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State of California
State Energy Resources Conservation and Development Commission

In the matter of:

Sequoia Data Center

Docket 19-SPPE-03

Robert Sarvey's Testimony on the Sequoia Data Center IS/MND

Generating Capacity

The Sequoia Data Center does not qualify for the SPPE process since its generating capacity is over 100 MW. The generating capacity for the SDC is 121.5 MW as computed by Section 2003 the only authority promulgated in the CEC regulations to compute generating capacity.¹ The initial Study claims Section 2003 is not controlling stating that, *"Title 20, California Code of Regulations, section 2003 specifies how the Energy Commission calculates "generating capacity" for jurisdictional determinations, including the 50 MW threshold for the definition of a thermal power plant under section 25120. However, section 2003, which uses nameplate capacity in addition to consideration of other factors, only addresses steam and combustion turbines, not diesel fueled gensets as used in the SBGF, and is therefore not controlling here."*²

The commission has applied section 2003 to the calculation of generating capacity for power plants that utilize IC engines many times before. In the Humboldt Generating Station Proceeding (06-AFC-07) the Commission determined that, *"The HBRP would consist of 10 dual-fuel Wärtsilä 18V50DF 16.3 MW reciprocating engine-generator sets and associated equipment with a combined nominal generating capacity of 163 MW."*³ In the Eastshore Energy Center Proceeding (06-AFC-06) the

¹ 54 X 2.25MW = 121.5 MW Continuous Rating 1.93 X 54 = 103.14 MW

² IS/MND Page 283 Of 322

³ <https://ww2.energy.ca.gov/2008publications/CEC-800-2008-005/CEC-800-2008-005-CMF.PDF> page 17 of 447

commission used Section 2003 to determine that, *“The proposed facility would be a nominal 115.5 megawatt (MW) simple cycle power plant consisting of 14 Wartsila 8.4 MW 20V34SG natural gas-fired reciprocating engine generators and associated equipment.”*⁴ In the Quail Brush Proceeding (11-AFC-03) the Commission utilized Section 2003 when determining that the projects 11 internal combustion engines totaled 100 MW of capacity.⁵

The Commission has also utilized Section 2003 in determining the generating capacity of a data center. In the Santa Clara Data Center Phase 2 application the applicant claimed the commission had no jurisdiction because the maximum generating capacity of the backup generating system would be limited by the 49.1 MW load of the data center. As the Santa Clara SPPE application states *“In a letter dated April 21, 2008, the Commission asserted permitting jurisdiction over the backup generators. (See Appendix F.) Xeres disagrees with the Commission’s assertion of jurisdiction because the Data Center will never sell power on the electrical grid, is not a “power plant” under the Warren-Alquist Act, and because the maximum output of the backup generators for both project phases is 49.1 MW, which is less than the Commission’s 50 MW jurisdictional threshold.”*⁶ The Commission clearly rejected data center load as the maximum generating capacity for the Santa Clara Data center in 2011. In the Santa Clara Data Center Initial /Study and Mitigated Negative Declaration CEC Staff calculated generating capacity stating , *“The current review by the Energy Commission considers the entire Data Center project, Phases 1 and 2, with the Phase 2 project as the trigger for analysis as it adds 16 additional backup generators, totaling 32 generators capable of 2.25 megawatts each, bringing total generation capacity of the backup system to 72 megawatts of installed capacity.”*⁷

In the commissions jurisdictional determination for the Santa Clara Data Center the commission rejected the data center load as the maximum generating capacity of

⁴ <https://ww2.energy.ca.gov/sitingcases/eastshore/documents/index.html>

⁵ <https://ww2.energy.ca.gov/sitingcases/quailbrush/index.html>

⁶ 11-SPPE-01 SPPE Application Page 26 of 70

https://ww2.energy.ca.gov/sitingcases/santaclara/documents/applicant/SPPE_Application/01_SPPE_Application.pdf

⁷ 11-SPPE-01 XERES VENTURES LLC, SANTA CLARA SC-1 DATA CENTER **Small Power Plant Exemption Initial Study and Negative Declaration Recommendation** Page 18 of 122

<https://ww2.energy.ca.gov/2012publications/CEC-700-2012-001/CEC-700-2012-001.pdf>

the backup generating system. The jurisdictional determination found that each of the Santa Clara Data Centers 32 diesel generators had a maximum load of 2.87 MW which would bring the total generating capacity of the Santa Clara Data Center to 91.8 MW.⁸

Energy Resources

The IS/MND inadequately analyzed the project's energy impacts under Appendix F of the CEQA Guidelines.

Appendix F of the California Environmental Quality Act (CEQA) Guidelines requires that an Environmental Impact Report (EIR) include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of nonrenewable energy in order to assure energy implications are considered in project decisions. The SDC IS/MND fails to properly analyze the projects energy impacts.

The IS MND fails to accurately describe the projects impact on SVP's energy supplies. The IS/MND accurately describes the projects potential energy use of 846,340 MWh⁹ a year but fails to compare it to the existing energy consumption and supplies of the City of Santa Clara and SVP. SVP total electric sales for 2018 were 3,566,293 MWh.¹⁰ SDC's potential energy use of 846,340 MWh is approximately 24% of the entire SVP sales for 2018.

The IS/MND ignores the reasonably foreseeable cumulative energy impact of the CEC's current review and siting of over seven other data centers. As can be seen from the table below the CEC is permitting 650 MW of data centers not including the newly announced Lafayette Data Center.

⁸ Attachment 1 Page 1 *"We also understand that each back up generator has a generating capacity of 2.87 MW which would make the total generating capacity 91.8 MW."*

⁹ Sequoia Data Center Application TN 229419-1 Page 106 of 222

¹⁰ Attachment 2 <https://www.siliconvalleypower.com/svp-and-community/about-svp/utility-fact-sheet>

DATA CENTER APPLICATIONS BEFORE THE COMMISSION

Facility	Docket #	Total MW	Annual MWh	(MTCO ₂ e/yr)
McLaren Data Center	17-SPPE-01	99 MW ¹¹	665,760 MWh ¹²	154,958 ¹³
Laurelwood Data Center	19 SPPE-01	99 MW ¹⁴	867,240 MWh ¹⁵	171,770 ¹⁶
Walsh Data Center	19-SPPE-02	80 MW ¹⁷	700,800 MWh ¹⁸	109,164 ¹⁹
Sequoia Data Center	19-SPPE-03	95.5 MW ²⁰	846,340 MWh ²¹	84,023 ²²
San Jose Data Center	19-SPPE-04	99 MW ²³	803,730 MWh ²⁴	254,122 ²⁵
2305 Mission College Data	19-SPPE-05	78.1 MW ²⁶	684,156 MWh ²⁷	86,762 ²⁸
Memorex Data Center		99 MW ²⁹	N/A	N/A
Totals		650 MW	4,568,006	860,799

The 2018 peak demand for the SVP service area was 526.2 MW in 2018.³⁰ With an additional 650 MW of peak demand from the CEC Data Centers under review peak demand would increase to 1,176 MW not including the newly announced Lafayette Data Center. According to CEC Staff analysis of SVP’s procurement plan peak demand in SVP service area will be 823 MW in 2030.³¹ SVP reports that it will have 998 MW

