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CALIFORNIA
ENERGY COMMISSION

STATEMENT OF STAFF APPROVAL OF POST CERTIFICATION CHANGE
RUSSELL CITY ENERGY CENTER
(01-AFC-07C)

On June 3, 2021, Russell City Energy Company, LLC (project owner) filed a post certification petition (TN#: 238126) with the California Energy Commission (CEC) to modify the Russell City Energy Center (RCEC) (01-AFC-07C). The project owner is requesting temporary safety modifications to the steam turbine condenser, which would allow the facility to operate in simple-cycle mode.

RCEC is a nominal 600 megawatt (MW) natural gas-fired, wet cooled, combined cycle electric generating facility that was certified by the CEC in September 2002 and began commercial operation in August 2013. The facility is in the City of Hayward, Alameda County, California.

DESCRIPTION OF PROPOSED CHANGE

On Thursday, May 27, 2021, at approximately 11 p.m., RCEC experienced a mechanical failure of the steam turbine generator that resulted in an explosion and fire requiring emergency response by the local fire department. The steam turbine and generator experienced extensive damage. As a result, there will be an extended production outage for the entire facility until damaged equipment can be repaired or replaced. Estimates of the time required for resumption of combined-cycle mode operations requiring use of the steam turbine are up to a year, or more. The cause of the failure is currently being investigated.
These proposed temporary modifications would allow all the steam from the heat recovery steam generators to be routed directly to the steam condenser and ensure safe operation of the facility in simple-cycle mode. Upon completion of the repairs and return of combined-cycle operations, the temporary isolating plate, rupture disk and pressure relief vent installed under this petition would be removed.

NECESSITY OF THE PROPOSED CHANGE

This petition for temporary safety modifications seeks to allow the facility to return to service for August/September 2021 at its simple-cycle generation capacity, provide frequency and voltage services, and support local and system grid reliability needs in the summer and fall of 2021. In simple-cycle mode, RCEC can provide approximately 300 to 350 MW of generation capacity and frequency and voltage support to the applicable resource area. The proposed temporary modification would also ensure that the facility can continue to provide Black Start service to the California Independent System Operator (CAISO).

The petition requesting the project change has been docketed and is available on the CEC's webpage for this facility at: https://ww2.energy.ca.gov/sitingcases/russellcity/..

CEC technical staff reviewed the petition for potential environmental effects and consistency with applicable laws, ordinances, regulations, and standards (LORS). Staff determined the following technical areas are not affected by the proposed changes: Biological Resources, Cultural Resources, Geological and Paleontological Resources, Land Use, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Transmission System Engineering, Visual Resources, and Waste Management.

For the technical areas of Air Quality, Efficiency and Reliability, Facility Design, Hazardous Materials Management, Noise and Vibration, Public Health, Socioeconomics, and Worker Safety and Fire Protection, staff has concluded that impacts on the environment would be less than significant and the project would remain in compliance with all applicable LORS with the continued implementation of existing conditions of certification in the Final Commission Decision. In addition, the project change would not affect any population including the environmental justice population as shown in **Environmental Justice Figure 1, Figure 2**, and **Table 1**.

Staff's conclusions for each technical or environmental area are summarized in the table on the following page.

Summary of Staff Conclusions Table 1

Technical/Environmental Areas Reviewed	Technical Area Not Affected	CEQA			Conforms with Applicable LORS	Revised Condition of Certification Recommended
		Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact		
Air Quality				X	X	
Biological Resources	X					
Cultural Resources	X					
Efficiency and Reliability				X		
Facility Design					X	
Geological and Paleontological Resources	X					
Hazardous Materials Management				X	X	
Land Use	X					
Noise and Vibration				X	X	
Public Health				X	X	
Socioeconomics				X	X	
Soil and Water Resources	X					
Traffic and Transportation	X					
Transmission Line Safety and Nuisance	X					
Transmission System Engineering	X					
Visual Resources	X					
Waste Management	X					
Worker Safety and Fire Protection				X	X	

Staff concludes the following for the technical areas affected by the proposed change:

Air Quality. The proposed modification to the steam turbine condenser would not result in an increase to criteria pollutant emissions, greenhouse gas (GHG) emissions, or toxic air contaminants (TACs) from the facility or cause significant environmental impacts, and the facility would continue to comply with all applicable laws, ordinances, regulations, and standards (LORS). There would be no changes to any conditions of certification as a result of this petition. Refer to the Air Quality analysis at the end of this document for further details.

