DOCKETED	
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Project Title:	Malburg Generating Station-Compliance
TN #:	228227
Document Title:	Staff Analysis of Petition to Amend the Final Commission Decision
Description:	Staff Analysis of Petition to Amend the Final Commission Decision to install and operate a Siemens A+ Turbine Upgrade for combustion turbines.
Filer:	Anwar Ali
Organization:	California Energy Commission
Submitter Role:	Commission Staff
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CALIFORNIA ENERGY COMMISSION
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DATE: May 10, 2019

TO: Interested Parties

FROM: Anwar Ali, Compliance Project Manager

SUBJECT: **Malburg Generating Station (01-AFC-25C)**
Staff Analysis of Petition to Amend the Final Commission Decision

On November 17, 2017, Bicent (California), Malburg, LLC (the project owner), filed a Petition to Amend (PTA) with the California Energy Commission to modify the Final Commission Decision for Malburg Generating Station (MGS). The project owner proposes to install and operate a Siemens A+ Turbine Upgrade for both combustion turbines, which will require minor modifications to existing air quality conditions of certification.

DESCRIPTION OF PROPOSED MODIFICATION

The PTA requests:

- Installation and operation of a Siemens A+ Turbine Upgrade package for both combustion turbines, including minor modifications to existing air quality conditions of certification;
- Modification of certain air quality conditions of certification for consistency with the South Coast Air Quality Management District (SCAQMD) Permits to Construct; and
- Modification of Condition of Certification **AQ-C8**, which prohibits testing of the fire pump on a day in which either a combustion turbine has had a startup of shut down.

ENERGY COMMISSION AMENDMENT REVIEW PROCESS

Energy Commission staff has reviewed the PTA pursuant to Title 20, California Code of Regulations, section 1769 (Post Certification Petition for Changes in Project Design, Operation, or Performance and Amendments to the Commission Decision) and concluded that with implementation of new or revised air quality conditions of certification the proposed modifications would not result in a significant impact on the environment, and the project would continue to comply with applicable laws, ordinances, regulations, and standards. Staff intends to recommend approval of the petition at the June 12, 2019 Energy Commission Business Meeting.

The Energy Commission's webpage for this facility, https://www.energy.ca.gov/sitingcases/vernon/index.html, has a link to the petition and

the Staff Analysis on the right side of the webpage in the box labeled “Compliance Proceeding.” Click on the “Documents for this Proceeding (Docket Log)” option. If approved, the Energy Commission’s Order approving this petition will also be available from the same webpage.

This notice has been mailed to the Commission’s list of interested parties and property owners adjacent to the facility site. It has also been e-mailed to the Siting listserv. The listserv is an automated Energy Commission e-mail system by which information about this facility is e-mailed to parties who have subscribed. To subscribe, go to the Commission’s webpage for this facility, cited above, scroll down the right side of the project’s webpage to the box labeled “Subscribe,” and provide the requested contact information.

Any person may comment on the Staff Analysis. Those who wish to comment on the analysis are asked to submit their comments by June 11, 2019. To use the Energy Commission’s electronic commenting feature, go to the Energy Commission’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. Once filed, you will receive an e-mail with a link to them.

Written comments may also be mailed or hand-delivered to:

California Energy Commission
Dockets Unit, MS-4
Docket No. **01-AFC-25C**
1516 Ninth Street
Sacramento, CA 95814-5512

All comments and materials filed with the Dockets Unit will be added to the facility Docket Log and become publically accessible on the Energy Commission’s webpage for the facility.

If you have questions about this notice, please contact Anwar Ali, Compliance Project Manager, at (916) 654-5020, or by fax to (916) 654-3882, or via e-mail at anwar.ali@energy.ca.gov.

For information on participating in the Energy Commission's review of the petition, call Jennifer Martin-Gallardo, Public Adviser, at (916) 654-3478 or (800) 822-6228 (toll-free in California) or send your e-mail to publicadviser@energy.ca.gov.

