

DOCKETED

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Memorandum

To: Commissioner Karen Douglas, Presiding Member
Vice Chair Janea Scott, Associate Member

Date: June 1, 2020

From: **California Energy Commission**
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Subject: **CALIFORNIA ENERGY COMMISSION STAFF RESPONSES TO COMMENTS RECEIVED ON THE MISSION COLLEGE DATA CENTER INITIAL STUDY/PROPOSED MITIGATED NEGATIVE DECLARATION (19-SPPE-05)**

In accordance with the revised schedule included in the "Notice of Prehearing Conference and Evidentiary Hearing, Scheduling Order, and Further Orders" docketed on May 28, 2020, staff submits the following summary of comments received and responses. Comments were received from the Bay Area Air Quality Management District (TN 233079) and the National Fuel Cell Research Center (TN 233098).

COMMENTS: Bay Area Air Quality Management District (BAAQMD)

BAAQMD-1a. The MND does not evaluate how the Project's use of diesel fuel would be consistent with carbon neutrality no later than 2045. The Air District does not believe that diesel use is consistent with carbon neutrality.

BAAQMD-1b. The Air District also does not agree that the operation of MCDC [Mission College Data Center] would conform to the City of Santa Clara's Climate Action Plan extend to at least 2030, since the City of Santa Clara has not yet adopted its 2030 CAP, and it is unclear what measures will be included in the CAP and whether they will be mandatory.

Staff Response to BAAQMD-1a: Greenhouse gas (GHG) impacts from all project emission sources would be considered less than significant if the project is consistent with the City of Santa Clara's Climate Action Plan (CAP) and applicable regulatory programs and policies adopted by the California Air Resources Board (ARB) or other California agencies. Because of the City of Santa Clara's CAP, and Silicon Valley Power's (SVP) progress towards meeting the 2030 GHG reduction goals and renewable energy goals of the CAP, the proposed project would not conflict with the region's efforts to reduce GHG emissions.

Executive Orders B-55-18 and S-3-05 express the state's intent to achieve carbon neutrality by 2045 and GHG emissions reductions equivalent to 80 percent below 1990 levels by 2050. The facility could be required to implement any specific regulations established by these Executive Orders, if promulgated in state or local regulations adopted to implement these policies. However, to date, specific requirements remain unidentified.

The City of Santa Clara adopted Resolution BOS-2018-103 on September 11, 2018, endorsing the BAAQMD's Diesel Free by '33 Statement of Purpose. The Statement of Purpose does not create a legally binding obligation on the signatories. BAAQMD leaves it to the signatories to develop their individual strategies to meet the goal of zero emissions from use of petroleum-derived diesel fuel within their communities. Staff is not aware of any regulations implemented at this time by the City of Santa Clara to implement the Statement of Purpose. If any such regulations are applied to existing data centers in the future the facility would have to comply and could deploy a mix of operations and technology changes. These could include offsets, batteries, fuel cells, alternative fuels, fail-safe servers that obviate the need for back-up diesel generators, or shut down, to net out carbon emissions.

Staff Response to BAAQMD-1b: The City of Santa Clara's CAP, adopted in 2013, provides a comprehensive emissions reduction strategy that will allow the city to achieve its fair share of statewide emissions reductions through 2020, consistent with Assembly Bill (AB) 32. Consistency with the CAP framework is a relevant

consideration in the analysis of the significance of the project's GHG impacts because many of the policies are expected to be carried forward by the city to address post-2020 emissions in its next CAP update.

GHG impacts from all project emission sources would be considered less than significant if the project is consistent not only with the City of Santa Clara's Climate Action Plan but also applicable regulatory programs and policies adopted by the California Air Resources Board, AB 32, Senate Bill (SB) 32, SB 350, SB 100, and Executive Orders. All of these various laws and policies drive a reduction in GHG emissions and increases in the use of renewable electricity.

