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STATEMENT OF STAFF APPROVAL OF PROPOSED CHANGE MARSH LANDING GENERATING STATION (08-AFC-03C)

On August 13, 2020, NRG Marsh Landing, LLC, filed a Petition to Amend (PTA) with the California Energy Commission (CEC) for the Marsh Landing Generating Station (MLGS). MLGS is a simple-cycle, natural gas-fired, 760-megawatt facility, located in the city of Antioch, California. The project was certified by the CEC on August 25, 2010 and began commercial operation on May 1, 2013.

DESCRIPTION OF PROPOSED CHANGE

The project owner is requesting changes to Title V conditions of certification (COCs) related to combustion turbine tuning events. Specifically amending COC AQ-19, 27, 28, and 32 for reduced source testing frequency.

This Statement of Staff Approval has been mailed to the facility's mail list of interested parties and property owners adjacent to the facility site. The petition requesting the project change has been docketed and is available on the CEC webpage for this facility at: <https://ww2.energy.ca.gov/sitingcases/marshlanding>

ENERGY COMMISSION STAFF REVIEW AND CONCLUSIONS

Title 20, California Code of Regulations, section 1769, states that a project owner shall petition the commission for approval of any change it proposes to the project design, operation, or performance requirements included in the Commission Decision. CEC technical staff reviewed the petition for potential environmental effects and consistency with applicable laws, ordinances, regulations, and standards (LORS). Staff has determined that the technical or environmental areas of Biological Resources, Cultural Resources, Facility Design, Geological and Paleontological Resources, 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 are not affected by the proposed changes.

For the technical area of **Air Quality**, staff is proposing to approve changes to the air quality conditions of certification for tuning, source testing, definitions, and citations. The proposed changes were analyzed for consistency with all LORS including the Bay Area Air Quality Management District (BAAQMD) and federal new source review regulations. The updates to the conditions of certification comply with all applicable LORS and do not result in significant air quality impacts. The changes have been reviewed by BAAQMD staff and will be incorporated into the BAAQMD-issued Title V permit.

Please see the Air Quality analysis included with this Statement of Staff Approval for details of staff's conclusion.

Request to Amend the Final Commission Decision
Air Quality Analysis of Changes to the Conditions of Certification
AIR QUALITY
Joseph Hughes

INTRODUCTION AND SUMMARY

On August 13, 2020, Marsh Landing, LLC (Marsh Landing or petitioner) filed a post certification petition (TN 234322) with the California Energy Commission (CEC) requesting a modification to the CEC license for the Marsh Landing Generating Station (MLGS). The petitioner is requesting changes to the tuning duration restriction and required frequency of source testing. There are no proposed changes to any emission concentration or mass limit.

MLGS is a nominal 760-megawatt (MW) generating facility consisting of four 190 MW simple cycle natural gas-fired combustion turbines. Additional equipment includes two 8 million British thermal units per hour (MMBtu/hr) natural gas-fired pre-heaters, a 779 horsepower (hp) emergency diesel-fired generator, a 300 hp emergency diesel-fired fire pump, a battery energy storage system (BESS) with black start capabilities, and other ancillary equipment.

The CEC certified MLGS on August 25, 2010 and commercial operation began on May 1, 2013. Since this time, the CEC has approved several project design refinements including the replacement of two 5 MMBtu/hr natural gas-fired pre-heaters with two 8 MMBtu/hr natural gas-fired pre-heaters, the addition of the diesel-fired backup generator and diesel-fired fire pump, and the addition of the BESS.

The current petition requests the CEC approve the following:

- A clarification of combustor tuning requirements including the removal of the 8-hour limit language
- A change in source test frequency for specified pollutants from an annual basis to a schedule based on actual operating hours.
- Additional language clarifying that relative accuracy test audits for the continuous emission monitors would still be required based on regulatory requirements.

The MLGS is a major source and requires a Title V operating permit. On March 27, 2020, Marsh Landing submitted an application to the Bay Area Air Quality Management District (BAAQMD) to renew the BAAQMD-issued Title V operating permit. On May 1, 2020, Marsh Landing submitted additional information to the BAAQMD on these requested changes. The

BAAQMD reviewed the changes and forwarded a draft evaluation to CEC staff. The BAAQMD will issue their permits after Energy Commission review and decision.

The changes would comply with all laws, ordinances, regulations, and standards (LORS) and air quality impacts associated with the changes would be less than significant. There are no increases to emissions or changes to project mitigation. There are no air quality environmental justice issues related to the evaluated facility modifications and no minority or low-income populations would be significantly or adversely impacted.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS) COMPLIANCE

There have been changes to air quality laws, ordinances, regulations and standards (LORS) applicable to the project since the Final Commission Decision. **Air Quality Table 1** includes a summary of the air quality LORS applicable to the changes proposed in this amendment. This table is not intended to be comprehensive of all MLGS facility LORS. The conditions of certification in the Final Commission Decision and amendments thereafter ensure that the facility would remain in compliance with all applicable LORS.

The BAAQMD reviewed the proposed modification applications and determined the proposed changes would comply with their current rules and regulations. A compliance summary is included in **Air Quality Table 1**.

**Air Quality Table 1
 Laws, Ordinances, Regulations, and Standards (LORS)**

APPLICABLE LAW	DESCRIPTION	COMPLIANCE
Federal	U.S. Environmental Protection Agency (U.S. EPA)	
Title 40, Code of Federal Regulations, part 50 (National Primary and Secondary Ambient Air Quality Standards)	Part 50 establishes the National Ambient Air Quality Standards (NAAQS). NAAQS define levels of air quality that are necessary to protect public health.	There are no emission increases or other changes that would impact compliance with the standards. Continued compliance is expected.
Title 40, Code of Federal Regulations, part 51 (Requirements for Preparation Adoption and Submittal of Implementation Plans)	Requires emission reporting and control strategies for the attainment and maintenance of national standards.	There are no emission increases or other changes that would significantly impact reporting and control strategies. Continued compliance is expected.
Title 40, Code of Federal Regulations, part 52 (Approval and Promulgation of Implementation Plans)	Establishes requirements for attainment emissions. Prevention of Significant Deterioration (PSD) requires review and facility permitting for construction of new or modified major stationary sources of pollutants at locations where ambient concentrations attain the NAAQS.	The changes do not result in any emission increase and are not considered a major modification under PSD review. Continued compliance is expected.