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

Mail List: 7095
Listserv: Malburg Generating Station

STAFF ANALYSIS

MALBURG GENERATING STATION
(01-AFC-25C)

PETITION TO AMEND
THE COMMISSION FINAL DECISION

MALBURG GENERATING STATION
(01-AFC-25C)
PETITION TO AMEND THE COMMISSION FINAL DECISION
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Anwar Ali, Ph.D.

INTRODUCTION

On November 21, 2017, Bicent (California), Malburg, LLC (the project owner), filed a Petition for Amendment (PTA) with the California Energy Commission to modify the existing Final Commission Decision for Malburg Generating Station (MGS). The project owner requests to install and operate a Siemens SGT-800 A-Plus upgrade package (A+ Turbine Upgrade) for both combustion turbines which will require minor modifications to existing conditions of certification including modifications to the South Coast Air Quality Management District (SCAQMD) Permits to Construct. The initial portion of the upgrade installation has already occurred. It was approved by staff as maintenance and completed in the spring of 2018 during a major maintenance outage.

PROJECT LOCATION AND DESCRIPTION

The MGS is a 134-megawatt (MW) combined-cycle natural gas facility that was certified by the Energy Commission on May 23, 2003, and began commercial operation in October 2005. The facility is located in the City of Vernon, Los Angeles County, California.

The MGS has two identical Siemens SGT800 combustion turbine generators (CTGs), rated at 454.05 MMBtu/hr, two heat recovery steam generators (HRSG) with supplemental duct burners, each rated at 81.2 MMBtu/hr, one shared steam turbine generator (STG), a three-cell cooling tower and various support equipment. There is an emergency diesel-fired firewater pump at the site. The two CTGs are equipped with dry low-NOx (DLN) combustors and selective catalyst reduction (SCR) and oxidizing catalysts. Each CTG is equipped with an inlet air cooler to control inlet air temperature and enhance turbine performance during hot weather.

DESCRIPTION OF PROPOSED MODIFICATIONS

The PTA requests to modify the existing Final Commission Decision MGS, which is located in the City of Vernon, California. The proposed modifications in the PTA include:

- Upgrading the existing combustion turbines with the A+ Turbine Upgrade, which would be installed during the period of the normal turbine maintenance and repair. On March 5, 2018, the Energy Commission staff approved this phase of the PTA as a maintenance activity as the physical components to be installed during the scheduled maintenance in Spring 2018 are functionally equivalent in design to the previously installed components. The staff approval was based upon the agreement between MGS and SCAQMD that the facility would operate without the enhanced performance until the installation of software by Siemens

as part of Phase II of the PTA. The proposed A+ Turbine Upgrade would involve replacing row one of the compressor blades with a functionally different design to increase the air flow. The proposed upgrade would improve the turbines' efficiency and capacity increase in the firing temperature and the use of the redesigned compressor blades. The potential power production resulting from the modified facility would equate to an approximate net increase of 8 MW over the existing nominal rate of 134 MW;

- Conforming changes to air quality Conditions of Certification **AQ-12**, **AQ-19**, **AQ-20**, and **AQ-21** for consistency with the SCAQMD Permits to Construct; and
- Modification to Condition of Certification **AQ-C8**, which prohibits testing the fire pump on a day in which either a combustion turbine has had a startup of shut down. This restriction is now overly burdensome since the needs of the electrical system cause the MGS to be dispatched more frequently than originally contemplated during the original licensing proceeding. Bicent requests flexibility in the condition to reflect that the combustion turbines have more startup and shutdown events with the changing nature today's electrical grid needs. Therefore, in order to allow flexibility while minimizing air quality impacts, Bicent proposes to restrict testing of the fire pump during the same hour as a startup or shutdown event as opposed to restricting the testing on the entire day in which a startup or shutdown event has occurred.

NECESSITY FOR THE PROPOSED MODIFICATIONS

The purpose of the A+ Turbine Upgrade is to increase generation capacity and combustion turbine efficiency. This upgrade package was not available at the time of the original licensing of the facility, and therefore could not have been proposed at that time.