¹¹ <https://ww2.energy.ca.gov/sitingcases/mclaren/>

¹² McLaren Final Decision TN 225170 Page 128 of 361

¹³ McLaren Final Decision TN 225170 Page 129 of 361

¹⁴ <https://ww2.energy.ca.gov/sitingcases/laurelwood/>

¹⁵ Laurelwood Proposed Decision TN 231721 Page 210 of 368

¹⁶ Laurelwood Proposed Decision TN 231721 Page 211 of 368

¹⁷ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=229419-1&DocumentContentId=60822>

¹⁸ Walsh Data Center Application TN 228877-2 Page 111 of 203

¹⁹ Walsh Data Center Application TN 228877-2 Page 112 of 203

²⁰ <https://ww2.energy.ca.gov/sitingcases/walsh/> Page 10 of 222

²¹ Sequoia Data Center Application TN 229419-1 Page 106 of 222

²² Sequoia Data Center Application TN 229419-1 Page 131 of 122

²³ <https://ww2.energy.ca.gov/sitingcases/sj2/>

²⁴ San Jose Data Center Application TN 230741 Page 175 of 285

²⁵ San Jose Data Center Application TN 230741 Page 176 of 285

²⁶ <https://ww2.energy.ca.gov/sitingcases/missioncollege/>

²⁷ Mission College Data Center Application TN 230848 Page 121 of 222

²⁸ Mission College Data Center Application TN 230848 Page 122 of 222

²⁹ https://ww2.energy.ca.gov/sitingcases/all_projects_cms.html

³⁰ Attachment 2 <https://www.siliconvalleypower.com/svp-and-community/about-svp/utility-fact-sheet>

³¹ Exhibit 2 TN230953 Review of Silicon Valley Power's 2018 Integrated Resource Plan Page 12

procured by 2030³² which leaves a procurement shortfall of approximately 178 MW not including the Lafayette Data Center.

The IS/MND fails to discuss the project's Construction energy requirements and its energy use efficiencies by amount and fuel type for construction. The IS/MND does not quantify or include in the analysis the energy consumption of the construction workforce traveling to and from the job site. The IS/MND fails to analyze "The project's projected transportation energy use requirements and its overall use of efficient transportation Alternatives as required by CEQA Appendix F.

The IS/MND fails to properly identify the energy supplies that would serve the project by assuming that the data center will utilize SVP's 2017 overall power mix of *"approximately 38 percent eligible renewable resources, 34 percent large hydroelectric, and 28 percent nonrenewable sources (SVP 2017)."*³³ While that may be true for the overall power mix the Santa Clara non-residential power mix has a much higher GHG intensity that may actually be higher than the 2018 California power mix as demonstrated in the table below. The SVP non-residential power mix is 32% renewable, 11% hydroelectric and 34% natural gas and 23% sources of unspecified power as shown in the table below. The non-residential mix consumes all of the natural gas fired generation owned by SVP and also consumes all of the 23% of sources that are unspecified.

³² Exhibit 2 TN230953 Review of Silicon Valley Power's 2018 Integrated Resource Plan Page 12

³³ IS/MND Page 140 of 322

2018 Power Content Label

CITY OF SANTA CLARA / SILICON VALLEY POWER					
ENERGY RESOURCES	SANTA CLARA RESIDENTIAL MIX	SANTA CLARA NON-RESIDENTIAL MIX	SANTA CLARA GREEN POWER STANDARD MIX	SANTA CLARA GREEN POWER - NATIONAL MIX	2018 CA POWER MIX**
Eligible Renewable	45%	32%	29%	6%	31%
Biomass & Biowaste	0%	2%	0%	0%	2%
Geothermal	0%	5%	0%	0%	5%
Eligible Hydroelectric	0%	13%	0%	0%	2%
Solar	27%	<1%	29%	0%	11%
Wind	19%	11%	0%	6%	11%
Coal	0%	0%	0%	0%	3%
Large Hydroelectric	55%	11%	0%	0%	11%
Natural Gas	0%	34%	0%	0%	35%
Nuclear	0%	0%	0%	0%	9%
Other	0%	0%	71%	94%	<1%
Unspecified sources of power*	0%	23%	0%	0%	11%
TOTAL	100%	100%	100%	100%	100%

* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.

** Percentages are estimated annual by the California Energy Commission based on the electricity generated in California and net imports as reported to the Quarterly Fuel and Energy Report database and the Power Source Disclosure program.

For specific information about this electricity product, contact:	CITY OF SANTA CLARA/SILICON VALLEY POWER 408-244-SAVE (7283)
For general information about the Power Content Label, please visit:	HTTP://WWW.ENERGY.CA.GOV/PCL/
For additional questions, please contact the California Energy Commission at:	TOLL-FREE IN CALIFORNIA: 844-454-2906 OUTSIDE CALIFORNIA: 916-653-0237

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The diesel fuel storage tanks have a capacity of 6,000 gallons of diesel fuel with an expected fuel consumption of 163 gal/hour at full load. The applicant expects the generators to be operated for 10 hours per year which would lead to an annual fuel consumption of 1,630 gallons. Diesel fuel degrades over time and must be removed

³⁴ <https://www.siliconvalleypower.com/svp-and-community/about-svp/power-content-label>

from the tanks if spoiled. The IS/MND fails to quantify the amount of diesel fuel that will be wasted and also fails to analyze the energy consumption of the diesel fuel trucks needed to remove contaminated diesel fuel. The use of alternative technologies could reduce the energy impacts of the projects spoiled diesel fuel and its removal.

Water used for both indoor and outdoor requires electricity for water treatment, conveyance, and distribution. The IS/MND fails to analyze and quantify the electricity requirements related to the treatment, conveyance, and distribution of the projects water use in the IS/MND.

GHG Emissions

The Initial Study improperly estimates the projects GHG emissions

According to the IS/MND, “ SVP’s power mix, with its 2017 estimate of 430 pounds of CO₂e per MWh, has a much lower average GHG emissions factor than the 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 that are provided in CalEEMod.”³⁵ The CEC Staff bases its estimate of GHG emission from the SDC electricity use on the 2017 SVP overall power mix as shown in the table below.

TABLE 5.8-3 COMPARISON OF SVP AND STATEWIDE POWER MIX⁴		
Energy Resources	2017 SVP Power Mix	2017 California Power Mix
Renewable (Biomass, Geothermal, Eligible Hydroelectric, Solar, and Wind)	38%	29%
Coal	9%	4%
Large Hydroelectric	34%	15%
Natural Gas	16%	34%
Nuclear	0%	9%
Other	0%	< 1%
Unspecified sources of power (not traceable to specific sources)	3%	9%
Total	100%	100%

Source: CEC 2017

³⁵ IS/MND page 170 of 322

According to the IS/MND, “As of December 31, 2017, the SVP power mix was composed of approximately 38 percent eligible renewable resources, 34 percent large hydroelectric, and 28 percent nonrenewable sources (SVP 2017).”³⁶ While that may be true for the overall power mix the Santa Clara’s non-residential power mix has a much higher GHG intensity that may be higher than the 2018 California power mix as demonstrated in the table below. SVP’s non-residential power mix is 32% renewable, 11% hydroelectric and 34% natural gas and 23% sources of unspecified power as shown in the table below.