APPLICABLE LAW	DESCRIPTION	COMPLIANCE
Title 40, Code of Federal Regulations, part 60, subpart A (General Provisions)	Outlines general requirements for facilities subject to standards of performance including notification, work practice, monitoring, and testing requirements.	The modifications to the conditions of certification are not expected to impact compliance with any requirement. Continued compliance is expected.
Title 40, Code of Federal Regulations, part 64 (Compliance Assurance Monitoring (CAM))	CAM regulations apply to major stationary sources that use control equipment to achieve emission limits.	The simple cycle turbines are located at a major source and are subject to Best Available Control Technology (BACT) requirements. Applicable BACT limits are met by using external control equipment consisting of a selective catalytic reduction (SCR) catalyst and a carbon monoxide (CO) oxidation catalyst. Compliance for CO and nitrogen oxide (NOx) requirements are demonstrated through the continuous emissions monitoring systems (CEMS). The CO oxidation catalysts also controls volatile organic compound (VOC) emissions. The simple cycle pre-controlled VOC would be less than the threshold for CAM requirements. There are no changes to the MLGS BACT and CEMS requirements that would impact compliance. Continued compliance with the monitoring requirements is expected.
Title 40, Code of Federal Regulations, part 70 (State Operating Permit Programs)	Part 70 establishes the Title V permitting program.	MLGS is considered a federal major source and operates under the Title V Operating Permit Program. Title V permits consolidate federally enforceable operating limits. Marsh landing submitted an updated Title V application to the BAAQMD. The changes will be incorporated into the Title V permit by the BAAQMD. Continued compliance is expected.
Title 40, Code of Federal Regulations, part 72 -78 (Acid Rain Provisions)	The acid rain program requirements establish controls for sulfur dioxide (SO ₂) and NOx emissions from fossil fuel-fired combustion used to generate electricity. Facilities are required to cover SO ₂ emissions with allowances or offsets.	Compliance with acid rain provisions is implemented through the Title V program. Continued compliance is expected.
State	California	
Health & Safety Code, sections 40910-40930 (District Plans to Attain State Ambient Air Quality Standards)	State Ambient Air Quality Standards should be achieved and maintained. The permitting of the source needs to be consistent with the approved clean air plan.	The BAAQMD New Source Review (NSR) program is required to be consistent with regional air quality management plans. There are no emission increases or other changes

APPLICABLE LAW	DESCRIPTION	COMPLIANCE
		that would impact compliance with the standards. Continued compliance is expected.
Health & Safety Code, sections 41700-41701 (General Limitations)	Establishes nuisance and visible emission requirements. Prohibits discharge of such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance. Prohibits visible emissions darker than Ringelmann 2 or 40 percent opacity.	The proposed changes are not expected to cause a nuisance. Continued compliance is expected.
Health & Safety Code, section 44300-44394 (Air Toxics "Hot Spots" Information and Assessment)	The Air Toxics "Hot Spots" Program was established to identify and assess air toxics. The program has established an air toxics inventory and requires risk assessment and public notification of potential health risks.	Marsh Landing prepares inventory and reports as required. Continued compliance is expected.
Title 17, California, Code of Regulations, subchapter 10 (Climate Change)	Established requirements for mandatory greenhouse gas reporting, verification and other requirements pursuant to cap and trade regulations.	Marsh Landing complies with current reporting and verification requirements. Continued compliance is expected.
Local	Bay Area Air Quality Management District (BAAQMD)	
BAAQMD Regulation 1 (General Provisions and Definitions)	Establishes administrative, monitoring, recordkeeping, and breakdown procedures and requirements. Established standards limiting the releases of air contaminants to not "cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public."	The proposed changes are not expected to cause injury, detriment, nuisance or annoyance. Continued compliance is expected.
BAAQMD Regulation 2, Rule 2 (New Source Review)	Establishes requirements for Best Available Control Technology (BACT), emission offsets, and NAAQS protection. The changes would not increase emissions. For project modifications, BACT is triggered by physical changes or modifications of operations resulting in an increase of a daily or annual potential to emit.	There are no physical changes or modifications of operation that would trigger BACT or offset requirements for the requested changes. In addition, since the changes would not result in a significant net increase of emissions there are no NAAQS protection requirements. Continued compliance is expected.
BAAQMD Regulation 2, Rule 5 (New Source Review of Toxic Contaminants)	Requires preconstruction review for new and modified sources of toxic air contaminants. Contains project health risk limits and requirements for Toxics BACT (TBACT).	The changes would not require any physical change, change in method of operation, or increase in throughput or production that would increase emissions of toxic air contaminants. Therefore, no new requirements are triggered. Continued compliance is expected.
BAAQMD Regulation 2, Rule 6 (Major Facility Review)	Established procedures for large facilities to obtain Title V permits.	MLGS operates under a Title V permit. Marsh Landing submitted an application the BAAQMD to amend the

APPLICABLE LAW	DESCRIPTION	COMPLIANCE
		MLGS Title V operating permit. BAAQMD will incorporate the changes into the MLGS Title V operating permit upon approval. Continued compliance is expected.
BAAQMD Regulation 2, Rule 7 (Acid Rain)	Requires monitoring, recordkeeping, and holding allowances for pollutants that contribute to the formation of acid rain as specified by Title IV of the federal Clean Air Act.	The changes would not trigger any new acid rain requirement or impact compliance with current requirements. Continued compliance is expected.
BAAQMD Regulation 7 (Odorous Substances)	Establishes general limitations on odorous substances and specific emission limitations on certain odorous compounds.	The changes would not trigger any new requirements. Continued compliance is expected.
BAAQMD Regulation 9, Rule 1 (Inorganic Gaseous Pollutants – Sulfur Dioxide)	Establishes emission limits for sulfur dioxide from all sources.	There are no emission increases with the changes. Continued compliance is expected during construction and ongoing operations.
BAAQMD Regulation 9, Rule 9 (Inorganic Gaseous Pollutants – Nitrogen Oxides from Stationary Gas Turbines)	Establishes limits for nitrogen oxides from stationary gas turbines.	There are no emission increases with the changes. Continued compliance is expected.
BAAQMD Regulation 10 (Standards of Performance for New Stationary Sources)	Established emission and/or performance standards for facilities. The regulation incorporates by reference the provisions of Title 40, Code of Federal Regulations, part 60.	There are no emission increases and the changes would not significantly impact ongoing compliance with any performance standard. Continued compliance is expected.

SETTING

SITE DESCRIPTION

The MLGS is located in Contra Costa County and is considered part of a nine-county regional air basin referred to as the San Francisco Bay Area Air Basin (SFBAAB).

Ambient Air Quality Standards

Ambient air quality standards are designed to protect public health. For reference, the current state and federal ambient air quality standards are listed in **Air Quality Table 2**. The averaging time for the various ambient air quality standards ranges from one hour to one year. The standards are read as a concentration, in parts per million (ppm), parts per billion (ppb), or as a weighted mass of material per unit volume of air, in milligrams (mg) or micrograms (μg) of pollutant in a cubic meter (m^3) of ambient air, drawn over the applicable averaging period.