Efficiency and Reliability. The proposed modification to the steam turbine condenser would temporarily reconfigure the combined-cycle power plant facility to a simple-cycle power plant facility. Without the steam turbine in operation and the gas turbines operating alone, in a simple-cycle mode, the steam produced in their heat recovery steam generators (HRSG) would not be used to turn the steam turbine for additional power generation, but rather to prevent the HRSG from overheating. Thus, this petition would result in the facility exhibiting a lower thermal efficiency than the efficiency level reached under the combined-cycle mode of operation, by perhaps several percentage points. However, the alternative would be to keep the facility shut down, which would prevent it from returning to service as soon as possible. The plant's thermal efficiency in simple-cycle mode would be comparable to that of other simple-cycle plants.

A power plant is considered reliable if it does not degrade the reliability of the utility system to which it is connected. This is the case if a project is at least as reliable as other power plants on that system. When a power plant is shut down, its reliability is virtually zero because it cannot be called up for power generation. The RCEC's return to service to generate power for the electricity grid, though in simple-cycle mode, would ensure it is available when called upon to operate.

Facility Design. Installation of the isolating plate (blind), rupture disk, and pressure relief vent to the steam turbine condenser on the RCEC site must be in accordance with the 2019 edition of the California Building Code. Implementations of the existing Facility Design conditions of certification adopted in the Final Commission Decision and construction compliance oversight by the CEC's delegate chief building official would ensure this compliance.

Hazardous Materials Management. During the proposed installation of the temporary modifications, several hazardous materials will be used onsite for equipment maintenance activities, including gasoline, solvents, lubricants, paint, and welding gases. Existing Condition of Certification **WORKER SAFETY-1** which covers worker health and safety requirements would ensure the safe and appropriate usage of the hazardous materials used for the proposed project modifications. In addition, because of the low volumes to be used, they would not present a significant impact to workers or the offsite public. No extremely hazardous or regulated hazardous materials would be used on site specifically for the installation of the project components and equipment. Therefore, with the project owner's continued compliance with **WORKER SAFETY-1**, the temporary proposed modifications would not have a significant impact on the offsite public or the environment and the facility would continue to comply with all applicable LORS.

Noise and Vibration. Construction associated with this petition would be temporary and would occur during daytime hours that are consistent with the local ordinance (Alameda County General Plan). Any noise generated during these activities

would result in a less-than-significant impact with implementation of the existing Noise conditions of certification in the Final Commission Decision. The pressure relief vent would release steam in the unanticipated event that an overpressure of the condenser occurs. The pressure release would generate non-continuous temporary noise. The project's continuous noise levels at the project boundary would not be affected, thus the project would continue to meet operational noise requirements established in the Final Commission Decision. Therefore, the changes in this petition would create a less-than-significant impact due to operational noise.

Socioeconomics. Installing temporary safety modifications to the steam turbine condenser would take approximately two weeks to complete. Contract personnel would be used to construct and install the temporary modifications. The construction needs for the project modification would not affect the workforce of the Oakland-Hayward-Berkeley Metropolitan Division (Alameda and Contra Costa counties). From a socioeconomics standpoint, the proposed modification would have insignificant workforce-related impacts on housing and community services.

Worker Safety and Fire Protection. Condition of Certification **WORKER SAFETY-1** covers worker health and safety requirements for construction activities, including activities to be performed to complete the proposed project modifications. By continuing to comply with existing conditions of certification, the project owner's proposed installation of temporary modifications converting RCEC to a simple cycle configuration would not have a significant impact on worker health and safety and would comply with all applicable LORS.