³⁶ IS/MND Page 140 of 322

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Biomass & Biowaste	0%	2%	0%	0%	2%
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Eligible Hydroelectric	0%	13%	0%	0%	2%
Solar	27%	<1%	29%	0%	11%
Wind	19%	11%	0%	6%	11%
Coal	0%	0%	0%	0%	3%
Large Hydroelectric	55%	11%	0%	0%	11%
Natural Gas	0%	34%	0%	0%	35%
Nuclear	0%	0%	0%	0%	9%
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The SDC with a 1.23 average PUE and a peak 1.43 PUE would be much higher PUE than other modern data centers higher than the industry standards and an inefficient and wasteful use of energy in violation of CEQA.

The new data centers in Santa Clara are proposing and or achieving PUE's far lower than 1.23. The MND for a newly announced nearly identical Data Center located

in Santa Clara at 2305 Mission College Boulevard Data Center states, “**with implementation of the proposed mechanical and electrical design of the building and the anticipated data center occupancy, the PUE of the data center would be 1.09.**”³⁷ The intel campus in Santa Clara located across the street from the Laurelwood data center, “uses close-coupled evaporative cooling that relies on recycled water, to help it to reach an annualized PUE of 1.06.”³⁸ Intel has issued a white paper describing the technology that it uses to achieve 1.06 PUE rating at its Santa Clara Data Centers. The technology can eliminate the wasteful energy use consumed by the SDC with its PUE of 1.23 to 1.43.³⁹

“Elsewhere in the old semiconductor fabrication plant are smaller data centers, including D2P4, which has 5MW of power capacity across 5,000 square feet (465 sq m). Thanks to free air cooling, it, too, has a PUE of 1.06 - “they have exactly the same PUE, but totally different techniques. The two facilities have the lowest PUE of any of Intel’s data centers. “We’ve closed lots of small, inefficient data centers, and are trying to reduce our average PUE across our data centers to near 1.06.”⁴⁰

“Google senior director of data center operations Joe Kava reported that the company’s trailing 12-month average PUE for 2011 was 1.14, an improvement from 1.16 in 2010. That includes a quarterly PUE of 1.12 for the fourth quarter of the year, when one facility recorded a PUE of 1.08 - the lowest ever for a Google data center.”⁴¹ Google recently reported that, “Our fleet-wide PUE has dropped significantly since we first started reporting our numbers in 2008. The TTM energy-weighted average PUE for all Google data centers is 1.11, making our data centers among the most efficient in the world

³⁷ <http://santaclaraca.gov/home/showdocument?id=56607> Page 71 of 126

³⁸ **Inside Intel: From silicon fabrication plant, to energy-efficient data center**

<https://www.datacenterdynamics.com/analysis/inside-intel-silicon-fabrication-energy-efficient-data-center/>

³⁹ Exhibit 1 Disaggregated Servers Drive Data Center Efficiency and Innovation

⁴⁰ **Inside Intel: From silicon fabrication plant, to energy-efficient data center**

<https://www.datacenterdynamics.com/analysis/inside-intel-silicon-fabrication-energy-efficient-data-center/>

⁴¹ <https://www.datacenterknowledge.com/archives/2012/03/26/google-our-pue-is-lower-and-its-scrupulous>

Many other data centers outside of Santa Clara have achieved far lower PUE's than the proposed SDC. Since 2015, Switch, the developer of SUPERNAP data centers, has had a third-party audited colocation PUE of 1.18 for its SUPERNAP 7 Las Vegas Nevada facility, with an average cold aisle temp of 20.6C (69F) and average humidity of 40.3%. This is attributed to Switch's patented hot aisle containment and HVAC technologies.⁴² As of the end of Q2 2015, Facebook's Prineville data center had a power usage effectiveness (PUE) of 1.078 and its Forest City data center had a PUE of 1.082.⁴³ In October 2015, Allied Control has a claimed PUE ratio of 1.02 through the use of 3M Novec 7100 fluid.⁴⁴ In January 2016, the *Green IT Cube* in Darmstadt was dedicated with a 1.07 PUE.⁴⁵ It uses cold water cooling through the rack doors. In February 2017, Supermicro has announced deployment of its disaggregated MicroBlade systems. An unnamed Fortune 100 company has deployed over 30,000 Supermicro MicroBlade servers at its Silicon Valley data center with a Power Use Effectiveness (PUE) of 1.06.⁴⁶ Through proprietary innovations in liquid cooling systems, French hosting company OVH has managed to attain a PUE ratio of 1.09 in its data centers in Europe and North America.⁴⁷

Even utilizing CEC staff's incorrect SVP power content, the staff still incorrectly computes the total indirect emissions of the SDC in the IS/MND. The CEC reports that the indirect emissions from electric use of the SDC as 83,006 MTCO₂e/year Utilizing 430 pounds of CO₂ per MWh and maximum electrical use of 867,240 MWh per year. Using 430 pounds of CO₂ per MWh would generate approximately 169,152 MTCO₂e/year almost twice the CEC estimate.

The CEC is permitting over seven data centers in Santa Clara. According to the applications the combined total of GHG emissions from the seven data centers is over

⁴² Miller, Rich. "[Inside SUPERNAP 8: Switch's Tier IV Data Fortress.](#)" *Data Center Knowledge*. Feb. 11, 2014

⁴³ "[Energy Efficiency](#)". *Open Compute Project*. Open Compute Project. Retrieved 18 March 2016.

⁴⁴ "Two-Phase Immersion Cooling" <http://multimedia.3m.com/mws/media/11279200/2-phase-immersion-cooling-a-revolution-in-data-center-efficiency.pdf>

⁴⁵ "[Green IT Cube: Hocheffizientes Supercomputer-Domizil eingeweiht](#)". 2016-01-23

⁴⁶ "[Supermicro - News - Supermicro Deploys 30,000+ MicroBlade™ Servers to Enable One of the World's Highest Efficiency \(1.06 PUE\) Data Centers](#)

⁴⁷ OVH. "[A green hosting provider - OVH Canada](#)". www.ovh.com.

860,000 MTCO₂e/yr as seen in the table below. The initial study needs to, assess and justify how power plant projects such as the back-up generators associated with these data centers will meet the electricity sector's share of the statewide goals in the Scoping Plan.