**Air Quality Table 2
 Federal and State Ambient Air Quality Standards**

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone	8 Hour	0.070 ppm (137 µg/m ³) ^a	0.070 ppm (137 µg/m ³)
	1 Hour	—	0.09 ppm (180 µg/m ³)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)
	1 Hour	35 ppm (40 mg/m ³)	20 ppm (23 mg/m ³)
Nitrogen Dioxide (NO ₂)	Annual	53 ppb (100 µg/m ³)	30 ppb (57 µg/m ³)
	1 Hour	100 ppb (188 µg/m ³) ^b	180 ppb (339 µg/m ³)
Sulfur Dioxide (SO ₂)	24 Hour	—	0.04 ppm (105 µg/m ³)
	3 Hour	0.5 ppm (1300 µg/m ³)	—
	1 Hour	75 ppb (196 µg/m ³) ^c	0.25 ppm (655 µg/m ³)
Respirable Particulate Matter (PM ₁₀)	Annual	—	20 µg/m ³
	24 Hour	150 µg/m ³	50 µg/m ³
Fine Particulate Matter (PM _{2.5})	Annual	12 µg/m ³	12 µg/m ³
	24 Hour	35 µg/m ³ b	—
Sulfates	24 Hour	—	25 µg/m ³
Lead	30 Day Average	—	1.5 µg/m ³
	Rolling 3-Month Average	0.15 µg/m ³	—
Hydrogen Sulfide	1 Hour	—	0.03 ppm (42 µg/m ³)
Vinyl Chloride	24 Hour	—	0.01 ppm (26 µg/m ³)
Visibility Reducing Particulates	8 Hour	—	Extinction coefficient of 0.23 per kilometer (statewide)

Source: ARB 2020, U.S. EPA 2020b

Notes: ^a Fourth- highest maximum 8 – hour concentration, averaged over 3 years.

^b 98th percentile of daily maximum value, averaged over 3 years.

^c 99th percentile of daily maximum value, averaged over 3 years.

ANALYSIS

CONSTRUCTION

There is no physical construction associated with the changes, new equipment, or physical change to any emissions unit.

OPERATION SUMMARY

Periodic Tuning

Marsh Landing requested a change to the tuning requirement in Condition of Certification **AQ-19**. Condition of Certification **AQ-19** includes an 8-hour limit for tuning operations and pound per hour (lb/hr) emission limits for nitrogen oxides (NO_x), carbon monoxide (CO), and precursor organic compounds (POC or VOC for the purposes of this analysis) during tuning periods. In addition, Conditions of Certification **AQ-21** and **AQ-22** include total daily and annual emission limits from the turbines applicable to tuning events. Marsh Landing requested to remove the 8-hour tuning limitation language without any change to the potential hourly, daily, or annual turbine emission limits.

Marsh Landing stated the turbine tuning performed consists of fine-tuning adjustments to improve turbine performance. This tuning can be an iterative process and may require longer durations to capture a range of ambient conditions and operation at different load operations. For example, an operator may operate the turbine at particular specifications to perform adjustments. The operator will then bring the turbine back to normal operations until additional tuning is performed. This process could repeat until the objectives of the tuning event are met. Marsh Landing stated the majority of operations during a tuning period comply with steady state emission requirements. However, sometimes a longer time period is needed to fully complete the process since it is not a continuous process.

The current language in Condition of Certification **AQ-19** states "Each tuning event shall not exceed 8 hours." The restriction could be interpreted to confine all tuning events within an 8-hour duration with a clear start and end, regardless if the tuning was continuous. Marsh Landing requested the language be clarified to allow a longer duration to perform iterative tuning without any increase to the hourly, daily, or annual emission limits.

Staff reviewed the current license, the analyses performed during licensing, and subsequent amendments. The analyses accounted for periods of operation with the potential for higher emissions. Emissions from the turbines have the potential to be higher during non-steady state operations such as start-up, shutdown, and tuning periods. During these periods, it is not technologically feasible for the turbines to meet steady state standards. The license includes alternate emission limits and operational requirements during periods when steady state standards are not feasible including tuning operations.

The analyses performed during licensing considered tuning events in the Best Available Control Technology (BACT) determination. The BACT determination compared tuning emissions from other projects with the MLGS tuning emission estimates from the vendor. The pound per hour emission limits for NO_x, CO, and POC were determined to be BACT for the tuning periods and were included as maximum emission limits in Conditions of Certification **AQ-19**. Conditions of Certification **AQ-19** also restricts tuning operations to one turbine per day.

Air Quality Table 3 summarizes the emission rates evaluated in previous analyses. The highest potential hourly emission rate for NO_x and VOC occurs during tuning. The highest potential hourly emission rate for CO occurs during a startup hour. As demonstrated in **Air Quality Table 3**, the potential hourly emission rate for sulfur oxides (SO_x) and PM_{10/2.5} do not change with the different operating categories. The NO_x, CO, and VOC emission rates for a startup event, shutdown event, and maximum hourly startup emissions are included in Condition of Certification **AQ-18**. The NO_x, CO, and VOC hourly emission rate for tuning is included in Condition of Certification **AQ-19**. There are no proposed changes to emission limits in **AQ-18** and **AQ-19**.

Air Quality Table 3
Maximum Emission Rates Per Turbine(pounds)

Simple-Cycle	NOx	VOC	PM10/2.5	CO	SOx
Simple Cycle -maximum routine hour	20.83	2.9	9.0	10.0	6.21
Simple Cycle -startup event ^a	36.4	11.9	4.5	216.2	3.11
Simple Cycle -shutdown event ^b	15.1	5.4	2.25	111.5	1.55
Simple Cycle -startup hour ^c	45.1	28.5	9.0	541.3	6.21
Simple Cycle -tuning hour	80	30	9.0	450	6.21
Simple Cycle -tuning event ^d	640	240	72.0	3,600	49.68

Source: CEC 2010a, BAAQMD 2010, Staff Analysis

Notes: ^a Startup event not to exceed 30 minutes

^b Shutdown event not to exceed 15 minutes.

^c Worst case hourly emission assume 2 startups and one shutdown in one hour based on an approved adjusted profile and not the maximum startup and shutdown events.

^d Tuning events not to exceed 8 hours.

Air Quality Table 4 summarizes the daily and annual emission limits evaluated in the original analyses and included in Conditions of Certification **AQ-21** and **AQ-22**. The daily emission limit assumes all four of the turbines in operation and an 8-hour tuning event for one turbine. The NOx, VOC, CO, and PM10/2.5 maximum daily emissions assumes three startup events and three shutdown events for all four turbines, one tuning event for one turbine, and the remainder of the day at the maximum routine hourly emission rate. The annual emission limitations are based on an approximate twenty percent capacity factor. There are no proposed changes to **AQ-21** and **AQ-22**.