Since the RPS (Renewable Portfolio Standards) increases to 60 percent by 2030 (SB 100), the carbon intensity of California's electricity supply and the GHG emissions generated to serve the project's electricity demand will continue to drop.

In addition, the analysis done by CEC staff is consistent with the requirements of CEQA, in addition to BAAQMD's CEQA guidelines. Taken together, both form the basis for concluding that the project would be consistent with the state's long-term greenhouse gas emissions reduction goals.

BAAQMD-2 (pp.2-3): Recommendations for Achieving Additional Emission Reductions. *The Air District encourages CEC to compel the applicant to incorporate additional emission reduction measures as a condition of approval of the project. These recommended measures will help ensure that the project's emissions impacts are reduced to the maximum extent possible, to achieve the most health protective air quality for Bay Area residents and to achieve climate change goals established by the Air District. These (air district recommended) mitigation measures are summarized as follows:*

BAAQMD-2a. Air District staff recommend that the Project join SVP's Santa Clara Green Power program and thus commit to purchase 100 percent renewable energy, or otherwise negotiate an electricity contract with SVP for 100 percent renewable energy.

BAAQMD-2b. Air District staff recommend that the project applicant use the cleanest available technologies such as solar power, batteries, fuel cells, or Tier 4 generators.

BAAQMD-2c. Air District staff recommends that CEC assess 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.

BAAQMD-2d. Air District staff strongly recommends that CEC work with SVP, the City of Santa Clara, the Air District, and the project proponents for this and

similar proposed data center projects to explore alternative options to reducing GHG emissions.

BAAQMD-2e. The Air District staff encourages CEC to "promote the project applicant" to adopt the use of cleaner, non-diesel technologies.

Staff Responses to BAAQMD-2a through BAAQMD-2e:

Staff Response to BAAQMD-2a: In response to the comment that advocates for the project applicant to purchase Santa Clara Green Power from SVP, it is important to understand that the MCDC would be a multi-tenant data center. The applicant as the data center owner purchases power from SVP for its use and to supply to each tenant, and passes the electricity costs along to each tenant using separate sub-meters. As with other data centers that have already been permitted through the City of Santa Clara, project applicants such as McLaren confirmed (based on comment letters from the City of Santa Clara) that for its own offices and building support spaces, the applicant would purchase Santa Clara Green Power, while also encouraging its tenants to participate in the Santa Clara Green Program.

The project applicant of MCDC has stated they would incorporate additional energy efficiency measures specified by the City of Santa Clara during the design review process to ensure compliance with applicable energy efficiency laws, ordinances, regulations, and standards. CEC staff agrees it would be beneficial for the applicant and the City of Santa Clara to come to a similar agreement as McLaren and not only to commit to purchase Santa Clara Green Power for its own building support requirements, but also to encourage MCDC tenants to participate in the Santa Clara Green Program as well. McLaren also agreed to install solar panels to supply a small portion of their electricity demand.

Staff Response to BAAQMD-2b: CEC staff agrees that solar power and battery technologies advocated by BAAQMD staff are expected to be a portion of the approach needed to meet California's 2050 GHG goals; however, current solar power, battery storage, and fuel cell technologies on a scale of around 80 MW as required for this project would not fit in the space available on this site for this project. Also, for the fuel cell option, pipeline natural gas is not likely to have the same reliability as the on-site diesel proposed for the Mission College Backup Generating Facility (MCBGF). Staff is not recommending Tier IV diesel engines because we did not identify a significant impact. Further, the short duration of most readiness tests would not achieve engine and emission control system temperatures where all the emission controls associated with Tier IV engines would operate – the potential additional emission reductions using Tier IV engines would only be realized on the annual load tests.

CEC staff agrees it would be beneficial for the applicant and the City of Santa Clara to come to an agreement to implement additional GHG reduction measures. However, the staff analysis did not determine that these additional measures were required to meet CAP requirements. Thus, as stated above, these additional measures are appropriately developed by these parties and do not need to include the CEC or be addressed in this proceeding. It is important to note that the CEC would not be permitting this project; it would be granting an exemption from its jurisdiction. Those jurisdictions actually granting the permits to allow the project to be built and operated would be in the best position to require further conditions on how the project should be built and operated. The CEC is committed to clean mobile and stationary sources, renewable energy, and energy efficiency and demand side management, and will continue to work with all energy users, including data centers.

