 feet, as this distance precludes the possibility the sources would combine to produce a cumulative impact. The 2,000-foot zone area focuses on the northwestern portion of the airport. The results of staff's independent analysis are shown below in Table 1 for 30-year cancer risk for residential/sensitive receptors and 25-year cancer risk for worker receptors, Table 2 for chronic hazard indices, and Table 3 for annual PM2.5 concentrations.

2) Existing Stationary Sources

The cumulative cancer risk, chronic hazard index, and PM2.5 concentrations from existing stationary sources were obtained from BAAQMD'S Permitted Sources Risk and Hazards Map. Then the risks were calculated using BAAQMD's Health Risk Calculator to refine screen-level cancer risk, chronic health hazard index, and PM2.5 concentrations. The Health Risk Calculator incorporates factors such as risk associated with individual toxic air contaminants emitted from an existing stationary source and the distance that a stationary source is from the proposed project's Maximally Exposed Individual Worker (MEIW), Maximally Exposed Individual Resident (MEIR), Maximally Exposed Soccer Child Receptor (MESCR), and Maximally Exposed Childcare Receptor (MECR) locations to calculate overall cancer risk, chronic hazard index, and PM2.5 concentration from these existing stationary sources.

Staff used for emissions data from existing stationary sources located within 1,000 feet of the proposed project's MEIW, MEIR, MESCR and MECR. Staff then estimated the distances of these stationary sources to the project's MEIW, MEIR, MESCR and MECR. Staff finally applied the distance adjustment multiplier in the Health Risk Calculator to get the refined cumulative cancer risk, chronic hazard index, and PM2.5 concentration of the stationary sources at the project's MEIW, MEIR, MESCR, and MECR. The MEIW is located to the south of the site at a distance of approximately 200 feet, the MEIR is located to the southwest of the site at a distance of approximately 1,725 feet, and the MESCR and MECR are both located outside of 1,000 feet from the project fence line.

3) Surrounding Highways, Major Streets, and Railways

The cancer risk and PM2.5 concentration from highways, major streets, and railways located within 1,000 feet of the project were determined using BAAQMD "raster files" obtained from BAAQMD staff. These incorporate annual average daily traffic (AADT) per EMFAC 2014 data for the 2014 on-road fleet mix and include OEHHA's 2015 Guidance Methods.

4) The Proposed Projects and the Approved Projects

For the proposed Sequoia project, please see the result of the applicant's HRA for facility wide operation of the proposed project beginning on page 5.3-26 and presented

in Table 5.3-10 of the Initial Study. For the proposed Walsh project and in construction McLaren project, please see the footnotes of Table 1, Table 2, and Table 3.

Tables 1 through 3 below summarize the results of the staff cumulative HRA and compare the results to corresponding BAAQMD thresholds of significance for cumulative risk and hazards. The cumulative cancer risk, hazard index, and PM2.5 concentration were conservatively calculated using the maximum value in relation to the MEIW, MEIR, MESCR, and MECR. Results show that the cumulative cancer risk results (Table 1) and chronic hazard index results (Table 2) are below BAAQMD thresholds of significance.

Table 1 CANCER IMPACTS FROM CUMULATIVE SOURCES LOCATED WITHIN 1,000 FEET OF THE SEQUOIA PROJECT AND PORTIONS OF THE SAN JOSE INTERNATIONAL AIRPORT LOCATED WITHIN 2,000 FEET OF THE WALSH PROJECT

Sources of Cumulative Impacts	Cancer Risk (per million) to Maximally Exposed Individual Worker (MEIW ¹)	Cancer Risk (per million) to Maximally Exposed Individual Resident (MEIR)	Cancer Risk (per million) to Maximally Exposed Soccer Child Receptor (MESCR)	Cancer Risk (per million) to Maximally Exposed Childcare Receptor (MECR)
San Jose International Airport (within 2,000 feet)	7.97	2.96	3.7	1.53
Existing Stationary Sources (within 1,000 feet)	0.1637	1.5220	25.8645	0.6664
Surrounding Highways, Major Streets, and Railways (within 1,000 feet)	11.47	46.25	51.79	80.98
Walsh Project (19-SPPE-02)	0.362 ²	0.038 ³	0.045 ⁴	0.022 ⁵
McLaren Project (17-SPPE-01)	0.026 ⁶	0.69 ⁷	0.058 ⁸	0.27 ⁹
Sequoia Project (19-SPPE-03)	2.2	0.19	0.002	0.5
Total - Cumulative Sources	22.1950	51.6467	81.4598	83.9627
Significance Threshold	100	100	100	100
Potential Significant Impact?	No	No	No	No

¹ Table 5.3-10 on page 5.3-27 of staff's Initial Study also includes results at the point of maximum impact (PMI), which is located to the south of the site at a distance of approximately 200 feet. It is based on a conservative assumption that an offsite worker could work there for 25 years. In addition, with BAAQMD staff support, CEC staff also converted the 30-year residential cancer risks from the existing stationary

sources and surrounding highways, major streets, and railways to 25-year worker cancer risks at the MEIW based on the ratio of exposure duration.

² Staff found a receptor location modeled by the Walsh applicant to be identical to the Sequoia MEIW location. Staff used the health risks at this receptor location to represent the cumulative impacts from Walsh at the Sequoia MEIW location. Worker exposure was used to calculate the cancer risk at this point.

³ Staff noticed that the Walsh MEIR location modeled by the Walsh applicant is almost identical to the Sequoia MEIR location modeled by the Sequoia applicant (only about 14 meters [46 feet] away). Staff used the health risks at the Walsh MEIR location to represent the cumulative impacts of Walsh at the Sequoia MEIR location.

⁴ Staff found the nearest receptor location modeled by the Walsh applicant to the Sequoia MESCR location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this receptor location to represent the cumulative impacts from Walsh at the Sequoia MESCR.

⁵ Staff found two receptor locations modeled by the Walsh applicant that are closest to the Sequoia MECR location, one is 56.6 meters (186 feet) away and the other is 60.8 meters (200 feet) away. Because the health risks modeled at the second closest receptor location would be higher than the closest receptor location, staff chose the health risks at the second closest receptor location to represent the cumulative impact of Walsh at the Sequoia MECR.

⁶ Staff found the nearest receptor location modeled by the McLaren applicant to the Sequoia MEIW location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this location to represent the cumulative impacts from McLaren at the Sequoia MEIW. Worker exposure was used to calculate the cancer risk at this point.

⁷ Staff found the nearest residential receptor location modeled by the McLaren applicant to the Sequoia MEIR location (about 85.6 meters [281 feet] away). Staff used the health risks modeled at this receptor location to represent the cumulative impacts from McLaren at the Sequoia MEIR.

⁸ Staff found the nearest soccer child receptor location modeled by the McLaren applicant to the Sequoia MESCR location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this location to represent the cumulative impacts from McLaren at the Sequoia MESCR.

⁹ Staff found the nearest residential receptor location modeled by the McLaren applicant to the Sequoia MECR location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this receptor location to represent the cumulative impacts from McLaren at the Sequoia MECR.