Modification of Air Quality Condition of Certification **AQ-C8** would allow MGS to provide additional ancillary services and provides MGS more flexibility to meet California Independent System Operator grid needs.

STAFF'S ASSESSMENT OF THE PROPOSED AMENDMENT

Energy Commission technical staff reviewed the petition for potential environmental effects and consistency with applicable LORS. A summary of staff's conclusions reached in each technical area are summarized in **Executive Summary Table 1**.

Staff has determined that the following technical or environmental areas are not affected by the proposed changes: Biological Resources, Cultural Resources, Facility Design, Geological and Paleontological Resources, Land Use, Noise and Vibration, Reliability, Soil and Water Resources, Transmission Line Safety and Nuisance, Transmission System Engineering, and Visual Resources.

Executive Summary Table 1
Summary of Impacts to Each Technical Area

Technical Areas Reviewed	Technical Area Not Affected	CEQA			Conforms with applicable LORS	Revised or New Conditions of Certification requested or recommended
		Potentially significant impact	Less than significant impact with mitigation	Less than significant impact		
Air Quality			X		X	X
Biological Resources	X					
Cultural Resources	X					
Efficiency				X	N/A	
Facility Design	X					
Geological and Paleontological Resources	X					
Hazardous Materials Management				X	X	
Land Use	X					
Noise and Vibration	X					
Public Health				X	X	
Reliability	X					
Socioeconomics				X	X	
Soil and Water Resources	X					
Traffic and Transportation				X	X	
Transmission Line Safety & Nuisance	X					
Transmission System Engineering	X					
Visual Resources	X					
Waste Management				X	X	
Worker Safety and Fire Protection				X	X	

For the technical areas of Efficiency, Hazardous Materials Management, Public Health, Socioeconomics, Traffic and Transportation, Waste Management, and Worker Safety and Fire Protection, staff has concluded that the proposed changes would not result in a significant impact on the environment or cause the project to not comply with applicable LORS. Some of the impacts identified below pertain to the portion of the upgrade

already completed in the spring of 2018, during a major maintenance outage. Staff notes the following for these areas:

Efficiency. The turbines upgrade would improve fuel efficiency by improving the heat rate through increasing the turbine's firing temperature and through the use of redesigned compressor blades. It would raise the turbine's output from 44 MW to 48.4 MW. The increase in efficiency would result in a two-percent decrease in fuel consumption per kWh. The overall power plant reliability would remain unchanged as the result of this petition.

Hazardous Materials Management. The replacement of the combustion turbine blades would not have a significant effect on hazardous materials. During the installation of the replacement turbine blades, several hazardous materials will be used onsite. Similar to equipment maintenance activities, these materials would include solvents, gasoline, lubricants, and welding gases which are already included in the annual compliance report under the existing **HAZ-1** condition. No extremely hazardous or regulated hazardous materials will be used on site specifically for the replacement of the turbine blades on the two existing combustion turbines. Therefore, with the petitioners' continued compliance with existing conditions of certification, **HAZ-1** specifically, the proposed modification would not have a significant effect on the environment and would continue to comply with all applicable LORS.

Public Health. Staff analyzed potential public health risks associated with the implementation of the proposed modifications in the PTA. Staff does not expect any significant adverse cancer, short-term, or long-term health effects on any members of the public, including low income and minority populations, from the project's toxic emissions. Staff also concludes that there is no need to add any Public Health Condition of Certification and that MGS would remain in compliance with all applicable LORS.

Socioeconomics. While there is a large workforce in the Los Angeles-Long Beach-Glendale Metropolitan Division (Los Angeles County), the proposed modification would not likely require an extensive workforce, thus the proposed modification would not impact the workforce in the project area.

Traffic and Transportation. Traffic generated by the proposed turbine upgrade would not significantly increase vehicle trips on local city roads causing a decrease to a level of service on a road or intersection delay.