Staff Response to BAAQMD-2c: Because the primary source of GHG emissions from operations of the project are 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 AB32, SB32, SB 350, SB 100, Executive Orders, and state and local policies. As stated in their 2018 Integrated Resource Plan, 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.

The most salient data regarding SVP's downward trending GHG emission's profile is its low and decreasing carbon intensity as represented by SVP's systemwide emissions factor. SVP's estimated carbon intensity has been reduced from 430 pounds of carbon dioxide equivalent (CO₂e) per megawatt-hour (MWh) in 2017 to 341 pounds of CO₂e per MWh in 2019. And the carbon intensity is expected to continue to reduce as shown in Table 1. (TN233129 of Walsh Data Center (19-SPPE-02), SVP Email to City of Santa Clara on Carbon Intensity Factors) To compare, the 2017 California statewide average emissions factor of 1,004 pounds of CO₂e per MWh and the PG&E average emissions factor value of 644 pounds of CO₂e per MWh are both 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. SVP expects to be 100 percent carbon free by 2045 as proposed by SB 100.

**Table 1 SVP Estimated Carbon Intensity Factors
(pounds of CO₂e per MWh)**

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
CO ₂ /MWh	341	348	271	230	222	278	277	279	276	273	270	219

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.

For the same reasons staff concludes 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 codifies as state policy that zero-carbon resources supply 100 percent of electric retail sales to end-use customers in the state by 2045.

Staff Response to BAAQMD-2d: There are several measures the BAAQMD staff recommended that would reduce project’s emissions, regardless of whether they are legally required to mitigate a significant adverse impact. In general, CEC staff’s task in preparing an IS/PMND is to determine whether a project as proposed would cause a significant impact. If such an impact is identified, staff would work with the applicant to incorporate mitigation measures. If such an impact is not identified, or if the applicant incorporates additional mitigation measures, the applicant can proceed to the local level for permitting and at that time, further design improvements could be incorporated to further reduce GHG emissions.

Staff Response to BAAQMD-2e: The CEC is committed to the development and deployment of cleaner mobile and stationary energy-using emission sources. Staff would welcome participating in a forum where these cleaner emissions sources are evaluated for applicability to data centers. One option would be for the CEC to include this topic in an upcoming Integrated Energy Policy Report (IEPR) update which would be open to all parties, if the IEPR Committee would be inclined to include this topic. The IEPR topic could include data center owners who could contribute how various options might or might not meet their facility reliability needs.

This data center proceeding has highlighted new electricity and fuel uses that will need to be part of local and statewide efforts to address air pollution and climate change. That being said, the path to carbon neutrality and a healthy economy

cannot rely on today's emission control technologies, nor can it be expected that tomorrow's economy will consist solely of today's business sectors.

COMMENTER: National Fuel Cell Research Center (NFCRC)

Summary of NFCRC Comments: On May 22, 2020, the National Fuel Cell Research Center (NFCRC) filed a comment letter (TN233098) on the Mission College IS/PMND. The comments centered on the use of fuel cells to provide backup electricity for large-scale data centers. In its comment letter, besides seeking some language clarifications in the IS/PMND regarding the fuel cell technology, NFCRC claims that this technology is readily available, appropriate, and reliable enough to meet the demands of MCD. Staff appreciates the interest of stakeholders in the review process for the MCBGF exemption request.

Staff Response to NFCRC: Staff agrees with the first comment that wording in the IS/PMND was not precise enough. Staff was referring to natural gas fired reciprocating engines when it referred to gas fired engines, not chemical fuel cells.