The seven data centers GHG emissions of 860,799 MTCO₂e/yr equal almost half of the total 2016 GHG emissions from the City of Santa Clara which was 1,769,178 MTCO₂e/yr.⁴⁸ With that increase in GHG emissions from data center electricity use a fair argument can be made that the City of Santa Clara will not comply with EO S-3-05 which sets the following GHG reduction goals for the state, Reduce emissions to 2000 levels by 2010, Reduce emissions to 1990 levels by 2020, Reduce emissions 80% below 1990 levels by 2050. From 2008 to 2016 the Santa Clara Climate Action Plan progress report shows the City of Santa Clara reduced GHG emissions by 85,122 MTCO₂e/yr⁴⁹ The GHG emissions from the SDC would equal any GHG reductions the City of Santa Clara has achieved from 2008 to 2016 essentially neutralizing any GHG mitigation measures proposed in the CAP.

⁴⁸ Exhibit 3 Page 10 of 29

⁴⁹ Exhibit 3 Pages 10 of 29, and 8 of 29

DATA CENTER APPLICATIONS BEFORE THE COMMISSION

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Memorex Data Center		99 MW ⁶⁸	N/A	N/A
Totals		650 MW	4,568,006	860,799

GHG Mitigation Measures

The IS/MND proposes Mitigation Measure GHG-10 which states, “SDC has a Power Usage Effectiveness of 1.23 and an average rack power rating range of 8 to 10 kilowatts. [SDC only]⁶⁹ There are many problems with this measure. First the City of Santa Clara is the agency that will administer the mitigation and monitoring program. How will the City of Santa Clara know whether the facility is meeting its PUE of 1.23.

⁵⁰ <https://ww2.energy.ca.gov/sitingcases/mclaren/>

⁵¹ McLaren Final Decision TN 225170 Page 128 of 361

⁵² McLaren Final Decision TN 225170 Page 129 of 361

⁵³ <https://ww2.energy.ca.gov/sitingcases/laurelwood/>

⁵⁴ Laurelwood Proposed Decision TN 231721 Page 210 of 368

⁵⁵ Laurelwood Proposed Decision TN 231721 Page 211 of 368

⁵⁶ <https://efiling.energy.ca.gov/GetDocument.aspx?tn=229419-1&DocumentContentId=60822>

⁵⁷ Walsh Data Center Application TN 228877-2 Page 111 of 203

⁵⁸ Walsh Data Center Application TN 228877-2 Page 112 of 203

⁵⁹ <https://ww2.energy.ca.gov/sitingcases/walsh/> Page 10 of 222

⁶⁰ Sequoia Data Center Application TN 229419-1 Page 106 of 222

⁶¹ Sequoia Data Center Application TN 229419-1 Page 131 of 122

⁶² <https://ww2.energy.ca.gov/sitingcases/sj2/>

⁶³ San Jose Data Center Application TN 230741 Page 175 of 285

⁶⁴ San Jose Data Center Application TN 230741 Page 176 of 285

⁶⁵ <https://ww2.energy.ca.gov/sitingcases/missioncollege/>

⁶⁶ Mission College Data Center Application TN 230848 Page 121 of 222

⁶⁷ Mission College Data Center Application TN 230848 Page 122 of 222

⁶⁸ https://ww2.energy.ca.gov/sitingcases/all_projects_cms.html

⁶⁹ IS/MND Page 1139 of 322

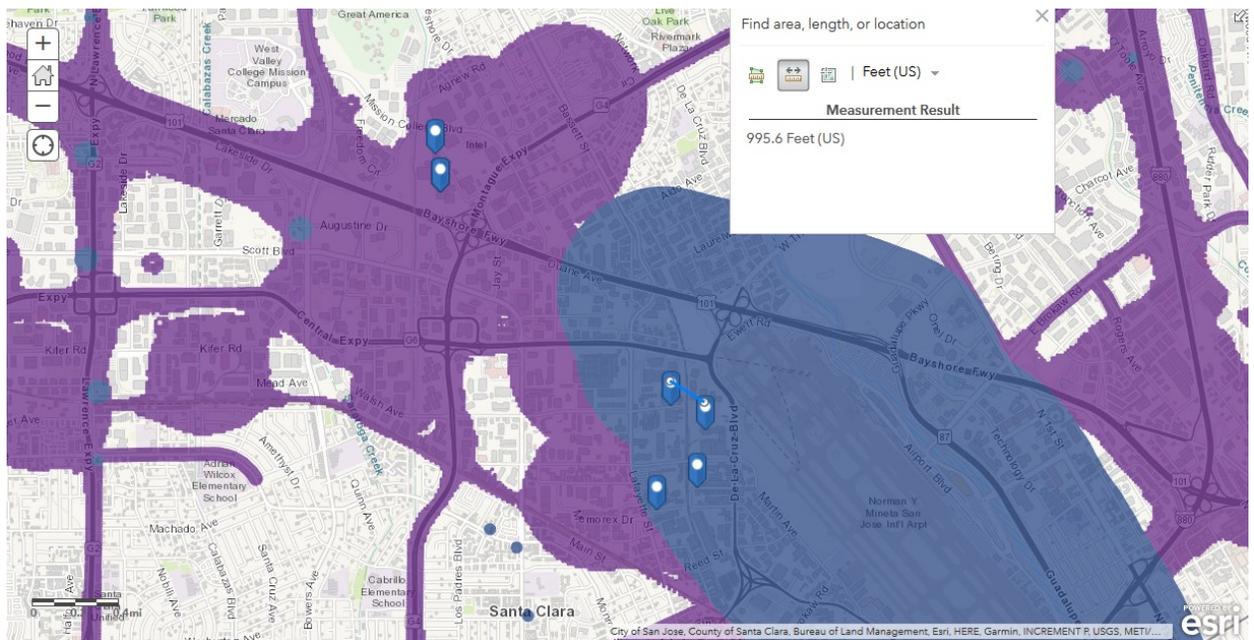
How will the city of Santa Clara know if the average rack power Rating range is 8 to 10 kilowatts. PUE has many different methods of measurement and the definition of the PUE metric must be included in the mitigation measure. Also, according to the application, the average PUE for SDC would be 1.23, and at peak operation the PUE would be 1.43.”⁷⁰

All of the Applicant’s Proposed GHG Measures contain no mitigation and monitoring protocol no estimate of the amount of GHG emissions they will reduce and provide no assurance that the APM’s will reduce GHG impacts below significance.

Cumulative Health Risks

BAAQMD CEQA Guidelines require that a cumulative health risk assessment must be performed that includes all sources within 1,000 feet of a proposed source. The health risk assessment should include all sources including the Walsh Avenue Data Center which is located less than 1,000 feet from the SDC and the San Jose Airport which is adjacent to the project.

Santa Clara Data Centers Under Commission Review and Distance between SDC and Walsh Avenue DC



⁷⁰ TN 227273-1 Page 105 of 172

2018 Power Content Label

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Biomass & Biowaste	0%	2%	0%	0%	2%
Geothermal	0%	5%	0%	0%	5%
Eligible Hydroelectric	0%	13%	0%	0%	2%
Solar	27%	<1%	29%	0%	11%
Wind	19%	11%	0%	6%	11%
Coal	0%	0%	0%	0%	3%
Large Hydroelectric	55%	11%	0%	0%	11%
Natural Gas	0%	34%	0%	0%	35%
Nuclear	0%	0%	0%	0%	9%
Other	0%	0%	71%	94%	<1%
Unspecified sources of power*	0%	23%	0%	0%	11%
TOTAL	100%	100%	100%	100%	100%

* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.