Table 2 MAXIMUM CHRONIC HAZARD INDEX IMPACTS FROM CUMULATIVE SOURCES LOCATED WITHIN 1,000 FEET OF THE SEQUOIA PROJECT AND PORTIONS OF THE SAN JOSE INTERNATIONAL AIRPORT LOCATED WITHIN 2,000 FEET OF THE WALSH PROJECT

Sources of Cumulative Impacts	Maximally Exposed Individual Worker (MEIW)	Maximally Exposed Individual Resident (MEIR)	Maximally Exposed Soccer Child Receptor (MESCR)	Maximally Exposed Childcare Receptor (MECR)
San Jose International Airport (within 2,000 feet)	0.15	0.02	0.03	0.01
Existing Stationary Sources (within 1,000 feet)	0.0028	0.0091	0.0596	0.0028
Surrounding Highways, Major Streets, and Railways (within 1,000 feet)	No Data Available ¹	No Data Available ₁	No Data Available ₁	No Data Available ¹
Walsh Project (19-SPPE-02)	0.0003 ²	0.00001 ³	0.00002 ⁴	0.000008 ⁵
McLaren Project (17-SPPE-01)	0.00008 ⁶	0.00018 ⁷	0.0016 ⁸	0.00007 ⁹
Sequoia Project (19-SPPE-03)	0.007	0.00005	0.00006	0.00003
Total - Cumulative Sources	0.1644	0.0301	0.0869	0.0139
Significance Threshold	10	10	10	10
Potential Significant Impact?	No	No	No	No

¹ No data available—BAAQMD staff did not provide data for these sources; they indicated the following: “We did not include chronic HI because you would see an exceedance above the thresholds under risk and PM2.5 before you see a hazard exceedance since the primary pollutant is diesel PM. Diesel PM has higher chronic reference dose so that it has relatively lower chronic impact compared to its risk potency.” See Table 3 below for PM2.5 impacts.

² Staff found a receptor location modeled by the Walsh applicant to be identical to the Sequoia MEIW location. Staff used the health risks at this receptor location to represent the cumulative impacts from

Walsh at the Sequoia MEIW location.³ Staff noticed that the Walsh MEIR location modeled by the Walsh applicant is almost identical to the Sequoia MEIR location modeled by the Sequoia applicant (only about 14 meters [46 feet] away). Staff used the health risks at the Walsh MEIR location to represent the cumulative impacts of Walsh at the Sequoia MEIR location.

⁴ Staff found the nearest receptor location modeled by the Walsh applicant to the Sequoia MESCR location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this receptor location to represent the cumulative impacts from Walsh at the Sequoia MESCR.

⁵ Staff found two receptor locations modeled by the Walsh applicant that are closest to the Sequoia MECR location, one is 56.6 meters (186 feet) away and the other is 60.8 meters (200 feet) away. Because the health risks modeled at the second closest receptor location would be higher than the closest receptor location, staff chose the health risks at the second closest receptor location to represent the cumulative impact of Walsh at the Sequoia MECR.

⁶ Staff found the nearest receptor location modeled by the McLaren applicant to the Sequoia MEIW location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this location to represent the cumulative impacts from McLaren at the Sequoia MEIW.

⁷ Staff found the nearest residential receptor location modeled by the McLaren applicant to the Sequoia MEIR location (about 85.6 meters [281 feet] away). Staff used the health risks modeled at this receptor location to represent the cumulative impacts from McLaren at the Sequoia MEIR.

⁸ Staff found the nearest soccer child receptor location modeled by the McLaren applicant to the Sequoia MESCR location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this location to represent the cumulative impacts from McLaren at the Sequoia MESCR.

⁹ Staff found the nearest residential receptor location modeled by the McLaren applicant to the Sequoia MECR location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this receptor location to represent the cumulative impacts from McLaren at the Sequoia MECR.

Table 3 PM2.5 IMPACTS FROM CUMULATIVE SOURCES LOCATED WITHIN 1,000 FEET OF THE SEQUOIA PROJECT AND PORTIONS OF THE SAN JOSE INTERNATIONAL AIRPORT LOCATED WITHIN 2,000 FEET OF THE WALSH PROJECT

Sources of Cumulative Impacts	Annual Diesel Particulate Matter (PM2.5) Concentration for Maximally Exposed Individual Worker (MEIW)	Annual Diesel Particulate Matter (PM2.5) Concentration for Maximally Exposed Individual Resident (MEIR)	Annual Diesel Particulate Matter (PM2.5) Concentration for Maximally Exposed Soccer Child Receptor (MESCR)	Annual Diesel Particulate Matter (PM2.5) Concentration for Maximally Exposed Childcare Receptor (MECR)
San Jose International Airport (within 2,000 feet)	0.058	0.007	0.009	0.003
Existing Stationary Sources (within 1,000 feet)	0.0267	1.032 ¹	0.0069	0
Surrounding Highways, Major Streets, and Railways (within 1,000 feet)	0.662	0.4	0.423	0.46
Walsh Project (19-SPPE-02)	0.0022 ²	0.00006 ³	0.0001 ⁴	0.00006 ⁵
McLaren Project (17-SPPE-01)	0.00042 ⁶	0.00091 ⁷	0.0081 ⁸	0.00035 ⁹
Sequoia Project (19-SPPE-03)	0.04	0.0003	0.00031	0.00016
Total - Cumulative Sources	0.7897	1.4402	0.4473	0.4640
Significance Threshold	0.8	0.8	0.8	0.8
Potential Significant Impact?	No	Yes	No	No

¹ The value provided by BAAQMD CEQA staff is 3.42. Upon CEC staff's investigation, this was determined to be total particulate matter (TPM), not PM2.5. Staff consulted with BAAQMD permit evaluation staff, who informed CEC staff that the specific source in question has operations that are very difficult to

measure by source tests, but that similar facilities have been tested which show that PM2.5 is approximately 30 percent of TPM. The value represented here reflects this adjustment.

² Staff found a receptor location modeled by the Walsh applicant to be identical to the Sequoia MEIW location. Staff used the health risks at this receptor location to represent the cumulative impacts from Walsh at the Sequoia MEIW location.

³ Staff noticed that the Walsh MEIR location modeled by the Walsh applicant is almost identical to the Sequoia MEIR location modeled by the Sequoia applicant (only about 14 meters [46 feet] away). Staff used the health risks at the Walsh MEIR location to represent the cumulative impacts of Walsh at the Sequoia MEIR location.

⁴ Staff found the nearest receptor location modeled by the Walsh applicant to the Sequoia MESCRC location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this receptor location to represent the cumulative impacts from Walsh at the Sequoia MESCRC.

⁵ Staff found two receptor locations modeled by the Walsh applicant that are closest to the Sequoia MECCR location, one is 56.6 meters (186 feet) away and the other is 60.8 meters (200 feet) away. Because the health risks modeled at the second closest receptor location would be higher than the closest receptor location, staff chose the health risks at the second closest receptor location to represent the cumulative impact of Walsh at the Sequoia MECCR.

⁶ Staff found the nearest receptor location modeled by the McLaren applicant to the Sequoia MEIW location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this location to represent the cumulative impacts from McLaren at the Sequoia MEIW.

⁷ Staff found the nearest residential receptor location modeled by the McLaren applicant to the Sequoia MEIR location (about 85.6 meters [281 feet] away). Staff used the health risks modeled at this receptor location to represent the cumulative impacts from McLaren at the Sequoia MEIR.

⁸ Staff found the nearest soccer child receptor location modeled by the McLaren applicant to the Sequoia MESCRC location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this location to represent the cumulative impacts from McLaren at the Sequoia MESCRC.

⁹ Staff found the nearest residential receptor location modeled by the McLaren applicant to the Sequoia MECCR location (only about 14 meters [46 feet] away). Staff used the health risks modeled at this receptor location to represent the cumulative impacts from McLaren at the Sequoia MECCR.

While the PM2.5 concentration at the MEIR potentially exceeds the BAAQMD's recommended significance threshold, that potential exceedance is due primarily to other existing stationary sources. The Sequoia project would contribute essentially zero PM 2.5 to this receptor (that is, 0.0003) and therefore the project's contribution is not cumulatively considerable.

Subject Area: Greenhouse Gas Emissions (GHG)

GHG-1: What is the CEC's legal obligation to evaluate potential impacts of GHG emissions from the Project, including operations of the Data Center, beyond calendar year 2020? What thresholds of significance must or may be applied?

CEQA generally requires an agency to consider three items when evaluating a project's GHG emissions: 1) the extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting; 2) whether the

project emissions exceed a threshold of significance that the lead agency determines applies to the project; and 3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. (Title 14, Cal. Code Regs., section 15064.4(b)(1)-(3).) These items are discussed in the initial study and further below.