Staff does not agree that it falsely asserted that that 78.1 MW of fuels cells and stored fuel would not fit on the MCD site. The NFCRC provided numbers that support staff's concern that fuel cells and their fuel supply would likely consume much of the site intended for data center use. NFCRC identified, as an example, 30 MW of tiered fuel cells that took up 1 acre; 78.1 MW of power supply would take almost 3 acres of tiered fuel cells, not even addressing site space or area that would be used if the data center wanted to store the selected fuel onsite. The generator yards proposed at MCD add up to about 1/2 acre. Fuel cells would be difficult to configure on the existing site to provide the design MWs.

Staff would not agree that natural gas pipelines would continue to operate during a major earthquake. At worst, transmission and distribution pipelines would be severed. At a minimum, pipelines, gas controls and throttles, and compressors would be shut down for inspections prior to return to service after an earthquake. In both cases, natural gas deliveries would be slowed, curtailed, or stopped. The reliability number provided by NFCRC in its comment letter reflect natural gas pipeline delivery but do not capture the perceived risk the data centers are trying to ameliorate with their data center designs and redundancies.

CEC staff imagines a likely comment from fuel cell proponents would be that a major earthquake is a rare event and should not be a design basis. The data center designers and operators seem to disagree – they appear to plan for the outlier events as well as the routine hot days.

CEC staff agrees that gaseous fuels in fuel cells are likely to have lower criteria and toxic air contaminant emissions, and in some cases, lower greenhouse gas emissions. Those potential environmental benefits do not overcome the storage

constraints (i.e., adequate space on site), and the additional permitting requirements likely associated with onsite storage of the quantities of compressed natural gas, liquefied natural gas, liquefied propane, or hydrogen needed for a data center the size of MCDC.

On page 3, NFCRC acknowledges that “[m]ost back up power demands can be met with fuel cells”. Staff notes that the letter refers to 40 sites, but neither the letter nor the web page cited as the reference provided a median size or cumulative MW. Further, it is unclear if the functions of the applications cited are similar to the data center design for MCDC. Large modern data centers like MCDC, in a California setting (with a relatively high earthquake risk) do not appear poised to use fuel cells for their current back up needs. Most fuel cell units have operated as demonstration units and the fuel cell technology has not matured enough to be suitable for large data centers, such as MCDC. It is not clear what the operational reliability is of currently available fuel cells (failure rate, maintenance requirements, etc.). Diesel backup generators have proven operational track records in large scale projects that are yet to be matched by fuel cells.

On page 7 of the comment letter, the NFCRC suggests staff’s IS/PMND text “recommend[s] the use of diesel”. Staff did not, but was only noting that other technologies do not appear to meet the design needs of the data center. Further, CEQA does not require, or necessarily allow for, an alternatives analysis for an IS/PMND. Lastly, since no significant environmental impacts were identified by staff, no alternative generating technology was needed to be considered to replace or mitigate potential impact of the proposed diesel backup generators.

On page 8 of the comment letter, NFCRC asks that staff clarify that fuel cells are not engines. Staff agrees, the statement in the IS/PMND regarding slow starts was intended to be solely about reciprocating natural gas fired engines.

Most data centers install batteries to act as both power quality conditioning devices and Uninterruptable Power Supply (UPS) for the transition to the backup generation. With or without diesel generators, the data center would likely have UPS/power conditioning equipment to protect the data servers from transients and unplanned outages. Staff would not expect that the use of fuel cells would obviate the need for some batteries onsite.

On page 10 of the comment letter, regarding the 6 MW of Bloom Energy fuel cells for the EBay facility in Utah, the photograph in the reference link shows a significant amount of land used by just the 6 MW of fuel cells.

Regarding NFCRC closing comments on page 11, staff did not recommend that diesels be used, but only that the project as proposed could be exempted from CEC jurisdiction since it was between 50 and 100 MW and no significant environmental impacts were identified. Therefore, staff cannot retract a statement that it did not make. Staff looks forward to review of future data center projects that are proposed with fuel cell backup power.