ENVIRONMENTAL JUSTICE

Environmental Justice – Figure 1 shows 2010 census blocks in the six-mile radius of the Russell City Energy Center with a minority population greater than or equal to 50 percent. The population in these census blocks represents an environmental justice (EJ) population based on race and ethnicity as defined in the United States Environmental Protection Agency's *Guidance on Considering Environmental Justice During the Development of Regulatory Actions*. Staff conservatively obtains demographic data within a six-mile radius around a project site based on the parameters for dispersion modeling used in staff's air quality analysis. Air quality impacts are generally the type of project impacts that extend the furthest from a project site. Beyond a six-mile radius, air emissions have either settled out of the air column or mixed with surrounding air to the extent the potential impacts are less than significant. The area of potential impacts would not extend this far from the project site for most other technical areas included in staff's EJ analysis.

Based on California Department of Education data in the **Environmental Justice – Table 1**, staff concluded that the percentage of those living in the Hayward Unified, San Leandro, and San Lorenzo Unified school districts (in a six-mile radius of the project site) and enrolled in the free or reduced price meal program is larger than those in the reference geography, and thus are considered an EJ population based on low income as defined in *Guidance on Considering Environmental Justice During the Development of Regulatory Actions*. **Environmental Justice – Figure 2** shows where the boundaries of the school district are in relation to the six-mile radius around the RCEC site.

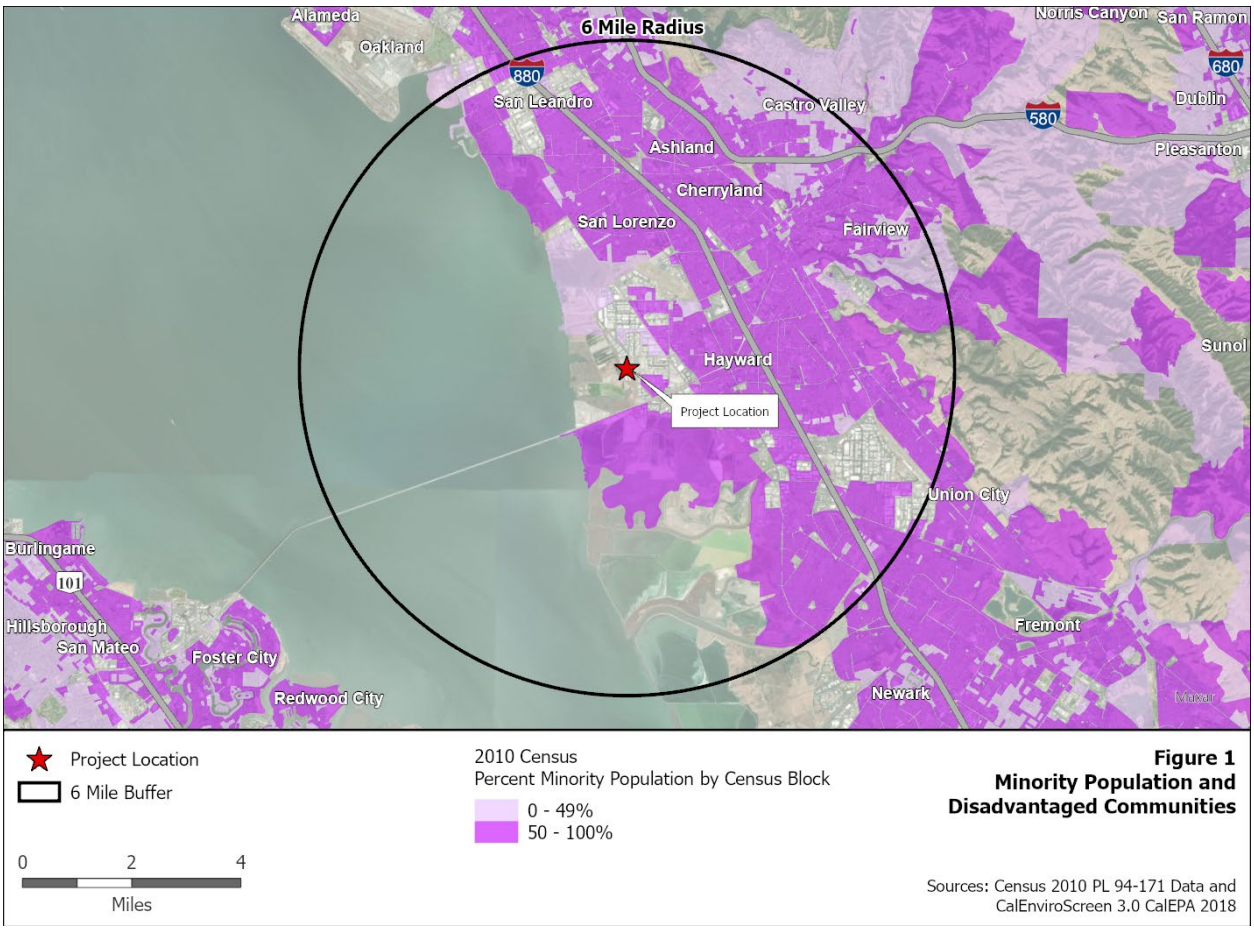
Environmental Justice – Table 1
Low Income Data within the Project Area