Relevant Time Period

The CEQA Guidelines under Title 14, section 15064.4(b) leave it up to the agency to determine the relevant period for a GHG analysis, stating in part, "The agency's analysis should consider a timeframe that is appropriate for the project." In this case staff used two distinct time periods. For construction, staff used 18 months which is the expected time to complete the construction. (Initial Study, p. 5.8-8). For operations, staff used an indefinite annual time-period and did not limit its analysis to just 2020. Additionally, staff analyzed the project's consistency with state and local GHG goals. Unlike power plants, data centers do not have a determinate lifespan; while the technology within the data centers may become outdated in as little as 10 years, it can be updated as needed to operate in perpetuity. Therefore, there is no set point in time at which the analysis may be truncated. Thus, staff believes it is reasonable to analyze GHG impacts as far out as 2050, which encompasses the current outlook of state GHG statutes.

The City of Santa Clara's Climate Action Plan (CAP) has set goals for the City of Santa Clara to achieve its share of statewide emissions reductions for the 2020 timeframe established by the Global Warming Solution Act (Assembly Bill 32). While the current CAP is targeting 2020, the city has yet to adopt an updated CAP and the general elements of GHG reduction are still relevant. In assessing the project's GHG emissions, staff also considered multiple state policies and statutes driving decreasing GHG emissions to conclude the project's GHG emissions would not be significant.

GHG impacts from all project emission sources would be considered less than significant if the project is consistent with not only the City of Santa Clara's CAP but also applicable regulatory programs and policies adopted by the California Air Resources Board (ARB), Assembly Bill (AB) 32 (page 5.8-2), SB 32 requirements to achieve GHG emissions reductions to 40 percent below 1990 levels by 2030 (page 5.8-3), SB 350 and SB 100, and Executive Orders. These various law and policies drive a reduction in GHG emissions and increases in the use of renewable electricity. Because the majority of the project emissions would be indirect from the use of grid power, the key factor is the decreasing carbon intensity and increasing procurement of renewable energy by SVP.

Thresholds of Significance

The BAAQMD Guidelines recommend thresholds of significance for various air quality impacts, including GHG emissions. While it is not mandatory for the CEC to adopt and use these thresholds, staff has analyzed the potential for impacts as if these thresholds applied. For construction activities, staff estimated the total emissions over the 18 months would be 1,395 metric tons of carbon dioxide equivalent (MTCO₂e). (Initial Study, p. 5.8-8) Section 2.6.2, page 2-6 of the BAAQMD 2017 CEQA Guidelines does not identify a GHG emission threshold for these short-term construction-related emissions. Instead, BAAQMD recommends that GHG emissions from construction be quantified and disclosed. BAAQMD further recommends incorporation of Best Management Practices (BMPs) to reduce GHG emissions during construction, as feasible and applicable. BMPs may include use of alternative-fueled (for example, biodiesel or electric) construction vehicles and equipment for at least 15 percent of the fleet, use of at least 10 percent of local building materials, and recycling or reusing at least 50 percent of construction waste (Initial Study, p. 5.8-8); which would be implemented by applicant proposed measure (APM) GHG-1 (Initial Study, p. 1-9).

The bulk of the direct operational GHG emissions would be the result of the testing and maintenance of the backup generators. (Initial Study, Table 5.8-2, p. 5.8-9) GHG emissions from testing and maintenance, which is capped at 50 hours, is a static number and would not exceed 4,301 MTCO₂e per year.

Section 2.2, page 2-4, of the 2017 BAAQMD CEQA Guidelines states:

For stationary-source projects, the threshold is 10,000 metric tons per year (MT/yr) of CO₂e. Stationary-source projects include land uses that would accommodate processes and equipment that emit GHG emissions and would require an Air District permit to operate.

Because the BAAQMD threshold at issue is an annual amount, not a total lifetime amount, no specific time-period is necessary to apply the threshold. The testing of the generators would likely occur each year the facility is in operation and each year it would be below the BAAQMD threshold. Therefore, staff concluded there would be no significant impact. (Initial Study, p. 5.8-16)

Independent of this annual threshold, the diesel fuel producers would be subject to various low-carbon fuel state laws and programs that would continue to drive down GHG emissions associated with the project's use of the diesel fuel. The policy drivers for long-term reductions in emissions of GHGs from fuels include Executive Orders B-55-18 and S-3-05, AB 32, SB 32, the Low Carbon Fuel Standard (LCFS), and the cap and trade program. Together these policies seek to achieve carbon neutrality by 2045 and statewide GHG emissions 80 percent below 1990 levels by 2050.

It is expected that due to these policy drivers, fuel suppliers will eventually be converting to a zero-carbon fuel source such as biodiesel and fossil-based diesel will no longer be available in the market. Based on the requirements in force on fuel suppliers to reduce carbon content, especially under the LCFS, the project's already low GHG emissions from the operational testing of the backup generators would reduce further and staff expects the project to be consistent with the long term state GHG emission goals as liquid fuels available in California become carbon neutral.

The primary indirect GHG emissions identified in the Initial study (Table 5.8-4, p. 5.8-11) would be emissions associated with electricity generation to service the project. The methodology for determining the GHG emissions from electricity with a mix of sources is to assign a carbon intensity factor that identifies the amount of CO₂ equivalent (CO₂e) produced per megawatt hour (MWh) of this mixed generation. As noted in the Initial Study at page 5.8-9, corrected in Response to Comments at page 3 (TN 232338), in 2017, Silicon Valley Power (SVP) had an estimated carbon intensity of 430 pounds of CO₂e per MWh.

Because the composition of electrical generation sources changes over time, the GHG emissions associated with electricity vary. Often, swings in hydro-generation result in swings in fossil fuel-fired generation, which directly affects GHG emissions in any one year, but the overall trend, while dynamic, is trending downward. Based on a carbon intensity of 430 pounds of CO₂e per MWh the indirect GHG emissions from the project's electricity use is estimated at 170,865 MTCO₂e/yr.

The BAAQMD threshold of 10,000 MTCO₂e/yr only applies to the emissions from the project's stationary sources and does not cover indirect impacts such as the emissions associated with grid power. There are no specific thresholds of significance related to indirect GHG emissions from grid power.

To reduce GHG emissions and the use of energy related to building operations, the project includes a variety of energy efficiency measures. The Sequoia Data Center would comply with all applicable city and state green building measures, including Title 24, Part 6, and the California Green Building Standards Code, commonly referred to as CALGreen (California Code of Regulations, Part 11). (Initial Study, p. 5.8-12)

SVP is subject to various GHG reduction requirements and programs such as cap and trade, renewable portfolio standard (RPS), and SB 100. Staff concluded there would be no significant impacts related to the GHG emissions associated with the electricity consumed by the project as that use complies with plans to reduce GHG emissions into the future and those emissions would be expected to come down over time as more carbon free energy comes onto the system due to a number of state requirements. (Initial Study, pp. 5.8-11, 5.8-12, and 5.8-16)

GHG-2: Were any of the methodologies or thresholds identified in CEQA Guidelines sections 15064.4 or 15183.5, or the BAAQMD CEQA Guidance used? If so, identify where, using reference to docketed documents specifying titles, transaction numbers and specific page numbers. If not, explain why and the legal significance, if any, of not including the methodologies or thresholds identified in CEQA Guidelines sections 15064.4 or 15183.5, or the BAAQMD CEQA Guidance.

Methodologies

Staff followed section 15064.4(a)(1) of the CEQA Guidelines which identifies quantification as a methodology for assessing the greenhouse gas emissions, stating in part:

A lead agency shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to: Quantify greenhouse gas emissions resulting from a project.

The inventory of direct annual GHG emissions includes short term emissions related to construction and operation of the project. The analysis of construction emissions included emissions from project equipment, vendor and hauling truck trips, and worker vehicle trips. (Initial Study, p. 5.8-5) As described on Initial Study page 5.8-8, the applicant estimated the construction sources would generate approximately 1,395 MTCO₂e during the estimated 18 months to complete construction.