Air Quality Table 4
Maximum Daily and Annual Emission Rates

Simple-Cycle	NOx	VOC	PM10/2.5	CO	SOx
Total Simple Cycle -maximum daily (pounds) ^a	2,941	693	864	8,378	596
Total Simple Cycle -maximum annual (tons) ^a	78.57	14.21	31.54	138.57	4.94

Source: CEC 2010a, BAAQMD 2010, Staff Analysis

Notes: ^a All four simple cycle units in operation. Does not include preheater emissions.

The original evaluation included an impact analysis based on the emission rates included in **Air Quality Table 3** and **Air Quality Table 4**. Emissions scenarios for NO₂, CO, PM10, and PM2.5 were modeled over selected averaging periods to demonstrate compliance with the standards included in **Air Quality Table 2**.

The worst-case emission rates for NO₂ and CO in **Air Quality Table 3** were used for the 1-hour averaging scenario. For NO₂, the worst-case 1-hour scenario assumed one turbine tuning, while the other three turbines underwent two startups and one shutdown (adjusted). For CO, the worst-case 1-hour scenario assumed all four turbines with two startups and one shutdown (adjusted) since the startup hour emission rate is higher than the tuning emission rate for CO. There are no changes to the maximum 1-hour emission

rates for either NO₂ or CO and the 1-hr worst-case scenarios are not impacted by removing the 8-hour tuning limitation.

The worst-case CO emission rate was modeled over an 8-hour averaging period. The worst-case CO emission rate during startup and shutdown was used for the 8-hour modeling since it is higher than the CO emission rate during tuning. The 8-hour modeled scenario included all four turbines at the maximum start-up hour (two startups and one shutdown) over the entire 8 hours. The 8-hour limit for a tuning event is not relevant to the modeling analysis for CO and removing the 8-hour restriction language would not impact the worst-case 8-hour emission rate used to determine CO impacts.

The evaluated worst-case PM₁₀ and PM_{2.5} 24-hour impact scenarios assumed one simple cycle tuning event, and three startups, three shutdowns for all simple cycle turbines, with the remaining period at normal operations. Staff notes that the PM₁₀/PM_{2.5} emission rate is the same over all these operating scenarios. Since the emission rates are identical during every hour, removing the 8-hour limit for a tuning event would not impact the maximum daily emission limits included in **Air Quality Table 4** or the worst-case scenario modeled.

Deleting the 8-hour tuning limitation would not result in a change to any of the worst-case scenarios used to determine potential impacts or allow maximum tuning emissions for more than an 8-hour non-consecutive period. Emission limits are included in the conditions of certification for hourly emission rates, daily emission limits, and annual emission limits. Therefore, staff has determined removing the 8-hour tuning restriction without increasing emissions, would not result in a significant impact.

Compliance Determination-Source Testing and Relative Accuracy Testing Audit (RATA)

Compliance with the emission limitations are determined through continuous monitoring of operational parameters, sampling, and source testing. Condition of Certification **AQ-24** requires Marsh Landing to maintain continuous emission monitors (CEMS) for CO, NO_x, and oxygen during all hours of operation including startup, tuning, shutdown, etc. Condition of Certification **AQ-25** requires daily determinations of mass emissions for POC, PM₁₀, and sulfur dioxide (SO₂). The mass emissions are determined through the continuous monitoring of the actual heat input rate and emission factors developed through source testing. Condition of Certification **AQ-28** outlines the source test requirements for NO₂, CO, POC, SO₂, PM₁₀, and total particulate matter. Additional testing is required for ammonia emissions and sulfuric acid emissions and additional monitoring is required for specified toxics.

Marsh Landing requested a change in the source test frequency for specified pollutants. Marsh Landing requests to change from an annual scheduling basis to a schedule based on actual operating hours. Currently, annual testing for ammonia slip is required by Condition of Certification **AQ-27**, annual testing for NO₂, CO, POC, SO₂, and PM₁₀ is required by Condition of Certification **AQ-28**, annual testing for sulfuric acid emissions is required by

Condition of Certification **AQ-32**. Marsh Landing is proposing to change the frequency to more accurately represent actual operations. Marsh Landing requested to change the source testing frequency from annual to testing every 1,752 hours of turbine operation or once every 36 consecutive months, whichever comes first. The additional language also states additional testing may be required at the discretion of the District (BAAQMD) to determine compliance.

The required source testing is performed for ongoing compliance with new source review requirements including BACT and offsets. The source testing frequency is not specified in the LORS applicable to MLGS. Marsh Landing is still required to perform federally mandated relative accuracy test audits (RATAs) on the CEMS based on the required frequency in the regulations. RATAs are generally required once every four quarters or more frequently depending on results of other audits performed during quarters that don't include RATA testing. RATAs and other periodic audits ensure the CEMS are accurately measuring and recording emissions data. Staff added clarifying language to Condition of Certification **AQ-28** stating that RATAs would still be required according to the regulatory requirements.

Estimated Heat Input From a Testing Event

The annual source test for MLGS is scheduled in advance, coordinated with the California ISO, and occurs during periods when the turbines would not otherwise be operating. Annual source testing occurred in the Fall of 2019. The Fall 2019 annual source test for MLGS included five days of simple cycle operation for a total of 86 hours of operation for testing purposes. Due to uncertainty with one of the tests, additional testing was performed in July 2020.

The test methods for the different pollutants vary along with the duration of the tests. For example, the testing for PM10 and SAM requires 3 runs for 180 minutes each at baseload, whereas ammonia requires 3 runs for 30 minutes each. The required RATA is also performed during the source testing event. The RATA runs are required to be 21 minutes in length. Relative accuracy is based on nine valid test runs. Generally, nine to twelve consecutive tests are performed to ensure nine valid test runs. Up to three test runs may be discarded, but they are required to be reported.

Air Quality Table 5 includes the approximate recorded heat input from the 2019 Source Tests conducted from November 18th through November 22nd. Staff notes the two units were dispatched during the testing. The heat input from the dispatched units are not included in **Air Quality Table 5**. In addition, the precursor organic compound testing was required to be repeated in July 2020 and the additional heat input is not included in **Air Quality Table 5**.