SCHOOL DISTRICT IN SIX-MILE RADIUS	**Enrollment Used for Meals**	**Free or Reduced Price Meals**	
Hayward Unified	21,638	12,757	59.0%
New Haven Unified	10,812	4,217	39.0%
San Leandro Unified	8,828	5,343	60.5%
San Lorenzo Unified	10,528	6,352	60.3%
REFERENCE GEOGRAPHY			
Alameda County	222,573	90,247	40.5%
Source: CDE 2021. California Department of Education, DataQuest, Free or Reduced Price Meals, District level data for the year 2020-2021, <http://dq.cde.ca.gov/dataquest/>.			

The following technical areas (if affected) consider impacts to EJ populations: Air Quality, Cultural Resources (indigenous people), Hazardous Materials Management, Land Use, Noise and Vibration, Public Health, Socioeconomics, Soil and Water resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, Waste Management, and Worker Safety and Fire Protection.

ENVIRONMENTAL JUSTICE CONCLUSIONS

For the technical areas affected by the proposed project changes that consider impacts to EJ populations—Air Quality, Hazardous Materials Management, Noise and Vibration, Public Health, Socioeconomics, and Worker Safety and Fire Protection—staff concludes that impacts would be less than significant, and thus would be less than significant on the EJ population represented in **Environmental Justice – Figure 1, Figure 2, and Table 1**.


6 Mile Radius
Alameda
Oakland
880
San Leandro
Castro Valley
Ashland
Cherryland
San Lorenzo
Fairview
Hayward
Project Location
Union City
Fremont
Newark
Norris Canyon
San Ramon
680
Dublin
580
Pleasanton
Sunol
Burlingame
101
Hillsborough
San Mateo
Foster City
Redwood City
Project Location
6 Mile Buffer
0
2
4
Miles
2010 Census
Percent Minority Population by Census Block
0 - 49%
50 - 100%
Figure 1
Minority Population and
Disadvantaged Communities
Sources: Census 2010 PL 94-171 Data and
CalEnviroScreen 3.0 CalEPA 2018