Direct operational GHG emissions included testing and maintenance of the backup generators, offsite vehicle trips for worker commutes and material deliveries, and facility upkeep (such as architectural coatings, consumer product use, landscaping, water use, waste generation, and natural gas use for comfort heating). (Initial Study, p. 5.8-11)

Staff also used a quantitative methodology to determine the indirect GHG emissions from the project use of grid power delivered by SVP. The calculations are detailed on pages 5.8-9 through 5.8-11 of the Initial Study, and pages 2 and 3 of CEC Staff Response to Comments³. Based on the carbon intensity of SVP's power mix, the emissions associated with the maximum annual electricity consumption would be 170,865 MTCO₂e/yr.

³ TN 232338, CEC Staff Responses to Comments on the Initial Study and Proposed Mitigated Negative Declaration

Thresholds of Significance

Sections 15064.4 and 15183.5 do not contain specific thresholds of significance, which are left to agencies to determine.

A lead agency should consider the following factors, among others, when determining the significance of impacts from greenhouse gas emissions on the environment: Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project. (CEQA Guidelines, section 15064.4(b)(2))

As described in the prior response, staff used the BAAQMD thresholds as set forth in their 2017 CEQA Guidelines. But those guidelines do not have thresholds for project level indirect GHG emissions from the grid. (Initial Study, p. 5.8-7)

Because the primary source of GHG emissions from operations of the project would be indirect emissions associated with SVP's grid power and not emissions from the project itself, staff considered whether SVP is on track to meet statewide long term RPS and low carbon energy requirements as set forth in various laws such as SB 350, SB 100, Executive Orders, and state and local policies. (Initial Study, pp. 5.6-2, 5.8-2, 5.8-3, 5.8-4 5.8-11 and 5.8-16) Specifically, SB 100 requires that zero-carbon resources supply 100 percent of electric retail sales to end-use customers in the state by 2045.

Section 15064.4(b)(3) of the CEQA Guidelines:

In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

The focus of the analysis of indirect impacts, then, is whether SVP is proceeding to reduce emissions associated with its electricity supply, which means that not only would the project be reducing its indirect emissions over time, but also that this component of the project complies with a statewide plan for the reduction or mitigation of greenhouse gas emissions.

As stated in their 2018 Integrated Resource Plan (SVP 2020), SVP follows the state's preferred loading order in procuring new energy resources. First, the current load (customer) is encouraged to participate in energy efficiency programs to reduce their usage, thus freeing up existing resources (and any related emissions) for new load (electricity demand). In addition, both the City of Santa Clara and SVP encourage the use of renewable resources and clean distributed generation, and the local area has

seen a significant increase in use of large and small rooftop photovoltaics. Demand displaced by customer-based renewable projects is also available to meet new loads. (Initial Study, p. 5.8-10)

The most salient data regarding SVP's downward trending GHG emission's profile is its low and decreasing carbon intensity or emission's factor. As noted in the Initial Study at page 5.8-10, in 2017, SVP had an estimated carbon intensity of 430 pounds of CO₂e per MWh. To compare, the 2017 California statewide average emissions factor of 1,004 pounds of CO₂e per MWh or the PG&E average emissions factor value of 644 pounds of CO₂e per MWh are much higher. SVP is also on track to meet the requirements of AB 32, cap and trade, and SB 100 as over 70 percent of SVP's electricity is already carbon free. (Initial Study, pp. 5.6-5, 5.8-10, and 5.8-15) SVP expects to be 100 percent carbon free by 2045 as required by SB 100.⁴

Therefore, based on the extensive legal and policy drivers reducing the GHG emissions associated with SVP electricity supply during the expected life of the project, staff found the indirect GHG emissions generated by the project would not be a cumulatively considerable contribution under CEQA because the project by way of SVP, would conform with all applicable plans, policies, and regulations adopted for the purpose of GHG reductions. (Initial Study, p. 5.8-11)

For the same reasons staff finds the project's indirect GHG emissions from the use of electricity would be consistent with long-term state GHG emission reductions goals, specifically, SB 100, which requires that zero-carbon resources supply 100 percent of electric retail sales to end-use customers in the state by 2045.

CEQA Guidelines section 15183.5(a) allows an agency performing a project-specific environmental analysis to rely on an EIR containing a programmatic analysis of greenhouse gas emissions. Typically, the referenced programmatic EIR would cover a general plan or other long-range city or county development plan. In this case there was no current programmatic EIR to tier from that staff was aware of or that would reduce the GHG emissions from the facility since the bulk of the project generated emissions would be from grid electricity. Staff did consider the goals of the Climate Action Plan, which is an expiring programmatic level effort by the City of Santa Clara to address GHG emissions. The City of Santa Clara may utilize the provisions of section 15183.5 as applicable if a programmatic EIR is developed and if the project is exempted.

⁴ <https://www.siliconvalleypower.com/sustainability/commitment-to-renewable-energy>

GHG-3: Explain whether and how the goal identified in the City of Santa Clara's 2020 Climate Action Plan, for data centers to achieve a power usage effectiveness below 1.2, is applicable to and whether it is feasible for the Project?

The power usage effectiveness (PUE) set forth under the 2020 Climate Action Plan (CAP) is not applicable to this project because the facility already deploys energy efficient server technology resulting in a low rack power rating.

Measure 2.3 of the CAP encourages completion of a feasibility study of energy efficient practices for new data center projects with an average rack power rating of 15 kilowatts or more to achieve a PUE of 1.2 or lower. The project would have an average rack power rating range of 8-10 kilowatts (Sequoia SPPE Application, p. 4.8-17), so a feasibility study of energy efficient practices would not be required. (Initial Study, p. 5.6-4)

The project would be consistent with the CAP by saving energy at the server level. The lower the rack power value the more information can be processed per unit of electricity consumed.

While targeting a PUE of 1.2 is not required; it is expected that the facility would have a PUE of around 1.30. (Initial Study, p. 5.6-4). Staff defers to the applicant who would be in the best position to discuss the feasibility of a PUE of 1.2. Regardless of whether achieving a PUE of 1.2 is feasible, staff concludes that the project as currently proposed would have a less than significant impact on energy resources and GHG emissions.

GHG-4: If the GHG emissions impacts from Project operation are found to be significant, what, if any, mitigation measures could be adopted to bring the GHG emissions below the threshold of significance?

As discussed above, the project's direct operational GHG emissions would be well below the BAAQMD's threshold of significance. Because the majority of the emissions associated with the operations of the data center would be indirect and comes from the generation of electricity provided by SVP, the most impactful measure would be increasing the percentage of carbon free power procured by SVP. Other options include improving energy efficiency of the equipment, or reducing the size of the project, potentially losing out on economies of scale.

ATTACHMENT B: CEC STAFF DECLARATIONS AND RESUMES

DECLARATION OF J. Brewster Birdsall

I, James Brewster Birdsall, declare as follows:

1. I am employed by the California Energy Commission as a contractor at Aspen Environmental Group.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on **Air Quality** for the **Sequoia Data Center Initial Study**, CEC Staff Responses to Comments on the Initial Study, and CEC Staff Responses to Committee Questions based on my independent analysis of the Application for Small Power Plant Exemption and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 22, 2020 Signed: *J. Brewster Birdsall*

At: San Francisco, California



Brewster Birdsall, PE, QEP

SENIOR ASSOCIATE, AIR QUALITY AND
ENGINEERING

SUMMARY OF QUALIFICATIONS

EDUCATION

MS, Civil Engineering, Colorado
State University, 1993

BS with High Honors, Mechanical
Engineering, Lehigh University,
1991

Mr. Birdsall is an engineer and environmental scientist who specializes in analyses of air quality and greenhouse gas (GHG) emissions with extensive experience in the areas of energy facility siting and infrastructure planning, permitting, analysis, and special studies. He has over 20 years of consulting experience focusing on climate change, air resources, and air quality and noise-impact modeling, and assessment under the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), and the Clean Air Act.