Air Quality Table 5
Approximate Fall 2019 Testing Heat Input

Equipment	Million British Thermal Units
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	(MMBTU)
Simple Cycle -Unit 1	40, 997.3
Simple Cycle -Unit 2	51,233.1
Simple Cycle -Unit 3	32,192.2
Simple Cycle -Unit 4	33,599.3
Total Four Units	158,022

Source: Staff Analysis

Greenhouse Gas Emissions From Fall 2019 Testing Event

Air Quality Table 6 includes the estimated GHG emissions from the 2019. The approximate GHG emissions from the 2019 source test are estimated using the calculated heat input in **Air Quality Table 5** and emission factors from U.S.EPA’s Emission Factors for Greenhouse Gas Inventories. The carbon dioxide equivalent (CO₂e) is calculated by applying the global warming potential factors from Table A-1 of 40 CFR Part 98, Subpart A.

Air Quality Table 6
Estimated Potential Greenhouse Gas Emissions During Fall Testing Event

Pollutant	Emission Factor (kg/MMBtu)	Global Warming Potential	CO ₂ e (lbs/2019 Test)	CO ₂ e (tons/2019 Test)
Total Units -CO ₂	53.06	1	18,471,180	9,235.59
Total Units -CH ₄	0.001	25	8,711	4.36
Total Units -N ₂ O	0.0001	298	10,383	5.19
Total CO₂e:			18,490,274	9,245.14

Source: Staff Analysis

Reducing the frequency of source testing would reduce GHG emissions from the facility. On years where only a RATA would be performed, staff conservatively estimates that the testing duration would be cut by fifty to sixty percent resulting in a similar reduction in GHG emissions emitted directly from the facility.

CHANGES TO THE CONDITIONS OF CERTIFICATION

In response to the Petition to Amend, staff agrees to make the following changes to the air quality conditions of certification:

- Remove the 8-hour tuning limitation language from Condition of Certification **AQ-19**.
- Change the ammonia source testing frequency in Condition of Certification **AQ-27** to reflect actual usage.
- Change the NO_x, CO, POC, ammonia, SO₂, PM₁₀, and total particulate source testing frequency in Condition of Certification **AQ-28** to reflect actual usage.
- The addition of clarifying language for relative accuracy test audit (RATA) continuous emission monitor testing frequency in Condition of Certification **AQ-28** to ensure the RATA frequency continues according to the regulatory requirements.

- Change the sulfuric acid mist compliance testing frequency in Condition of Certification **AQ-32** to reflect actual usage.
- Update the definitions to ensure all definitions included in the BAAQMD-issued Title V permit are included in the license. This includes removing the 8-hour language in the tuning definition reviewed in the original analysis (see below).
- Update citations to reflect changes to BAAQMD rules and regulations.

The definitions added to the air quality conditions of certification are included in the BAAQMD-issued permits. The definitions were reviewed in the original analyses but were not clearly adopted into the approved conditions of certification. The definitions provide clarity with the requirements in the air quality condition language. In addition, definitions were added to the air quality conditions of certification in the CEC approved BESS amendment order.

CONCLUSIONS

Staff approves changes to the air quality conditions of certification for tuning, source testing, definitions, and citations. The proposed changes were analyzed for consistency with all LORS including the BAAQMD and federal new source review regulations. The updates to the conditions of certification comply with all applicable LORS and do not result in significant air quality impacts to any environmental population including minority or low-income populations. The changes have been reviewed by BAAQMD staff and will be incorporated into the BAAQMD-issued Title V permit.

AMENDED CONDITIONS OF CERTIFICATION

The modifications to the air quality conditions of certification are included below. **Bold underline** indicates new language. ~~Strikethrough~~ indicates deleted language.

AQ-19 The owner/operator shall not perform combustor tuning on each Gas Turbine (S-1, S-2, S-3, or S-4) more than twice every consecutive 12-month period. ~~Each tuning event shall not exceed eight hours.~~ Combustor tuning shall only be performed on one gas turbine per day. The owner/operator shall notify the District no later than seven days prior to combustor tuning activity. The emissions during combustor tuning from each gas turbine shall not exceed the limits established below. (Basis: Offsets, Cumulative Increase)

Pollutant	Combustor Tuning (lb/hour)
NO_x-(as NO₂)	80
<u>Carbon Monoxide (CO)</u>	450
<u>Precursor Organic Compound (POC)</u> -(as CH₄)	30

Verification: The project owner shall notify both the District and CPM at least 7 days prior to the combustor tuning. A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-27 ~~Within 90 days of start up of each of the MLGS SGT65000F units, the~~**The** owner/operator shall conduct a District-approved source test on each corresponding exhaust point P-1, P-2, P-3, or P-4 to determine the corrected ammonia (NH₃) emission concentration to determine compliance with **AQ-17(e)**. The source test shall determine the correlation between the heat input rates of the gas turbine, A-2, A-4, A-6, or A-8 SCR System ammonia injection rate, and the corresponding NH₃ emission concentration at emission point P-1, P-2, P-3, or P-4. The source test shall be conducted over the expected operating range of the turbine (including, but not limited to, minimum and full load modes) to establish the range of ammonia injection rates necessary to achieve NOx emission reductions while maintaining ammonia slip levels. The owner/operator shall repeat the source testing on an annual basis thereafter. **A source test shall be conducted at least once every 1,752 hours of turbine operation or once every 36 consecutive months, whichever comes first.** **Additional source testing may be required at the discretion of the District to address or ascertain compliance with the requirements of this permit.** Ongoing compliance with **AQ-17(e)** shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of ammonia injection rate. The owner/operator shall submit the source test results to the District and the CEC CPM within 60 days of conducting the tests. (Basis: Regulation 2, Rule 5)

Verification: The results and field data collected during source tests shall be submitted to the District and CPM within 60 days of testing and according to a pre-approved protocol (**AQ-29**). ~~Testing for steady state emissions shall be conducted upon initial operation and at least once every 12 months.~~

AQ-28 ~~Within 90 days of start up of each of the MLGS SGT65000F units and on an annual basis thereafter, the~~**The** owner/operator shall conduct a District-approved source test on each corresponding exhaust point P1, P2, P3 and P4 while each Gas Turbine is operating at maximum load to determine compliance with **AQ-17(a), AQ-17(b), AQ-17(c), AQ-17(d), AQ-17(f), AQ-17(g), AQ-17(h), AQ-17(i)**, and while each Gas Turbine is operating at minimum load to determine compliance with **AQ-17(c)**, and **AQ-17(d)** and to verify the accuracy of the continuous emission monitors required in **AQ-24**. **The owner/operator shall perform a relative accuracy test audit (RATA) on the CEMS, on at least an annual basis or as allowed by the regulations and approved by the District, in accordance with the applicable requirements of 40 Part 75 Appendix A and 40 CFR Part 60 Appendix B Performance**