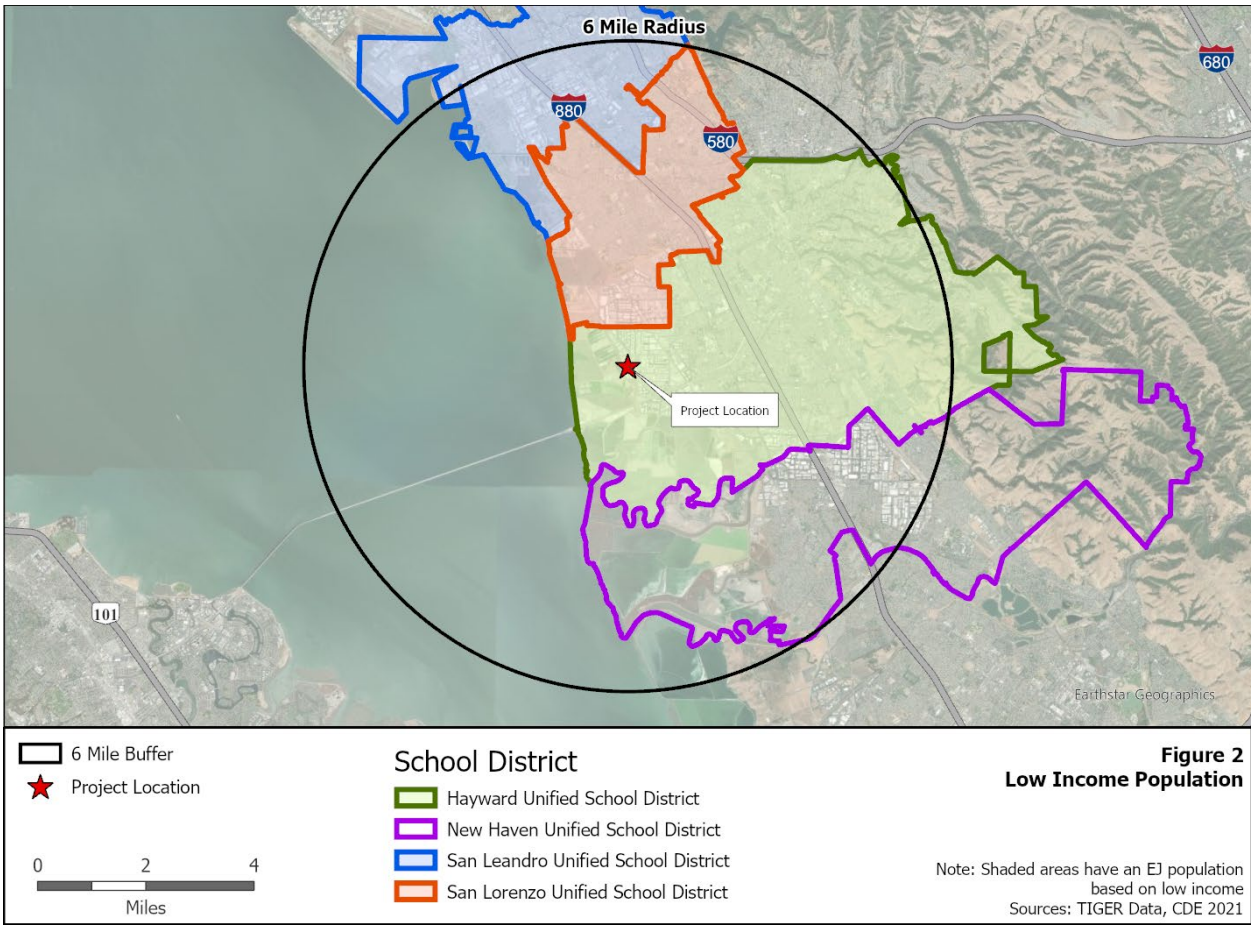


Figure 2
Low Income Population

Note: Shaded areas have an EJ population based on low income
Sources: TIGER Data, CDE 2021

ENERGY COMMISSION STAFF DETERMINATION

Section 1769(a)(3)(A), Title 20, California Code of Regulations states, "(s)taff shall approve the change where staff determines:

(i) that there is no possibility that the change may have a significant effect on the environment, or the change is exempt from the California Environmental Quality Act;

(ii) that the change would not cause the project to fail to comply with any applicable laws, ordinances, regulations, or standards; and

(iii) that the change will not require a change to, or deletion of, a condition of certification adopted by the commission in the final decision or subsequent amendments."

CEC staff has determined the proposed change to the project meets the criteria for approval at the staff level.