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Emergency Operation Air Quality Impact Assessment

The IS/MND does not provide an air quality impact assessment of the SDC emergency generators for emergency operations. The IS/MND states that, "Based on staff's review of air quality agency practices summarized above, staff concludes that

emergency operations are too infrequent and unable to be reliably evaluated for ambient air quality impacts.”⁷¹ This is a departure from the last data center CEC Staff evaluated the Laurelwood Data Center where staff modeled emergency emissions to protect the sensitive receptors in the environmental justice community.

SDC Commission Staff did model the testing and maintenance of one diesel generator at a time in the ISA/MND. The results presented below show that with just one generator operating the projects impact plus background is within 1 % of the Federal 1-hour NO₂ standard and within 2% of the State 1-hour NO₂ standard.

TABLE 5.3-8 SEQUOIA MAXIMUM IMPACTS DURING READINESS TESTING AND MAINTENANCE-TESTING ONLY (µg/m³)

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24-hour	0.76	69.8	70.6	50	141%
	Annual	0.05	21.9	22.0	20	110%
PM2.5	24-hour	0.58	31.0	31.6	35	90%
	Annual	0.05	10.6	10.7	12	89%
CO	1-hour	3,053	2,748	5,801	23,000	25%
	8-hour	1,967	2,061	4,028	10,000	40%
NO ₂	State 1-hour ^a	---	---	333	339	98%
	Federal 1-hour ^b	---	---	187	188	99%
	Annual	13.2	24.1	37.3	57	65%
SO ₂	State 1-hour	0.21	9.4	9.6	655	1%
	Federal 1-hour	0.19	6.1	6.3	196	3%
	24-hour	0.08	2.9	3.0	105	3%

Notes:

Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.

Results are the worst-case impact of a single generator in use because only a single generator would operate at a given time for testing and maintenance.

The federal 24-hour PM_{2.5} background of 31.0 µg/m³ is based on 98th percentile averaged over 3 years of recent data (2015-2017) excluding 2018.

^a For CAAQS 1-hour NO₂ impacts, this is the project impact and seasonal hour of day background for source "C1SWEG01" at a 75% load; staff reports the highest 1-hour NO₂ modeled result (on 5/12/2017).

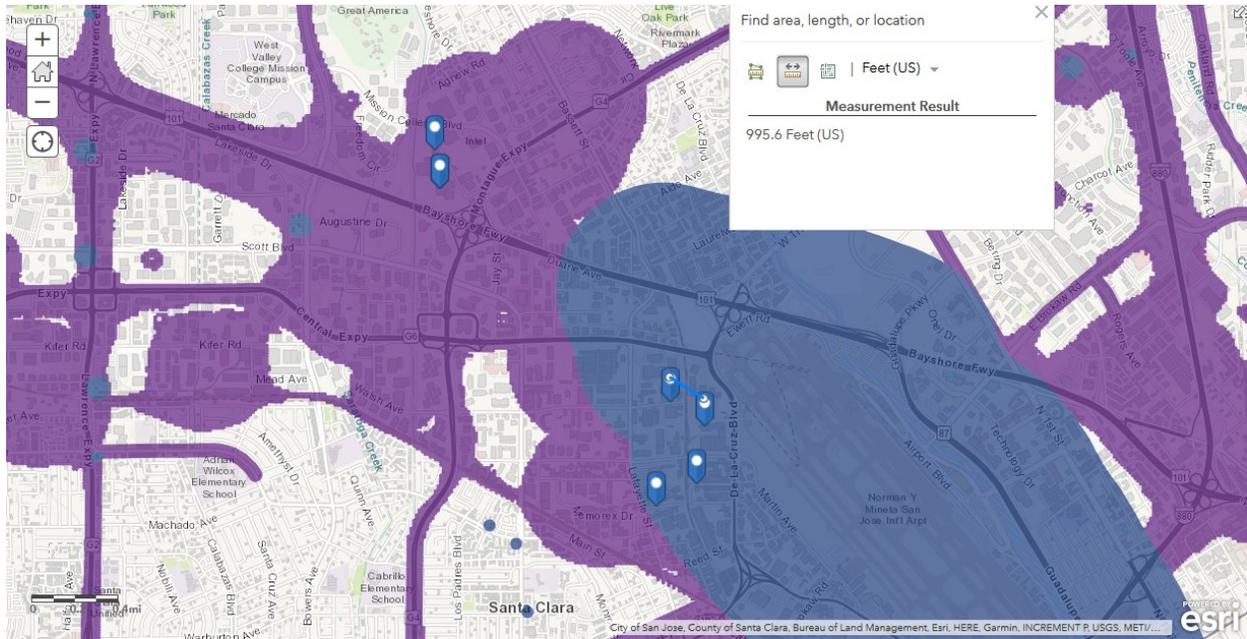
If operating only one generator at a time almost exceeds the State and Federal NO₂ standards emergency operation will surely exceed both standards which would be a significant impact under CEQA requiring mitigation. Without modeling emergency operation, the applicant cannot bear the burden of proof that the project will not violate State and Federal NO₂ standards. The project can reduce its NO₂ impact by utilizing

⁷¹IS/MND Page 84 of 322

natural gas IC engines or fuel cells or Tier 4 diesel engines as Santa Clara Data Center did to reduce its NO2 impacts.

The energy commission is currently processing six other data centers including the McLaren Data Center it recently approved. The distance between the Walsh Avenue Data Center and the SDC is less than 1,000 feet.

Santa Clara Data Centers Under Commission Review and Distance between SDC and Walsh Avenue DC



CEC Staff has determined that the population around the project is an environmental justice community.⁷² Staff's analysis states that in the project area, *"There are two census tracts where the pollution burden percentile is above 90 and there are 13 census tracts where individual pollution burden indicators are in the 90 or above percentile. Table 5.21-5 presents the CalEnviroScreen percentiles for the indicators that make up the population characteristics in a six-mile radius of the project site. There is one census tract where the population characteristics burden percentile is above 90 and there are 11 census tracts where individual population characteristic indicators are in the 90 or above percentile."*⁷³

⁷² IS/MND Page 263 of 322

⁷³ IS/MND Page 263 of 322

BAAQMD has determined that the project area shaded in blue in the map above requires further study. BAAQMD Planning healthy Places handbook on page 12 describes the blue shaded project area in the map above. The handbook states,