Specifications. A referenced method source test shall be conducted at least once every 1,752 hours of turbine operation or once every 36 consecutive months, whichever comes first. Additional source testing may be required at the discretion of the District to address or ascertain compliance with the requirements of this permit. The owner/operator shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and mass emissions, nitrogen oxide concentration and mass emissions (as NO₂), carbon monoxide concentration and mass emissions, sulfur dioxide concentration and mass emissions, methane, ethane, and total particulate matter emissions including condensable particulate matter. The owner/operator shall submit the source test results to the District and the CEC CPM within 60 days of conducting the tests. (Basis: BACT, Offsets)

Verification: The results and field data collected during source tests shall be submitted to the District and CPM within 60 days of testing and according to a pre-approved protocol (**AQ-29**). ~~Testing for steady state emissions shall be conducted upon initial operation and at least once every 12 months.~~

AQ-31 The owner/operator shall calculate the sulfuric acid mist (SAM) emission rate using the total heat input for the sources and the highest results of any source testing conducted pursuant to **AQ-32**. If this SAM mass emission limit of **AQ-33** is exceeded, the owner/operator must utilize air dispersion modeling to determine the impact (in µg/m³) of the sulfuric acid mist emissions pursuant to Regulation 2, Rule 2, Sections **305 and 306**. (Basis: Regulation 2, Rule 2, Section ~~306~~**227**)

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB and the Energy Commission to verify the calculation and recordkeeping system is properly installed and operational. The quarterly operation report (**AQ-SC8**) shall include a determination of the impact if triggered by this condition.

AQ-32 ~~Within 90 days of start up of each of the MLGS SGT65000F units and on an annual basis thereafter, the~~The owner/operator shall conduct a District-approved source test on two of the four exhaust points P1, P2, P3, or P4 while each gas turbine is operating at maximum heat input rates to demonstrate compliance with the SAM emission rates specified in **AQ-33**. **A source test shall be conducted at least once every 1,752 hours of turbine operation or once every 36 consecutive months, whichever comes first. Additional source testing may be required at the discretion of the District to address or ascertain compliance with the requirements of this permit.** The owner/operator shall test for (as a minimum) SO₂, SO₃, and H₂SO₄. The owner/operator shall submit the source test results to the District and the CEC CPM within 60 days of conducting the tests. (Basis: Regulation 2, Rule 2, Section ~~306~~**227**, and Regulation 2, Rule 2, Section ~~419~~**409**)

Verification: The results and field data collected during source tests shall be submitted to the District and CPM within 60 days of testing and according to a pre-approved protocol (**AQ-29**). ~~Testing for steady-state emissions shall be conducted upon initial operation and at least once every 12 months.~~

AQ-33 The owner/operator shall not allow sulfuric acid emissions (SAM) from stacks P-1, P-2, P-3, P-4 combined to exceed seven tons in any consecutive 12-month period. (Basis: Regulation 2, Rule 2, Section ~~306227~~, and Regulation 2, Rule 2, Section ~~419409~~)

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

DEFINITIONS:

Hour: Any continuous 60- minute period

Clock Hour: Any continuous 60- minute period beginning on the hour

Calendar Day: Any continuous 24- hour period beginning at 12:00 AM or 0000 hours

Year: Any consecutive twelve-month period of time

Rolling 3- hour period: Any consecutive three – clock hour period, not including start-up or shutdown periods

Heat Input: All heat inputs refer to the heat input at the higher heating value (HHV) of the fuel, in BTU/scf

Firing Hours: Period of time during which fuel is flowing to a unit, measured in minutes

MMBtu: Million British thermal units

Gas Turbine Start- up Mode: The lesser of the first 30 minutes of continuous fuel flow to the Gas Turbine after fuel flow is initiated or the period of time from Gas Turbine fuel flow initiation until the Gas Turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of conditions 17(b) and 17(d).

Gas Turbine Shut down Mode: The lesser of the 15-minute period immediately prior to the termination of fuel flow to the Gas Turbine or the period of time from non-compliance with any requirement listed in Conditions 17(b) and 17(d) until termination of fuel flow to the Gas Turbine

Gas Turbine Combustor Tuning Mode: The period of time in which testing, adjustment, tuning, and calibration operations are performed, as recommended by the gas turbine manufacturer, to insure safe and reliable steady-state operation, and to minimize NO_x and CO emissions. The SCR and oxidation catalyst may not be operating at their design control effectiveness during the tuning operation.

Transient Hour: A transient hour is any clock hour during which the change in gross electrical output produced by the gas turbine exceeds 25 MW per minute for one minute or longer during any period that is not part of a startup, shutdown, or combust or tuning period.

Specified PAHs: The polycyclicaromatic hydrocarbons listed below shall be considered to be Specified PAHs for these permit conditions. Any emission limits for Specified PAHs refer to the sum of the emissions for all six of the following compounds

Benzo[a]anthracene
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[a]pyrene
Dibenzo[a,h]anthracene
Indeno[1,2,3-cd]pyrene

Corrected Concentration: The concentration of any pollutant (generally NO_x, CO, or NH₃) corrected to a standard stack gas oxygen concentration. For emission points P-1 (exhaust of S-1 Gas Turbine), P-2 (exhaust of S-2 Gas Turbine) P-3 (exhaust of S-3 Gas Turbine), P-4 (exhaust of S-4 Gas Turbine), the standard stack gas oxygen concentration is 15% O₂ by volume on a dry basis

Commissioning Activities: All testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the MLGS construction contractor to insure safe and reliable steady-state operation of the gas turbines, steam turbine, and associated electrical delivery systems during the commissioning period (Separate from Commissioning Activities for Black Start Capability)

Commissioning Period: The Period shall commence when all mechanical, electrical, and control systems are installed and individual system start-up has been completed, or when a gas turbine is first fired, whichever occurs first. The period shall terminate when the plant has completed performance testing, is available

for commercial operation, and has initiated sales to the power exchange.

Precursor Organic Compounds (POCs): Any compound of carbon, excluding methane, ethane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate

CECCPM: California Energy Commission Compliance Program Manager

MLGS: Marsh Landing Generating Station

Total Particulate Matter: The sum of all filterable and all condensable particulate matter.

Black Start Emergency Operation: Operation of Gas Turbine S-3 and/or S-4 and associated equipment as directed by the California Independent System Operator (CAISO) and/or Pacific Gas and Electric Company (PG&E) to restore power to the grid in the event of a system outage in accordance with the CAISO's or PG&E's system restoration plan, including operation of a turbine after termination of the Black Start Instruction until either (i) the turbine is shut down (up to a maximum of 30 minutes following termination of the Black Start Instruction) or (ii) the turbine achieves an output of 120 Megawatts (up to a maximum of 60 minutes following termination of the Black Start Instruction).