WRITTEN COMMENTS

Any person may file a comment on the petition or file an objection to staff's determination within 14 days of the date of this statement on the grounds that the project change does not meet the criteria set forth in section 1769(a)(3)(A). As specified in 1769(a)(3)(C), any such objection must make a showing supported by facts that the change does not meet the criteria in subdivision (a)(3)(A). Speculation, argument, conjecture, and unsupported conclusions or opinions are not sufficient to support an objection to staff approval. Absent any such objections, this petition will be approved 14 days after this statement is filed in the docket.

This statement is being sent electronically to the RCEC listserv. Any person may comment on the petition. To use the CEC's electronic commenting feature, go to the CEC's webpage for this facility, cited above, click on the "Submit e-Comment" link, and follow the instructions in the on-line form. Be sure to include the facility name in your comments.

Written comments may also be mailed to:

California Energy Commission
Docket Unit, MS-4
Docket No. 01-AFC-07C
1516 Ninth Street
Sacramento, CA 95814-5512

All comments and materials filed with and accepted by the Docket Unit will be added to the facility Docket Log and be publicly accessible on the CEC's webpage for the facility.

If you have questions about this notice, please contact John Heiser, Compliance Project Manager for the Office of Compliance, Monitoring and Enforcement, at (916) 628-5566 or via email at John.Heiser@energy.ca.gov.

For information on public participation, please contact the Public Advisor, at (916) 654-4489 or (800) 822-6228 (toll-free in California), or send you're email to publicadvisor@energy.ca.gov.

News media inquiries should be directed to the Media Office at (916) 654-4989, or by email to mediaoffice@energy.ca.gov.

Mail List: 7078
Listserv: Russell City Energy Center

RUSSELL CITY ENERGY CENTER (01-AFC-7C)

AIR QUALITY, PUBLIC HEALTH, AND GREENHOUSE GASES

Joseph Hughes, P.E.

INTRODUCTION

On June 3, 2021, Russell City Energy Company, LLC (project owner) submitted a petition to the CEC for the Russell City Energy Center (RCEC) to install temporary safety modifications to the steam turbine condenser, and allow the facility to operate in simple-cycle mode. This would allow the facility to return to service for August/September 2021 at its simple-cycle capacity, provide frequency and voltage support, and support local and system grid reliability needs in the summer and fall of 2021.

In simple-cycle mode, RCEC can provide approximately 300 to 350 megawatts (MW) of capacity and frequency and voltage support to the applicable resource area. The temporary modification would also ensure that the facility can continue to provide Black Start service to the California Independent System Operator (CAISO).

The proposed modification to the steam turbine condenser would not result in an increase to criteria pollutant emissions, greenhouse gas (GHG) emissions, or toxic air contaminants (TACs) from the facility or cause significant environmental impacts, and the facility would continue to comply with all applicable laws, ordinances, regulations, and standards (LORS). There would be no changes to any conditions of certification as a result of this petition. There would be no adverse impacts to any EJ populations as the requested modifications would not increase facility emissions.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The project would continue to comply with all applicable LORS. The requested modification does not trigger any new LORS.

ADDITIONAL PROPOSED CONDITIONS OF CERTIFICATION

No modifications to the Air Quality conditions of certification are needed as part of the request to operate in simple-cycle mode. The facility would continue to comply with all conditions of certification in the Final Commission Decision.

ANALYSIS

RCEC is proposing to bypass the steam turbine and operate the facility in simple-cycle mode. The combustion turbine generators (CTGs) exhaust would continue to go through the heat recovery steam generator and subsequent post-combustion emission

control equipment (i.e., selective catalytic reduction systems [SCR] and oxidation catalysts) keeping the exhaust parameters and emission rates the same as when the facility is operated in combined cycle mode.

Since the steam turbine generator (STG) cannot be utilized, the requested modifications include placing an isolating plate (blind) at the expansion joint between the condenser and steam turbine and installing a rupture disk and pressure relief vent. These temporary modifications would allow all the heat recovery steam generator (HRSG) steam to be routed to the condenser and ensure safe operation of the facility in simple-cycle mode. Upon completion of the repairs and return of combined cycle operation capabilities, the temporary isolating plate, rupture disk and pressure relief vent would be removed, and operation as a combined cycle facility would continue.