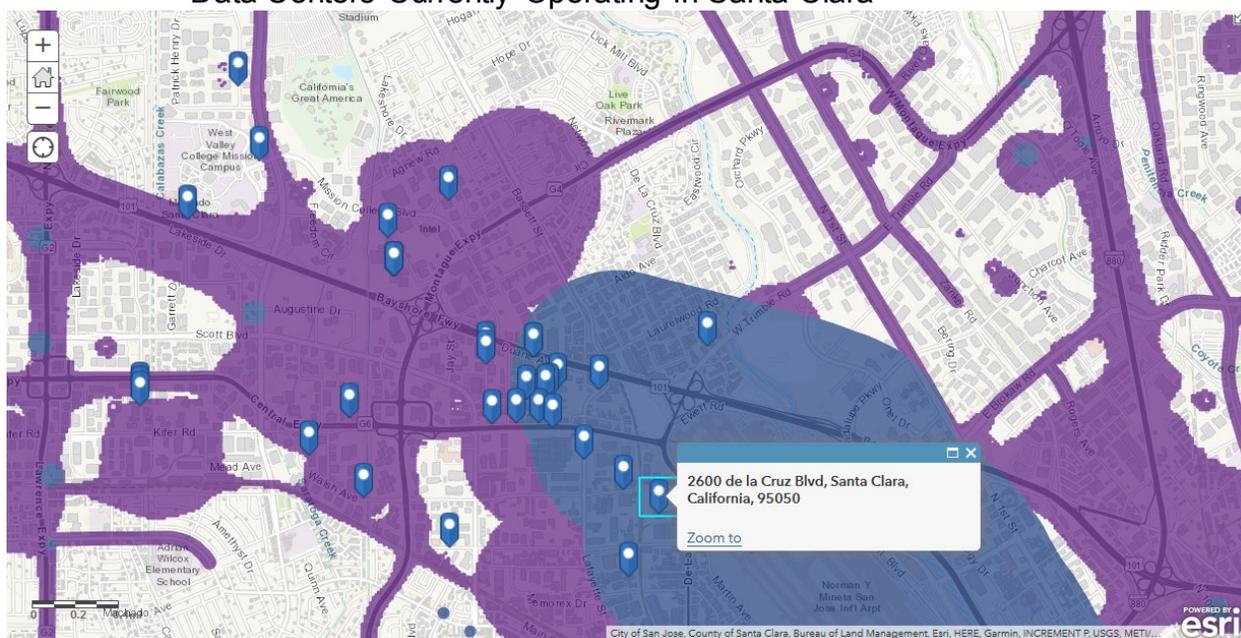
The Air District has identified a number of areas within the Bay Area where additional analysis (i.e. further study) is recommended to assess the local concentrations of TACs and fine PM, and therefore the health risks from air pollution. These areas are characterized by “large and complex” industrial facilities such as oil refineries, large airports, and seaports, etc., and the Air District recommends using caution when considering sensitive land uses in these areas. More information on “large and complex” sources is below. Conducting “further study” would entail air quality modeling to more precisely determine fine PM concentrations and/or to estimate increased health risks from air toxics to determine if there is an unacceptable level of health risk, and to identify measures that can be implemented to reduce the health risks to acceptable levels.⁷⁴

Cumulative Air Quality Impact Analysis must be performed.

The project area is home to 50 data centers, a metropolitan airport and many congested highways and streets. The CEC is processing seven data centers many with the same sensitive receptors as the LDC. The map below depicts some of the currently operating data centers locations.

⁷⁴ BAAQMD Planning Healthy Places Guidebook Page 12 https://www.baaqmd.gov/~media/files/planning-and-research/planning-healthy-places/php_may20_2016-pdf.pdf?la=en

Data Centers Currently Operating in Santa Clara



CEQA provides that a proposed project may have a significant effect on the environment when the possible effects on the environment are individually limited but “cumulatively considerable.” (Pub. Resources Code, §21083(b); Cal. Code Regs., tit. 14, §15065.) “Cumulatively considerable” means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.” (Cal. Code Regs., tit. 14, §15065, emphasis added.) In addition to analyzing the direct impacts of a project, CEQA requires a determination of whether or not a project will result in a significant cumulative impact. The analysis must include other past, present and probable future projects causing related cumulative impacts regardless of whether such projects are within the control of the lead agency. (Cal. Code Regs., tit. 14, §15130, subs. (a)(1) & (b)(1).)

California courts have repeatedly emphasized that the rationale for the cumulative impact analysis is to provide the decisionmaker a broad perspective on the overall impact of a project. (See *Bozung v. Local Agency Formation Com.* (1975) 13

Cal.3d 263; *Citizens Association v. County of Inyo* (1985) 172 Cal.App.3d 151.) In *Bozung*, the State Supreme Court termed the CEQA cumulative impact requirement a “vital provision” which “directs reference to projects, existent and planned, in the region so that the cumulative impact of all projects in the region can be assessed.” (*Bozung v. Local Agency Formation Com.*, supra, 13 Cal.3d 263, 283, emphasis added.)

As noted by the courts, “a cumulative impact analysis which understates information concerning the severity and significance of cumulative impacts impedes meaningful public discussion and skews the decisionmaker’s perspective concerning the environmental consequences of a project, the necessity for mitigation measures, and the appropriateness of project approval.” (*Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal.App.3d 421, 431)

Utilities and Service Systems

The IS/MND makes the incredible claim that the, “Construction and operation of the project would not require new or expanded electric power utilities. Therefore, potential impacts would be less than significant. According to the CEC Staff’s evaluation of SVP’s procurement plan the cumulative impact of the seven CEC data centers is requiring:

Upgrade breakers and install larger transformers at the Scott Receiving Station

- Upgrade breakers and install larger transformers at the Northern Receiving Station
- Design reconfiguration and restructuring of the South Loop (one of four 60 kV circuit loops within the City of Santa Clara)
- Upgrade lines at the Northern Receiving Station and Scott Receiving Station Lines #1 and #2

Serra Substation replacement, which involves replacing the existing single transformer bank substation with a two-transformer bank substation

- Homestead Substation, which involves replacing the existing two-transformer bank substation with a higher capacity two-transformer bank substation
- Parker Substation, which will be a new substation dedicated to a single customer
- Fairview Substation expansion, which will add a third transformer bank in existing two-transformer bank substation
- Oaks Junction (RW) Substation, which will be a new substation dedicated to a single customer
- Laurelwood Substation, which will be a new substation dedicated to a single customer
- Freedom Circle Junction Substation, which will be a new substation dedicated to a single customer

- Esperanca Substation, which will be a new general distribution substation to serve new developments proposed around Levi's stadium⁷⁵

Project Design Measures

According to the IS/MND , *“The applicant has incorporated numerous design measures into the project to avoid environmental impacts. Since these measures address specific technical areas, they are listed in the technical sections that follow this project description chapter, along with a discussion of any changes prompted by Staff's analysis.”*⁷⁶ The MND includes no standards/thresholds of significance for impacts allegedly prevented by these proposed design measures. This is critical; without a significance threshold, there is no means by which to conclude whether impacts would or would not be significant, and findings under CEQA Section 21081 cannot be properly made (i.e., whether significant impacts are reduced to a less-than-significant level and, if so, how). The design measures incorporated in the project have no monitoring mechanism or enforcement mechanism to ensure they are employed or effective. All project design measures must be quantitatively evaluated and demonstrated to mitigate any environmental impacts they are employed to lessen.