PROFESSIONAL EXPERIENCE

REGIONAL RENEWABLE ENERGY RESOURCE PLANNING AND TRANSMISSION STUDIES

Various Clients
2015-2018

Mr. Birdsall actively works with the energy policy issues that affect electric utilities, transmission, and generation. He provides senior-level analyses for landscape-scale energy resource planning, energy supply alternatives, transmission planning, and the impacts on greenhouse gas emissions and air resources. Mr. Birdsall recently served as a coordinator for statewide and region-wide environmental reviews for expanding California's access to renewable energy, and he has reported on long-range energy resource planning as it relates to California's disadvantaged communities.

POSEIDON SEAWATER DESALINATION AT HUNTINGTON BEACH PROJECT

*California State Lands
Commission*
2017

Technical reviewer for topics of air quality, GHG emissions, noise, and underwater sound levels within a supplemental analysis of marine vessels and offshore installation of seawater intake and discharge.

GREENHOUSE GAS EMISSIONS THRESHOLD OF SIGNIFICANCE

*Santa Barbara County, Energy
Division*
2015

Expert review to support the Planning Commission and Board of Supervisors formal adoption of a new significance threshold, guidelines, and potential mitigation strategies for the CEQA treatment of GHG emissions caused by industrial stationary sources in the unincorporated areas of Santa Barbara County.

<p>ATHOS RENEWABLE ENERGY PROJECT <i>Intersect Power</i> 2018-2019</p>	<p>Prepared air quality, GHG, and noise topics and technical analyses for utility-scale solar power with battery storage on behalf of Riverside County and the BLM.</p>
<p>ANALYSIS OF OIL AND GAS WELL STIMULATION TREATMENTS IN CALIFORNIA EIR <i>Department of Conservation</i> 2013-2015</p>	<p>Mr. Birdsall prepared the air quality and GHG impact assessments in the EIR evaluating oil and gas well stimulation treatments throughout California, as required by Public Resources Code Section 3161 (b)(3) and (4) (Senate Bill 4 [Pavley]), as signed into law on September 20, 2013. Section 3161 (b)(3) and (4) requires the Division of Oil, Gas and Geothermal Resources (DOGGR) to evaluate the impacts of well stimulation treatments that may occur from either existing or future oil and gas wells, including hydraulic fracturing, acid fracturing and acid matrix stimulation.</p>
<p>OIL AND GAS LEASING AND DEVELOPMENT, DRAFT RESOURCE MANAGEMENT PLAN AMENDMENT AND EIS <i>Bureau of Land Management</i> 2015-2018</p>	<p>Developed background information on reasonably foreseeable oil and gas development trends in the BLM Central Coast Field Office territory of Monterey County, San Benito County, and Fresno County, and prepared impact analyses for air quality, atmospheric conditions, greenhouse gas emissions, and climate change.</p>
<p>PLAN TO PROVIDE RETAIL ELECTRIC SERVICE <i>South San Joaquin Irrigation District (SSJID)</i> 2005-2006, 2010-2014</p>	<p>Project manager for full environmental analyses for new provider of electric distribution service. Topics of assessment include how GHG emissions and energy conservation programs could be affected by change in system ownership, assessment of concurrent Municipal Services Review and Sphere of Influence, and analysis of Community Choice Aggregation (CCA) and as an alternative to allowing a change in retail electric service provider in southern San Joaquin County.</p>
<p>DESERT RENEWABLE ENERGY CONSERVATION PLAN EIR/EIS <i>California Energy Commission</i> 2014-2015</p>	<p>Mr. Birdsall provided senior review and analysis of the climate change and air quality topics, and he prepared responses to comments from the public and reviewing agencies and organizations.</p>
<p>SITING CASES – REVIEW OF APPLICATIONS TO CONSTRUCT POWER PLANTS <i>California Energy Commission</i> 2001-2018</p>	<p>Mr. Birdsall assists the California Energy Commission (CEC) as a technical specialist by reviewing and providing testimony on Applications for Certification (AFC) for new power plants throughout California, including natural gas-fired combined cycle, peaking, solar, and geothermal facilities. As a contractor for the Engineering Office of the Siting, Transmission, and Environmental Protection Division, he provided precedent-setting testimony for the CEC on the implementation of the California Global Warming Solutions Act of 2006 (AB 32) in the electricity sector. This work addresses the potential effects of new power plants on overall electricity system operation, achieving California’s GHG goals, avoiding deterioration of air resources, and offsetting power plant emissions.</p>

- Humboldt Bay Generating Station (2016-2018). Air quality review of changes in diesel fuel firing.
- Redondo Beach Energy Project (2012-2014). Provided air quality and GHG assessment support for a proposed 496 MW replacement power plant using fast-starting combined cycle technology.
- Pio Pico Energy Center (2011-2012). Provided air quality assessment support for proposed 300 MW power plant in San Diego County adjacent to the existing Otay Mesa Generating Project.
- Mariposa Energy Project (2009-2011). Lead technical staff for a 200 MW fast-starting simple cycle power plant capable of integrating renewable resources in eastern Alameda County.
- Oakley Generating Station (2009-2011). Lead technical staff for air quality and greenhouse gas assessment for a 624 MW fast-starting combined cycle power plant in Contra Costa County.
- Marsh Landing Generating Station (2008-2010). Lead technical staff for air quality and greenhouse gas assessment for new 760 MW fast-starting power plant in Contra Costa County.
- Avenal Power Center (2002, 2008-2009). Prepared precedent-setting greenhouse gas impact evaluation and air quality assessment for 600 MW combined cycle power plant in Kings County. Identified the roles played by fossil-fueled and renewable resources together in furthering California's GHG reduction goals.
- Tracy Combined Cycle Power Plant (2008-2010). Lead technical staff for air quality and greenhouse gas assessment for new 314 MW power plant in San Joaquin County.
- Turlock Irrigation District Almond 2 Power Plant (2009-2010). Lead technical staff for air quality and greenhouse gas assessment for new 174 MW simple cycle power plant near Ceres.
- Lodi Energy Center (2008-2010). Lead technical staff for air quality and greenhouse gas assessment for new 255 MW combined cycle power plant in Lodi.
- Vaca Station Power Plant (2008-2009). Lead technical staff for air quality and greenhouse gas assessment for new 660 MW combined cycle power plant near Vacaville, Solano County.
- San Joaquin Solar 1 and 2 (2008-2010). Lead technical staff for air quality and greenhouse gas assessment for two new solar and biomass hybrid power plants in Fresno County.
- Carrizo Energy Solar Farm (2009). Provided air quality and greenhouse gas assessment for proposed 177 MW solar thermal power plant in San Luis Obispo County.
- Bottle Rock Geothermal Power Plant (2006). Prepared air quality assessment to allow the re-firing of this 55 MW renewable energy facility after 15 years of non-operation.
- Eastshore Energy Power Plant (2006-2008). Lead technical staff for air quality assessment for new 116 MW power plant with 14 natural gas-fired engine generators in Hayward, Alameda County.

- Humboldt Bay Repowering Project (2006-2008). Lead technical staff for air quality assessment for new 163 MW power plant with 10 dual-fuel diesel/natural gas-fired engine generators in Eureka.
- Inland Empire Energy Center (2001-2003, 2005-2006). Lead technical staff for air quality assessment for original 670 MW and amendment for 810 MW combined cycle power plant near Romoland in Riverside County. The project is the first use of the General Electric H System in the US.
- Blythe Energy Project Phase II (2002-2006). Lead technical staff for air quality assessment and technical staff for water conservation program including cooling water supply and dry cooling system studies for new 520 MW combined cycle power plant and affiliated 118-mile transmission line in the Mojave Desert and Coachella Valley of Riverside County.
- Tesla Power Plant (2001-2004). Lead technical staff for air quality assessment and analysis of visible plumes and established major emissions offset program for new 1,120 MW combined cycle power plant and 11-mile recycled water pipeline in rural eastern Alameda County near Tracy.
- Palomar Energy (2001-2003). Lead technical staff for air quality assessment and supporting staff for cooling system studies for new 540 MW combined cycle power plant in northern San Diego County.
- Kings River Conservation District Peaking Power Plant (2003-2004). Lead technical staff for air quality assessment of new 97 MW simple cycle power plant in Fresno County.
- Russell City Energy Center (2001-2002). Lead technical staff for noise assessment of new 600 MW combined cycle power plant adjacent to shoreline recreational areas in Hayward.
- Los Esteros Critical Energy Facility (2001-2002). Lead technical staff for impacts of noise and visible plumes from new 180 MW simple cycle power plant adjacent to recreational areas in San Jose.