CRITERIA POLLUTANT EMISSIONS ANALYSIS

Operation in simple-cycle mode would not affect any criteria pollutant emissions. Exhaust parameters and emission rates would remain the same as when the facility is operated as a combined-cycle facility and compliance with all CEC conditions of certification would continue to be met.

TOXIC AIR CONTAMINANTS EMISSIONS ANALYSIS

Operation in simple-cycle mode would not affect any toxic air contaminant (TACs) emissions. Exhaust parameters and emission rates would remain the same as when the facility is operated as a combined cycle facility and compliance with all CEC conditions of certification would continue to be met.

Greenhouse Gas Emissions

Operation in simple-cycle mode would not cause an increase in GHG emissions and the facility would continue to comply with all CEC conditions of certification.

The Bay Area Air Quality Management District's (BAAQMD) permit includes a condition that is not included in the Energy Commission Final Decision. The condition requires the facility to maintain the gas turbines such that the heat rate of each turbine does not exceed 7,730 British thermal units per kilowatt hour (BTU/Kw-hr). RCEC cannot comply with this requirement while operating in simple-cycle mode since the additional energy that would be supplied by the STG is not contributing to the facility's total heat rate in the denominator of the equation. The GHG efficiency standard in the BAAQMD permit was a voluntary limit that the facility agreed to meet and therefore is not required by any Air District regulation.

On June 14, 2021, the project owner submitted an application to BAAQMD for a minor permit revision of the facility's Title V permit and an amendment of BAAQMD's permit to

operate, which it requested to be processed pursuant to BAAQMD's Accelerated Permitting Program. Under the Accelerated Permitting Program, an applicant for a minor permit revision is authorized to operate in accordance with the conditions of the requested permit amendment, until such time as BAAQMD completes its review and final issuance of the minor permit revision. BAAQMD and the project owner continue to work together to determine whether a variance from the voluntary efficiency standard or a revised Title V permit would be the best course of action. Additional actions may be required by the district or RCEC to support simple-cycle operation.

The Greenhouse Gas Emission Performance Standard (EPS) of Senate Bill (SB) 1368 and the Standards of Performance for Greenhouse Gas Emissions for Electrical Generating Units (Title 40, Code of Federal Regulations, part 60, subpart TTTT) are other efficiency-based standards that are based on the amount of carbon dioxide emitted per megawatt-hour produced. These standards apply to baseload facilities.

The EPS, established by SB 1368, limits long-term investments in baseload generation by the state's utilities for power plants based on greenhouse gas emissions. Operational data for the last three years shows that RCEC has operated well below the baseload threshold of 60 percent (RCEC had an average capacity factor of about 18% for the years 2018-2020). Furthermore, operation as a simple-cycle facility would be short term while the new STG is being prepared for installation and should not be considered for long-term investments.

The units are not subject to Subpart TTTT since the facility commenced construction in 2011 and this rule went into effect October 23, 2015. Nonetheless, RCEC would comply with the non-baseload emission limit of 50 kg of CO_2 per GJ of heat input (120 lb CO_2/MMBtu) during simple-cycle operation by the exclusive use of natural gas as fuel.

CONCLUSIONS

The proposed modification to the steam turbine condenser would not result in an increase to criteria pollutant emissions, GHG emissions, or TACs from the facility or cause significant environmental impacts, and the facility would continue to comply with all LORS. There would be no changes to any conditions of certification as a result of this petition. There would be no adverse impacts to any environmental justice populations as the requested modifications would not increase facility emissions.

REFERENCES

CEC 2002 – California Energy Commission (CEC), Russell City Energy Center (01-AFC-07) Commission Decision, September 2002.

RCEC 2021 – Russell City Energy Center, LLC (RCEC), Petition for Temporary Safety

Modifications, TN 238126, docketed June 3, 2021.