Commissioning Activities for Black Start Capability: All performance testing and adjustment activities associated with the initial installation of the battery energy storage system specifically designed for black start capability at MLGS.

Readiness Testing for Black Start Capability: All testing activities of Gas Turbines S-3 and/or S-4 associated with the battery energy storage system except for Commissioning Activities for Black Start Capability at MLGS.

REFERENCES

ARB 2019a – California Air Resources Board. Air Designation Maps available on ARB website. <http://www.arb.ca.gov/desig/adm/adm.htm>. Accessed September 2020.

ARB 2019b – California Air Resources Board. California Ambient Air Quality Data Standards available on ARB website. <http://www.arb.ca.gov/research/aqs/aqs.htm>. Accessed September 2020.

BAAQMD 2010 – Bay Area Air Quality Management District – Final Determination of Compliance (TN 57561) Docket Date: June 29, 2010

CEC 2010 – California Energy Commission – Final Commission Decision (TN 58247), Docket Date: May 4, 2017

CEC 2010a – California Energy Commission – Revised Staff Assessment (TN 57073), Docket Date: June 10, 2010

CEC 2016a – California Energy Commission – Errata to Air Quality Section (TN 215087), Docket Date: December 22, 2016

CEC 2019 – California Energy Commission – Staff Analysis of Petition to Amend to Add Back Start Capabilities (TN 226487), Docket Date: February 8, 2019

CEC 2019a – California Energy Commission – Order Approving Petition to Amend Facility License (TN 227326), Docket Date: March 13, 2019

MLGS 2020 – Marsh Landing -Marsh Landing Petition to Amend Conditions of Certification (TN 234322), Docket Date: August 13, 2020

U.S. EPA 2019a – United States Environmental Protection Agency. The Green Book Nonattainment Areas for Criteria Pollutants website. <https://www.epa.gov/green-book>. Accessed September 2020.

U.S. EPA 2019b - United States Environmental Protection Agency. National Ambient Air Quality Data Standards available on U.S. EPA website. <https://www.epa.gov/criteria-air-pollutants/naaqs-table>. Accessed September 2019.

ENVIRONMENTAL JUSTICE

Environmental Justice – Figure 1 shows 2010 census blocks in the six-mile radius of the Marsh Landing Generating Station 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 Antioch, Oakley, Pittsburg, and Fairfield-Suisun 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 districts are in relation to the six-mile radius around the Marsh Landing Generating Station site.

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

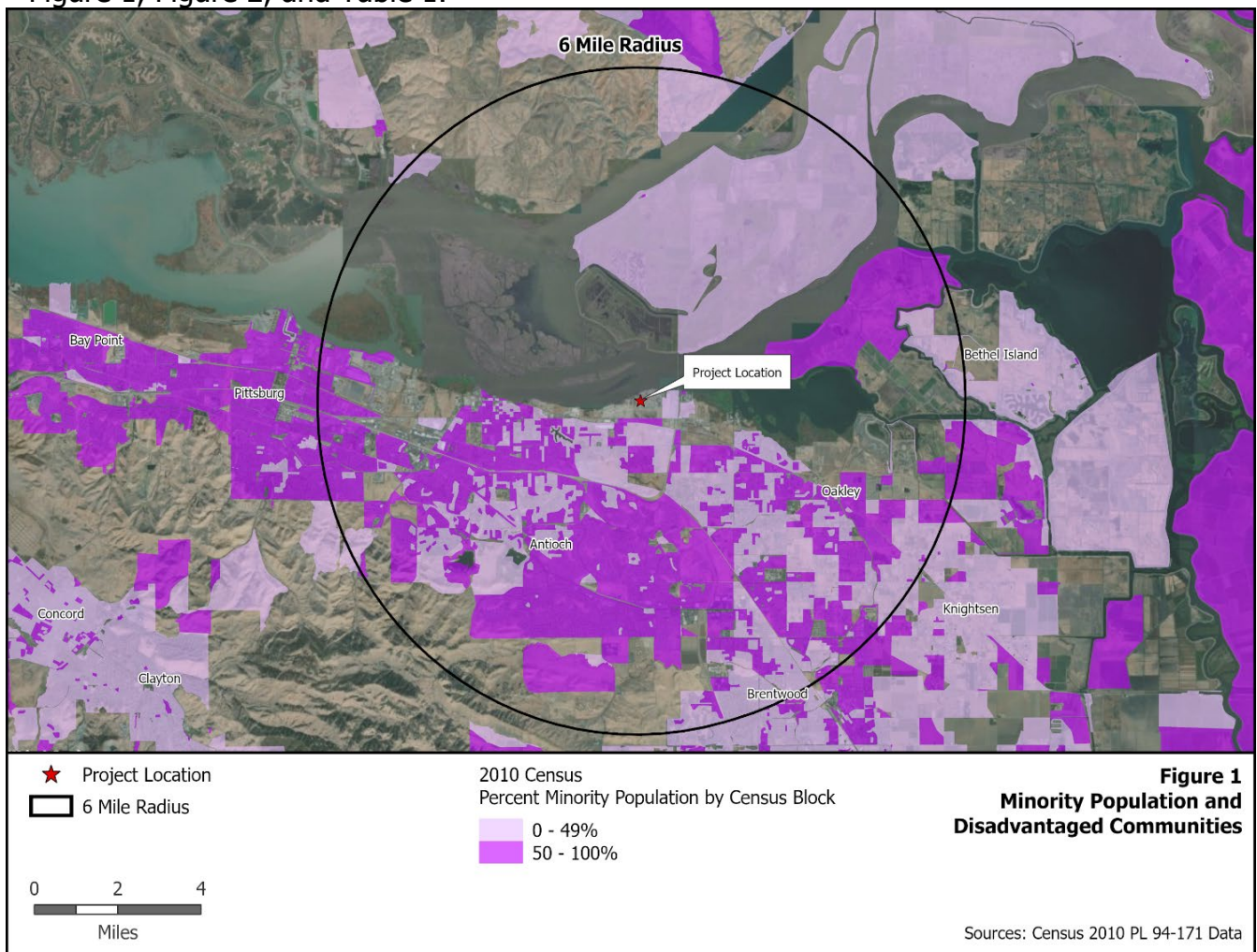
CONTRA COSTA COUNTY SCHOOL DISTRICT IN SIX-MILE RADIUS	Enrollment Used for Meals	Free or Reduced Price Meals	
Antioch Unified	17,167	11,887	69.2%
Brentwood Union Elementary	9,290	2,584	27.8%
Oakley Union	5,194	2,243	43.2%
Pittsburg Unified	11,367	8,060	70.9%
REFERENCE GEOGRAPHY			
Contra Costa County	178,411	70,401	39.5%
SACRAMENTO COUNTY SCHOOL DISTRICTS IN SIX-MILE RADIUS			
River Delta Joint Unified	2,383	1,270	53.3%
REFERENCE GEOGRAPHY			
Sacramento County	249,542	150,025	60.1%
SOLANO COUNTY SCHOOL DISTRICTS IN SIX-MILE RADIUS			
Fairfield-Suisun Unified	21,287	11,553	54.3%
REFERENCE GEOGRAPHY			
Solano County	62,980	31,404	49.9%
Source: CDE 2020. California Department of Education, DataQuest,			