TECHNICAL STUDIES

California Energy Commission
2002-2018

Mr. Birdsall is also an author or contributor on special studies of energy issues.

- Energy Systems Planning: Siting, Transmission, and Environmental Protection Division (2016-2018). For the Strategic Transmission Planning Office, Mr. Birdsall provided deputy program management, engineering support, and technical assistance for energy facility and infrastructure planning, including technical support for the RETI 2.0 process.
- Transmission Options in Southern California (2013-2015). Prepared an environmental feasibility study for electric transmission options and potential corridor designations from Imperial County and Riverside County to Orange County and San Diego in response to closure of San Onofre Nuclear Generating Station (SONGS). Documented potential overland transmission line corridors and the feasibility of building offshore submarine high voltage direct current (HVDC) cable corridors in the Pacific Ocean to connect the Southern

California Edison (SCE) and San Diego Gas and Electric (SDG&E) electrical transmission systems.

- Biomethane Additionality Study (2012). Developed comparisons of landfill gas, digester gas, and other biogas emission factors in various applications as an alternative to pipeline quality gas.
- California Credit Policies: Lowering the Effective Cost of Capital for Generation Projects (2006). Prepared workshop report exploring policy options for transforming power procurement and credit policies to encourage power plant development in California and manage the risk of project failure.
- WESTCARB Environmental Documentation and PIER Global Climate Change Research (2006). Supporting technical staff for impact assessment of greenhouse gas sequestration test cases.
- Relative Cost Differences Between Anhydrous and Aqueous Ammonia Systems for Power Plants (2004). Supervising editor for cost comparison on air pollution control systems minimizing use of hazardous materials.
- 2003 Environmental Performance Report (2003). Technical and editorial review for environmental performance and natural gas market outlook portions of the first Integrated Energy Policy Report for the Governor and Legislature.
- Upgrading California's Electric Transmission System: Issues and Actions for 2004 and Beyond (2004). Technical author on Alternatives to Transmission chapter and overview of Transmission Planning in California in support of 2004 Integrated Energy Policy Report Update.
- Air Quality Compliance (2003). Analyzed modifications to permit conditions at the Moss Landing Power Plant. Prepared independent analysis of permit requirements and environmental consequences of increasing the capacity of the Midway-Sunset Cogeneration Project.
- Alternative Cooling Technology Studies (2002-2003). Supporting staff for analyses of water conservation through dry cooling and hybrid cooling alternatives for the Cosumnes Power Plant and Palomar Energy Project. Coordinated and edited documentation from design engineers and other specialists.

CEQA DOCUMENTS AND ENERGY STUDIES

California Public Utilities Commission
2002-2016

Mr. Birdsall is also an author or contributor on special studies of energy issues.

- West of Devers Upgrade (2013-2016). Coordinator for transmission planning and engineering alternatives in the environmental review to access desert-area generation. Directed the independent power flow modeling work and structural design review with the goal of identifying feasible alternatives to partially rebuild the corridor, develop the project in longer term phases, or provide a plan of service to replace the project altogether. Assessed noise, air quality, and GHG impacts.
- Embarcadero-Potrero 230 kV Transmission Project (2012-2014). Deputy Project Manager and coordinator of transmission planning

and engineering alternatives in the environmental review of this underground and submarine transmission line in the San Francisco Bay for improving reliability in downtown San Francisco. Conducted the review of health effects, noise, air quality, and GHG.

- Long-Term Procurement Plan Guidelines and Renewable Portfolio Standard Implementation (2008-2011). Developed timelines of permitting and identified barriers to implementing the 33 percent Renewable Portfolio Standard (RPS), including ranking and screening of available energy resources. Surveyed historical transmission build-out timelines, based on experiences of the California Independent System Operator (CAISO), CPUC, and other cooperating agencies. Mapped and scored renewable resources from the Renewable Energy Transmission Initiative (RETI) process and CPUC Energy Division database for environmental concern and permitting risk.
- Sunrise Powerlink 500 kV Transmission Line (2006-2011). Coordinator for transmission planning and engineering alternatives in the environmental review. Assessed GHG results of production cost modeling and analyzed net GHG emissions and climate change effects for multiple renewable and conventional generation and transmission scenarios. Developed mitigating actions and carbon offset strategies that were adopted in advance of AB 32 implementation.
- Colorado River Substation (2011). Analysis of GHG emissions, including indirect effects of renewable energy production and fossil fuel displacement, for the CPUC's Supplemental EIR evaluating new 500 kV substation design and location in eastern Riverside County.
- Desert Sunlight Solar Farm/Red Bluff Substation (2011). Peer review of fugitive dust issues and construction equipment controls for a 550 MW solar power plant near Joshua Tree National Park.
- Devers–Palo Verde 500 kV #2 Transmission Line (2005-2006). Coordinator for transmission planning and engineering alternatives in the environmental review of this major transmission upgrade between the Phoenix area and urban Riverside County to deliver low-cost, out-of-state power.
- San Onofre Nuclear Generating Station and Diablo Canyon Power Plant, Steam Generator Replacement Projects (2004-2005). Deputy Project Manager for two comprehensive Environmental Impact Reports to fulfill CEQA requirements for major investments in the Diablo Canyon and SONGS nuclear power plants, with analyses of potential shutdown, replacement facilities, and extension of life.
- Miguel-Mission 230 kV #2 Transmission Line (2003-2004). Conducted the air quality and noise review for a system that would reduce transmission constraints between San Diego County and generators within the US and Mexico. Supervised the engineers studying impacts to traffic and transportation, the transmission system design, and public health.
- Jefferson-Martin 230 kV Transmission Line (2003-2004). Prepared air quality and noise studies and provided oversight of health effects

	analyses for construction and operation of a 27-mile transmission line through urban and rural San Mateo County. The project passes through the Cities of Burlingame, Millbrae, San Bruno, South San Francisco, Brisbane, Colma, and Daly City to serve the projected electric demand in San Francisco.
<p>CONFIDENTIAL PROJECT(S) <i>Confidential Client(s)</i> 2015-2018</p>	Mr. Birdsall prepares analyses, technical studies, presentations, and reports on the feasibility and the impacts of developing renewable energy, energy storage, transmission and distributed energy resources as driven by California's RPS and GHG goals.
<p>SAN LUIS TRANSMISSION PROJECT EIS/EIR <i>Western Area Power Administration/San Luis & Delta Mendota Water Authority</i> 2015-2017</p>	Air quality, general conformity, GHG, and noise analyses with Voluntary Emission Reduction Agreement (VERA) for construction and operation of 95 miles of new transmission lines in western San Joaquin Valley, to serve pumping and generating facilities along the California Aqueduct and the Delta-Mendota Canal.
<p>SANTA MARGARITA QUARRY EXPANSION PROJECT EIR <i>San Luis Obispo County</i> 2014-2015</p>	Reviewed public records and baseline activities in order to prepare an emissions inventory and impact analysis for air quality and greenhouse gas emissions to expand the aggregate products quarry and add reserves.
<p>RENEWABLE ENERGY STREAMLINING PROGRAM AND EIR <i>San Luis Obispo County</i> 2013</p>	Analysis of electric transmission and distribution systems and interconnection processes for a county-wide Opportunities and Constraints Technical Study to determine Renewable Energy Development Areas for siting of small-scale renewable energy. The analysis would be used for updating or establishing renewable energy policies, a Renewable Energy Combining Designation for the County General Plan Open Space Element, and a Renewable Energy Ordinance in a process funded by the CEC.
<p>BURNING MAN 2012-2016 ENVIRONMENTAL ASSESSMENT <i>Bureau of Land Management</i> 2011-2012</p>	Developed technical memoranda on community noise, air quality, and a greenhouse gas emissions inventory for the annual Burning Man Event for the five-year review conducted by the BLM Winnemucca Field Office and Black Rock City LLC.