Basic Data Center Location Requirements

TIA-924-A-2012 has very basic requirements that must be satisfied before any discussion of Tier 3 or higher takes place

- If cooling equipment, generators, fuel tanks, or access provider equipment is situated outside the customer space, then this equipment should be adequately secured. In the Midwest, this also means sustaining a 120 MPH wind load.
- The data center owner will need access to this space 24 hrs/day, 7 days/week. (This is impossible if the facility is within a ½ mile of a major sporting venue)
- The computer room should not be located directly in close proximity to a parking garage
- **The site should not be located in a 100-year flood plain, near an earthquake fault, on a hill subject to slide risk, or downstream from a dam or water tower.**
- **The site should not be in the flight path of any nearby airports.**

⁷⁵ Exhibit 2 Pages 28 and 29 of 53Staff Paper - Review of Silicon Valley Power's 2018 Integrated Resource Plan TN- 230593

⁷⁶ IS/MND Page 37 of 322

- **The site should be no closer than 0.8 km (½ mile) from a railroad or major interstate highway to minimize risk of chemical spills.**
- The site should not be within 0.4 km (¼ mile) of a research lab, chemical plant, landfill, river, coastline, or dam.
- **The site should not be within 8.0 km (5 miles) of a major airport.**
- The site should not be within 0.8 km (½ mile) of a military base. (This includes National Guard armories and reserve unit headquarters)
- The site should not be within 1.6 km (1 mile) of nuclear, munitions, or defense plants.⁷⁷

Environmental Justice

The project area is considered an environmental justice community. Currently there are 50 data centers operating in the project area and the CEC is processing seven more. Despite this the IS/MND fails to provide a cumulative health risk and toxic air contaminant assessment as required by BAAQMD regulations. The operation of just one SDC diesel generator can produce an air quality impact that is within 2% of the State NO₂ standard and 1% of the federal NO₂ standard but the IS fails to model emergency operations of the diesel generators. The CEC Staff failed to do a cumulative air quality impact assessment.

The Energy Commission failed to engage the confirmed environmental justice community that will be impacted by this proposal. The Commission failed to hold the traditional Informational Hearing and Site Visit. An informational hearing is sponsored by the Energy Commission to inform the public about the project and to invite public participation in the review process. Project materials such as the IS/MND, the data responses, and the application were not printed in languages friendly to the EJ community so they could understand the project and participate. The energy commission once again has failed to properly engage the environmental justice community.

⁷⁷ <https://lifelinedatacenters.com/data-center/data-centers-location/>

Attachment 1 Letter from Melissa Jones to Mr. Cantrell

CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET
SACRAMENTO, CA 95814-5512
www.energy.ca.gov



April 21, 2008

Mr. W. Tate Cantrell, Jr.
Vice President, Data Center Technologies
DuPont Fabros Technology, Inc.
1212 New York Avenue, NW
Suite 900
Washington, DC 20005

RE: Diesel Backup Generators (Xeres Permit S-1 through S-32)

Dear Mr. Cantrell:

The California Energy Commission has received information regarding 32 low-use diesel backup generators that we understand Xeres Ventures, LLC, plans to install to support a data center at 535 Reed Street in Santa Clara, California. We also understand each backup generator has a rated capacity of 2.87 megawatts, which would make the total generating capacity at the site be 91.8 megawatts. We also understand Xeres is seeking a permit from the Bay Area Air Quality Management District, as well as a use permit from the City of Santa Clara.

The purpose of this letter is to inform you that the Energy Commission has permitting jurisdiction over the 32 diesel generators. As a general matter, the Energy Commission has jurisdiction over any site for a thermal power plant with a generating capacity of 50 megawatts or more. (Pub. Resources Code §§ 25110, 25120, 25500.) Here, the 32 generators, each to use diesel as a source of thermal energy to generate electricity, constitute a thermal power plant with more than 50 megawatts in generating capacity.

The aggregation of all 32 generators is based on their common location for a computer server campus and their common purpose to provide power conditioning and backup power to the data center that is also planned for the site. The issue of whether to aggregate the backup generators and view them as a thermal power plant under the Energy Commission's jurisdiction is one we have dealt with on more than one occasion. In all these cases, including a few in which the power plants were to be located a mile or more apart and two others which also involved diesel backup generators for a data center, the Energy Commission's Chief Counsel concluded the Commission has jurisdiction based on aggregating the proposed power plants, including backup diesel generators.

Mr. W. Tate Cantrell, Jr.
April 21, 2008
Page 2

The factors supporting aggregation include such matters as the separate generating units: (a) being served by common structures, for example, a common control room or a common gas line, (b) if lacking a common control room, nevertheless being triggered to operate by the same event, for example, grid failure, (c) being under common ownership or subject to a common permit to operate, (d) being proposed as part of a foreseeable plan of development and, thus, constituting a "project" under the California Environmental Quality Act for purposes of environmental review by the permitting agency, and (e) being installed to serve a common industrial or commercial host.

Here, the generators will be located on one site proposed for the development of a data center. The generators are considered by the Air District to be components of a single project. The generators have the common purpose of serving as power conditioning and backup generators for a computer server campus being developed by a single project proponent. Their operation is likely to be triggered by the same event, for example, lightning storms or grid failure. Moreover, the potential for the generators to operate simultaneously should be analyzed in a comprehensive environmental document in accordance with the California Environmental Quality Act. Such analysis would identify the project's emissions, assess their impacts, identify feasible mitigation, and assess the potential health risks from this concentration of diesel engines.

For all these reasons, we believe the Energy Commission has permitting authority over the 32 generators, regardless of whether the power will be sold to the grid or used exclusively on-site. Thus, to receive a valid permit for the 32 diesel generators, Xeres must file with the Energy Commission either an application for a small power plant exemption (for a thermal power plant of 50 to 100 megawatts) or an application for certification. We believe an application for certification would be most appropriate, given the potential for adverse impacts from the use of diesel fuel in as many as 32 generators operating at one time.

In either case, the Energy Commission, as a matter of statute, serves as lead agency under the California Environmental Quality Act. As lead agency, it is responsible for preparing the appropriate environmental document for public review and consideration in deciding whether to approve the application. In the case of a small power plant exemption, the project is exempted from the Commission's jurisdiction and permitted at the local level. In the case of an application for certification, the project is permitted by the Energy Commission. During the certification process, the Commission and its staff work with the Air District, which is required under the Commission's regulations to issue a determination of compliance with the District's rules. The conditions of the District's determination, provided within the timeline of the Commission's proceeding, are incorporated into and become enforceable through the Commission's final decision.