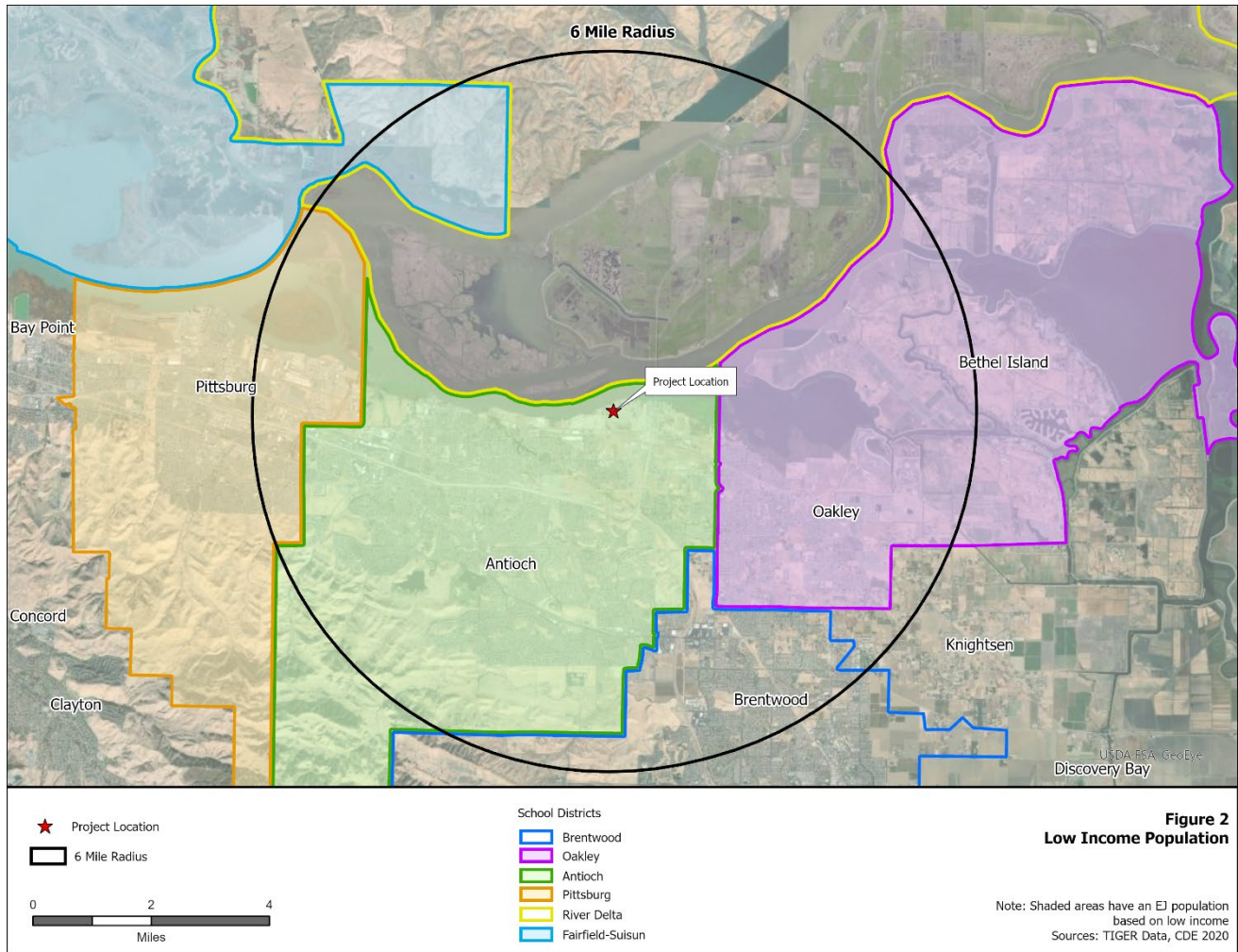
Free or Reduced Price Meals, District level data for the year 2019-2020, < http://dq.cde.ca.gov/d ataquest/ >.			
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The following technical areas (if affected) consider impacts to EJ populations: Air Quality, Cultural Resources (indigenous people), Hazardous 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 one technical area that addresses EJ which would be affected by the project change, Air Quality 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.





ENERGY COMMISSION STAFF DETERMINATION

Pursuant to Title 20, California Code of Regulations, section 1769(a)(3)(B), CEC staff has determined for this petition that approval by the Commission at a noticed business meeting or hearing is not required and the proposed changes meet the criteria for approval by staff because:

- i. that the criteria in subdivisions (a)(3)(A)(i) and (ii) are met (i.e., there is no possibility that the change may have a significant impact on the environment and the change would not cause the project to fail to comply with any applicable laws, ordinances, regulations, or standards); and
- ii. that no daily, quarterly, annual, or other emission limit will be increased as a result of the change.

Staff also concludes that the proposed changes do not meet the criteria requiring production of subsequent or supplemental review as specified in Title 14, California Code of Regulations, section 15162(a).

WRITTEN COMMENTS

This Statement of Staff Approval of the proposed project changes has been filed in the docket for this project. Pursuant to section 1769(a)(3)(C), any person may file an objection to staff's determination within 14 days of the filing of this statement on the grounds that the project change does not meet the criteria set forth in section 1769(a)(3)(A). Absent any objections as specified in 1769(a)(3)(C), this petition will be considered approved 14 days after this statement is filed.

Written comments or objections to staff's determination may be submitted using the CEC's e-Commenting feature, as follows: Go to the CEC's project webpage and click on either the "Comment on this Proceeding," or "Submit e-Comment" link. When your comments are filed, you will receive an email with a link to them.

Written comments or objections may also be mailed:

California Energy Commission
Docket Unit, MS-4
Docket No. 08-AFC-03C
1516 Ninth Street
Sacramento, CA 95814-5512

All comments and materials filed with 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 Keith Winstead, Compliance Project Manager, Office of Compliance, Monitoring, and Enforcement at (916) 208-3849 776-0609, or via e-mail at Keith.Winstead@energy.ca.gov or Elizabeth.Huber@energy.ca.gov.

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

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

Listserv: Marsh Landing Generating Station