PREVIOUS EMPLOYMENT

EIP Associates (1998-2001). As a Senior Environmental Scientist at EIP Associates, Mr. Birdsall performed comprehensive analyses of air quality and noise impacts for Environmental Impact Reports/Statements and independent studies.

Trinity Consultants (1994-1998). Mr. Birdsall prepared compliance strategies, evaluated modeled impacts, and negotiated air permits while a Project Supervisor at Trinity Consultants, an environmental firm specializing in air quality. Mr. Birdsall advised clients in the industries of municipal solid waste

landfills and landfill gas to energy, independent power production, open-pit metallic mineral mining, major natural gas pipelines, and upstream natural gas processing.

PROFESSIONAL AFFILIATIONS AND AWARDS

- Panelist, Offsets for Environmental Mitigation, Navigating the American Carbon World 2014
- Professional Engineer (Mechanical, California #32565)
- Qualified Environmental Professional, Institute of Professional Environmental Practice (#03030005)
- 2001 Outstanding Performance Award presented by the California Energy Commission
- Air and Waste Management Association since 1994
- Tau Beta Pi, National Engineering Honor Society

NOISE IMPACT ASSESSMENT EXPERTISE

- Federal Highway Administration Traffic Noise Model
- California Department of Transportation Traffic Noise Model (SOUND32)
- FTA Transit Noise Assessment and Mitigation Methodology

AIR QUALITY MODELING EXPERTISE

AERMOD; CAL3QHCR; CALINE4; ISC; CTDM; CalEEMod; EMFAC; TANKS; Landfill Gas Emissions Model

ADDITIONAL TRAINING AND COURSES

- Climate Change, A New Age for Land Use Planning, U.C. Davis Extension
- Fundamentals of Noise and Vibration for the California Energy Commission
- Expert Witness Training, California Energy Commission
- Co-Instructor, Air Permitting Issues for Municipal Solid Waste Landfills, Trinity Consultants
- Fundamentals of New Source Review Workshop, Air and Waste Management Association
- Title V and Compliance Assurance Monitoring Workshops, Air and Waste Management Association
- NATO Advanced Studies Institute, Wind Climates in Cities
- Graduate-level Coursework: Solar Energy Conversion, Wind Engineering, Reciprocating and Centrifugal Engines, Computational Fluid Dynamics, Scalar Transport

DECLARATION OF Shahab Khoshmashrab

I, Shahab Khoshmashrab, declare as follows:

1. I am employed by the California Energy Commission as a Senior Mechanical Engineer in the Siting, Transmission and Environmental Protection Division.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared staff testimony for the Sequoia Data Center Initial Study and CEC Staff Responses to Comments on the Initial Study and Proposed Mitigated Negative Declaration in the technical areas of **Energy Resources** and **Appendix A – Project’s Jurisdictional and Generating Capacity Analysis**. This testimony reflects my independent analysis of the Application for Small Power Plant Exemption and related materials, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 22, 2020 Signed: /s/

At: Sacramento, California

Shahab Khoshmashrab, P.E.
Senior Mechanical Engineer

Professional Experience

2001-Current—Senior Mechanical Engineer – Siting, Transmission, and Environmental Protection Division – California Energy Commission

- Perform analysis of, and address complex engineering issues related to, generating capacity, power plant reliability, energy efficiency, noise and vibration, jurisdictional determination, and the mechanical, civil, electrical, and structural aspects of power plants' licensing, construction, and operation.
- Review and evaluate projects to ensure compliance of power plants and related facilities with applicable laws, ordinances, regulations, and standards and California Environmental Quality Act.
- Assist the California Energy Commission in policy making related to electricity generation.

1998-2001—Structural Engineer – Rankin & Rankin

Engineered concrete foundations, structural steel and sheet metal of various building structures including energy related structures such as fuel islands. Performed energy analysis/calculations of such structures and produced both structural plans and detailed shop drawings using AutoCAD.

1995-1998—Manufacturing Engineer – Carpenter Advanced Technologies

Managed manufacturing projects of various mechanical components used in high tech medical and engineering equipment. Wrote and implemented QA/QC procedures and occupational safety procedures. Conducted developmental research of the most advanced manufacturing machines and processes including writing of formal reports. Developed project cost analysis. Developed/improved manufacturing processes.

Education

- California State University, Sacramento-- Bachelor of Science, Mechanical Engineering
- Registered Professional Engineer (Mechanical), California License No. M 32883, Exp. 9/30/2018

DECLARATION OF Jacquelyn Leyva Record

I, Jacquelyn Leyva Record, declare as follows:

1. I am employed by the California Energy Commission as an Air Resources Engineer in the Siting, Transmission and Environmental Protection Division.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared staff testimony for the Sequoia Data Center Initial Study, staff responses to comments on the Initial Study and Proposed Mitigated Negative Declaration, and staff responses to committee questions in the technical area(s) of **Air Quality** and **Greenhouse Gases**. This testimony reflects my independent analysis of the Application for Small Power Plant Exemption and related materials, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: March 22, 2020 Signed: /s/

At: Sacramento, California

Jacquelyn Leyva Record

916.654.3846

jrecord@energy.ca.gov

Education

California State University, Irvine, 2003-2008

Irvine, Ca

Bachelor of Science, Chemical Engineering, June 2008

Experience

California Energy Commission, March 2009-Present

Sacramento, Ca

Air Resources Engineer

Technical regulatory expert responsible for completing engineering and environmental analysis on thermal (utility scale 50MW or greater) power plant project siting applications seeking a California Energy Commission license amendment or project modification to an existing license. In addition to determining ongoing operational compliance for facilities operating under existing Energy Commission licenses. Specific responsibilities include the following:

- Identifying, assessing and analyzing greenhouse gas impacts of power generation development, emission and fuel use data analysis, to assess the local reliability areas around the power plants. Assisted in determining the role of aging power plants for the Energy Commission Integrated Energy Policy Report.
- Identifying, assessing and analyzing air quality impacts, along with thermal plume impacts, of stationary sources through the use of complex dispersion modeling and measures to mitigate these impacts following California Environmental Quality Act (CEQA) and regulations of U.S. Environmental Protection Agency, California Air Resources Board, and local air pollution control districts.
- Independently perform responsible, varied analysis assessing environmental impacts of energy resource use and large electric power generation projects in California.
- Managing ongoing engineering and environmental compliance for operational power plant facilities and recommending enforcement actions for violations.
- Presenting complex technical staff reports and planning/policy recommendations at evidentiary hearings, business meetings, committee meetings, publicly-noticed workshops, and meetings with project developers.
- Testifying as an expert witness at committee held evidentiary hearings.

Preparation of Staff Assessments for the following Applications for Certification (AFCs) and project amendments of the following: Puente Power Project, Ivanpah Solar Electric Generating System, Rice Solar Energy Project, Blythe Solar Power Project, Palen Solar Power Project, Los Esteros Critical Energy Facility, Mariposa Energy Project, Roseville Energy Park, Metcalf Energy Center, Donald Von Raesfeld (Formerly Pico Power), Delta Energy Facility, Los Medonos (Pittsburg) Energy, Colusa Generating Station, Colusa Generating Station, Campbell Cogeneration Project and Sutter Energy Center.