Attachment 2 Silicon Valley Power 2018 Fact Sheet

<https://www.siliconvalleypower.com/svp-and-community/about-svp/utility-fact-sheet>

Utility Fact Sheet

Electric Utility
City of Santa Clara
FACT SHEET - JAN - DEC 2018

City Hall
1500 Warburton Avenue
Santa Clara, CA 95050

Phone:
(408) 261-5292

Form of Government:

Council-City
Manager

No. of Employees (2018-19):

193

Operating Budget (2018-19):

\$ 450,092,360

Fast Facts:

Electric Meters	55,383
Peak Demand	526.2 MW
Service Area	18.41 square miles
System Load Factor	80.1%
Transmission Lines	55.5 miles

Distribution Lines:

Underground	352.0 miles
Overhead	186.6 miles
Street Lights	7,076

2018 Calendar Year Retail Transactions:

Sales Revenues (note 1)	\$ 414,019,366
kWh Sales	3,566,293,836

Purchased Power & Generation for
Retail:

	kWh	
City-owned Generating Facilities	943,529,625	25.5%
Western Area Power Administration	231,119,803	6.3%
Northern California Power Agency	686,315,083	18.6%
Other Joint Power Agencies & City Purchases	1,833,347,659	49.6%
Total	3,694,312,170	100.0%

Average Monthly Customer Count & Total kWh
Sales:

		kWh	
Residential	47,007	226,010,342	6.3%
Commercial	6,168	92,413,001	2.6%
Industrial	1,647	3,229,606,952	90.6%
Municipal	193	18,263,541	0.5%
Unmetered	379	N/A	N/A
Total	55,394	3,566,293,836	100.0%

Note 1: Unaudited; Includes revenue from unmetered accounts.

Note 2: kWh sales may include adjustments due to timing issues.

RESUME OF ROBERT SARVEY

Academic Background

BA Business Administration California State University Hayward, 1975

MBA Tax Law California State University Hayward, 1985

Experience

San Joaquin Valley Air Pollution Control District Citizens Advisory Board Industry

Representative: Analyzed proposed air quality regulations and made recommendations to the Governing Board for approval.

GWF Peaker Plant 01-AFC-16: Participated as an Intervenor in the project and helped negotiate and implement a 1.3 million dollar community benefits program. Successfully negotiated for the use of local emission reduction credits with GWF to offset local air quality impacts.

Tesla Power Project 01- AFC-04: Participated as an Intervenor and provided air quality testimony on local land use and air quality impacts. Participated in the development of the air quality mitigation for the project. Provided testimony and briefing which resulted in denial of the PG&E's construction extension request.

Modesto Irrigation District 03-SPEE-01: Participated as an Intervenor and helped negotiate a \$300,000 air quality mitigation agreement between MID and the City of Ripon.

Los Esteros: 03-AFC-2 Participated as an Intervenor and also participated in air quality permitting with the BAAQMD. Responsible for lowering the projects permit limit for PM-10 emissions by 20%.

SFERP 4-AFC-01: Participated as an Intervenor and also participated in the FDOC evaluation. My comments to the BAAQMD resulted in the projects PM -10 emission rate to be reduced from 3.0 pounds per hour to 2.5 pounds per hour by the District. Provided testimony on the air quality impacts of the project.

Long Beach Project: Provided the air quality analysis which was the basis for a settlement agreement reducing the projects NOx emissions from 3.5ppm to 2.5ppm.

ATC Explosive Testing at Site 300: Filed challenge to Authority to Construct for a permit to increase explosive testing at Site 300 a DOE facility above Tracy. The permit was to allow the DOE to increase outdoor explosions at the site from 100 pounds per charge to 300 pounds per charge and also grant an increased annual limit on explosions from 1,000 pounds of explosive to 8,000 pounds of explosives per year. Contested the permit and succeeded in getting the ATC revoked.

CPUC Proceeding C. 07-03-006: Negotiated a settlement with PG&E to voluntarily revoke Resolution SU-58 which was the first pipeline safety waiver of GO112-E granted in the State of California. Provided risk assessment information that was critical in the adoption of the Settlement Agreement with PG&E which, amongst other issues, resulted in PG&E agreeing to withdraw its waiver application and agreeing to replace the 36-inch pipeline under the sports park parcel after construction.

East shore Energy Center: 06-AFC-06: Intervened and provided air quality testimony and evidence of cancellation of Eastshore's power purchase agreement with PG&E.

Colusa Generating Station: 06-AFC-9: Participated as air quality consultant for Emerald Farms. Filed challenge to the PSD Permit.

CPUC proceeding 08-07-018: Tesla Generating Station CPCN participated in proceeding which was dismissed due to motion by IEP. Reviewed all filings, filed protest, signed confidentiality agreement and reviewed all confidential testimony.

GWF Tracy Combined Cycle 08-AFC-07: Participated in negotiation of the Air Quality Mitigation Agreement with the San Joaquin Valley Air Pollution Control District and GWF.

CPUC Proceeding 09-09-021: Provided Testimony that demonstrated PG&E failed to follow its environmental protocol in the LTPP. Provided testimony and evidence that PG&E's need had fallen since 2007 and that the Commission should limit PG&E's procurement to the 950-1000 MW Range.

CPUC Proceeding A. 09-04-001: Demonstrated PG&E had violated terms of Mariposa Settlement Agreement. PG&E was fined \$25,000 for breach of settlement.

CPUC Proceeding A. 09-10-022: Provided Testimony on behalf of Californians for Renewable Energy. Provided confidential evaluation of PPA value. Provided testimony and evidence that PG&E had violated the Mariposa Settlement. Provided testimony that demonstrated PG&E's demand had fallen sharply since the issuance of D. 07-12-052.

Oakley Generating Station 09-AFC-04: Participated as an intervenor. Provided testimony in Alternatives, Air Quality, Environmental Justice, and Water Quality. Negotiated settlement with CCGS to not use ERC's and instead exclusively use 2.5 million dollars to create real time emission reductions through BAAQMD real time emission reduction programs.

Pio Pico PSD Permit: Participated in the Pio Pico PSD permit. Comments resulted in a remand to the air district and a lowering of particulate matter emission limits by 10%

CPUC Proceeding A.11-12-003: Was credited by the decision for demonstrating that an additional 5 MW of firm capacity was not needed from the Thermal Energy Biomass Plant. Decision led to the plants closure.

**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA**

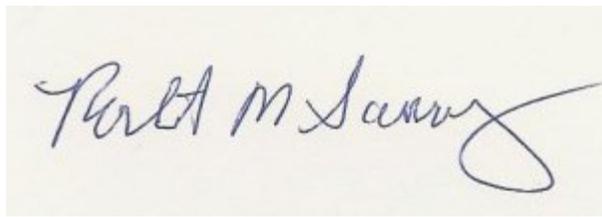
In the Matter of Sequoia Data Center
Docket Number 19-SPPE-03

Declaration of Robert Sarvey

I Robert Sarvey Declare as Follows:

1. I prepared the attached testimony on the IS/MND for the Sequoia Data Center.
2. A copy of my professional qualifications and experience is included with this Testimony and is incorporated by reference in this Declaration.
3. I am personally familiar with the facts and conclusions related in the attached prepared testimony and if called as a witness could testify competently thereto.
4. It is my professional opinion that the attached prepared testimony is valid and accurate with respect to issues that it addresses.

I declare under penalty of perjury, under the laws of the State of California, that the foregoing is true and correct to the best of my knowledge and that this declaration was executed in Tracy, California on January 28, 2020.

A rectangular box containing a handwritten signature in blue ink that reads "Robert M. Sarvey".

Robert M. Sarvey
501 W. Grant Line Rd.
Tracy, CA. 95376
209 835-7162