Environmental Remediation Resources Group (ERRG), August 2008-2009
Sacramento, Ca

Engineering Assistant

- Assisted with both technical and field duties for a variety of environmental investigations.
- Assisted on an environmental site assessment, preliminary assessments (PA), site inspections, and remedial investigations feasibility studies.
- Field duties performed include groundwater sampling and air sampling

Tetra Tech EC, Inc., June 2007-2008
Santa Ana, Ca

Engineering Assistant Intern

- Assisted with both technical and field duties for a variety of environmental investigations.
- Assisted on an environmental site assessment, preliminary assessments (PA), site inspections, and remedial investigations feasibility studies.
- Field duties performed include groundwater sampling and air sampling

SF Regional Water Board, June 2005- September 2005
Oakland, Ca

Contract Work – Special Project

- Wrote a memorandum regarding total petroleum hydrocarbons showing up as false positives in submitted quarterly monitoring reports for NPDES FUEL permit.
- Researched various EPA methods of testing for VOC, and Fuel constituents in water.
- Communicated with consultants from Weiss Associates and state funded laboratories to come to a conclusion for memorandum.
- Site inspections, site reports.

Affiliated Associations

MAES (Mexican American Engineers and Scientists) – Vice Chair 2004-2005

**DECLARATION OF
Kenneth Salyphone**

I, Kenneth Salyphone, declare as follows:

1. I am employed by the California Energy Commission as a Mechanical Engineer in the Siting, Transmission and Environmental Protection Division.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I have reviewed all of staff's previous testimony for the Sequoia Data Center Initial Study in the technical areas of **Energy Resources** and **Appendix A – Project's Jurisdictional and Generating Capacity Analysis**.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 22, 2020 Signed: /s/

At: Sacramento, California

Kenneth Salyphone

916.654.4658

1516 9th Street Sacramento CA 95814

kenneth.salyphone@energy.ca.gov

PROFESSIONAL EXPERIENCE:

Mechanical Engineer

California Energy Commission, Sacramento CA

12/2020 – Present

Mechanical Design Engineer, Lead

Micron Technology, Inc., Folsom CA

12/2017 – 12/2020

Mechanical Design Engineer

Micron Technology, Inc., Folsom CA

12/2013 – 12/2017

Mechanical Design Engineer, Intern

Micron Technology, Inc., Folsom CA

06/2013 – 12/2013

EDUCATION:

Master of Science in Mechanical Engineering, CSU Sacramento, 2013

Bachelor of Science in Mechanical Engineering, CSU Sacramento, 2010

CERTIFICATION/LICENSE:

Engineer-In-Training (EIT) Certified # 149129

WHAT I DO:

- Prepare analyses of facility design code compliance, noise and vibration, power plant efficiency, generating capacity determination, and power plant reliability aspects of power generation plants and related facilities. Includes evaluating facility design; potential impacts and appropriate mitigation measures; and determining the ability of the facility to comply with applicable laws, ordinances, regulations, and standards
- Review and evaluate the mechanical engineering and related aspects of equipment as applied to thermal power plants related facilities. Includes the evaluation of system and equipment design, performance and reliability, as well as alternatives to the proposed facility.
- Develop compliance monitoring requirements and verifications related to noise and vibration and facility design to ensure that proposed facilities are properly constructed and operated in accordance with Energy Commission certification requirements.
- Monitor construction and operation of licensed facilities to assure their conformance with licensing requirements.
- Evaluate the efficiency and reliability implications of energy generation, supply, and end use strategies as input energy policy development.
- Evaluate existing and proposed governmental laws, ordinances, regulations, standards, and policies as they pertain to power plant design.

MEMBERSHIPS AND AFFILIATIONS:

- Member of Tau Beta Pi
- Member of the American Society of Mechanical Engineers

**DECLARATION OF
Wenjun Qian, Ph.D., P.E.**

I, Wenjun Qian, declare as follows:

1. I am employed by the California Energy Commission as an Air Resources Engineer in the Siting, Transmission and Environmental Protection Division.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I am sponsoring the **Public Health** portion of the **Air Quality** response to Committee Questions for Sequoia Data Center. This testimony reflects my independent analysis of the Application for Small Power Plant Exemption and related materials, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: May 22, 2020 Signed: 

At: Sacramento, California

Wenjun Qian, Ph.D., P.E.

Education

Ph.D., Mechanical Engineering, University of California, Riverside, 2010

M.S., Mechanical Engineering, George Washington University, 2005

B.S., Mechanical Engineering, Shanghai Jiao Tong University, China, 2004

Professional Experience

Air Resources Engineer

(July 2010 – Present)

California Energy Commission, Siting Transmission and Environmental Protection Division

Technical expert responsible for completing environmental analysis on thermal power plant project (including linears) applications seeking a California Energy Commission license, or an amendment to an existing license, in addition to determining ongoing compliance for facilities operating under existing Energy Commission licenses. Specific responsibilities, by technical area, include the following:

Air Quality

- Reviewing modeling protocols to make sure they comply with current modeling guidance documents.
- Reviewing project applications to verify engineering data, including worst case emissions during construction/demolition, commissioning, and various operating profiles.
- Completing air dispersion modeling to identify the worst case project impacts, and determining whether the project would result in any significant air quality related impacts.
- Determining whether the project would comply with all federal, state, and local air quality laws, ordinances, regulations, and standards.
- Coordinating with local Air Quality Management Districts and incorporating Determinations of Compliance into Energy Commission Staff Assessments.
- Investigating and recommending appropriate emission mitigation measures under California Environmental Quality Act requirements.
- Managing ongoing air quality compliance for power plant facilities during construction and operation.

Greenhouse Gases

- Reviewing project applications and quantifying potential greenhouse gases emissions associated with construction/demolition, commissioning, and operation of the proposed facilities.
- Determining whether the project would comply with all federal, state, and local greenhouse gases laws, ordinances, regulations, and standards.
- Analyzing the implications the proposed facility may have on California's electricity sector, and how it may affect greenhouse gases emissions in California and globally.

Visible Water Vapor Plume

- Assisting the technical experts authoring the Visual Resources section to identify potential visual impacts as a result of visible water vapor plumes.
- Reviewing operational design data from visible water vapor plume emitting sources and calculating visible plume frequencies and sizes.

Vertical Plume Velocity

- Assisting the technical experts authoring the Traffic and Transportation section to identify potential hazards to aircrafts as a result of vertical plume velocities.
- Reviewing operational design data from vertical plume emitting sources and calculating the vertical plume velocities at various heights.
- Identifying at what height above the plume sources the vertical plume velocities drop below the threshold of concern set by the Federal Aviation Administration.

Nitrogen Deposition

- Assisting the technical experts authoring the Biological Resources section to identify potential nitrogen deposition impacts.
- Reviewing and completing air dispersion modeling to identify nitrogen deposition impacts to sensitive habitats.

Worked on the following AECs/SPPEs:

Mariposa Energy Project, Laurelwood Data Center, McLaren Backup Generating Facility, Pio Pico Energy Center, Pomona Repower Project, Puente Power Project, Quail Brush Generation Project, Redondo Beach Repower, Rio Mesa Solar Electric Generating System, etc.

Worked on the following project amendments:

El Segundo Energy Center, Huntington Beach Energy Project, Ivanpah Solar Electric Generating System, Orange Grove Energy Power Project, Otay Mesa Energy Center, Palomar Energy Project, Russell City Energy Center, etc.

Research Assistant

(Sept. 2005 – June 2010)

University of California, Riverside, Mechanical Engineering

- Evaluated air quality impacts of distributed generations in South Coast Air Basin of California.
- Estimated air quality impacts from the key power plant of Los Angeles Department of Water and Power in shoreline urban areas.
- Improved AERMOD performance during low wind stable conditions.
- Prepared and presented multiple comprehensive reports, journal papers, and conference papers.

Licensures

Professional Engineer, Mechanical (California License No. M 36370)

Awards

2013 Superior Accomplishment Award – California Energy Commission