Waste Management. No ground disturbing activities would take place as a result of turbine upgrade. During the exchange/installation of the hot gas path components, waste produced included: replaced parts (e.g. wiring, connectors, valves, gaskets, etc.), packing materials, and empty containers. Waste generated was handled and disposed of in accordance with the Operational Waste Management Plan (CEC 2003). Compliance with existing Waste Management Conditions of Certification **WASTE- 3** and **WASTE-4** mitigated these impacts to a less-than-significant level.

Based on the information provided by the project owner, staff concludes the proposed turbine upgrade would not result in additional significant environmental impacts in terms of waste management in comparison with the original analysis for the approved project, provided the owner complies with Conditions of Certification **WASTE-3** and **WASTE-4**. The proposed construction would not require any change to the conditions of certification related to waste management adopted by the Energy Commission in their Decision of May 2003 (CEC 2003). Staff also concludes that compliance with current waste management LORS and conditions specified by the Decision would ensure mitigation of the effects of waste management at the site (CEC 2003).

Worker Safety and Fire Protection. The replacement of the combustion turbine blades would not have a significant effect on power plant worker safety.

By continuing to comply with the existing conditions of certification, the petitioner's proposed replacement of the turbine blades for the two existing turbines would not have a significant effect on the environment and would continue to comply with all applicable LORS. Activities to be performed during the construction duration required for the installation would comply with worker safety and fire safety requirements already contained in health and safety plans utilized for construction of the main facility per Condition of Certification **WORKER SAFETY-1**.

Air Quality. Bicent is proposing to upgrade the existing turbines with an A+ Upgrade package. In addition, Bicent is proposing to modify one air quality condition of certification (**AQ-C8)** in the Final Commission Decision and to conform changes to four air quality conditions of certification (**AQ-12**, **AQ-19**, **AQ-20**, and **AQ-21**) for consistency with the SCAQMD Title V permit.

Based on the SCAQMD proposed changes to the Title V permit for the MGS, staff is proposing changes to sixteen conditions of certification, the addition of three new conditions of certification, and the requested conforming revisions to the five identified conditions of certification. Staff noted additional changes needed and inconsistencies with the SCAQMD permit conditions and Energy Commission's air quality conditions of certification. Therefore, staff is proposing changes to twenty other air quality of certifications and the deletion of three conditions of certification to clarify Energy Commission requirements.

The proposed A+ Turbine Upgrade consists of two phases. The first phase of the A+ Turbine Upgrade has been completed. This phase included installation of enhanced turbine and compressor blades. The second phase includes the tuning and installation of engineering software necessary to operate with the enhanced performance upgrades.
On March 5, 2018, the Energy Commission staff granted authorization to complete the Phase I of the A+ Turbine Upgrade which was completed during the Spring 2018 outage to allow the facility to complete the work during the scheduled outage while staff processed the PTA in coordination with the modification to the SCAQMD issued permits. Phase I was approved as a maintenance activity as the physical components,

to be installed during the scheduled Spring 2018 maintenance, were equivalent in design and function to the previously installed components. In addition, MGS and SCAQMD agreed that the facility would operate without the enhanced performance until the installation of software by Siemens as part of Phase II of the PTA.

The SCAQMD completed their analysis and drafted a proposed operating permit. The SCAQMD issued the modified permit on May 7, 2019 after completing a 45-day regulatory review and 30-day public noticing period.

Staff determined all proposed changes would conform to the applicable LORS related to air quality and would not result in significant air quality impacts. Additionally, the proposed potential emission increases would not require additional mitigation including Emission Reduction Credits (ERCs) or Regional Clean Air Incentives Market (RECLAIM) trading credits. The details of the proposed changes to air quality conditions of certification are found under the **Air Quality** section in this Staff Analysis.

ENVIRONMENTAL JUSTICE

Environmental Justice (EJ) Figure 1 shows 2010 census blocks in the six-mile radius of MGS with a minority population greater than or equal to 50 percent. The population in these census blocks represents an 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*.

Based on U.S Census data from the American Community Census 5-Year Estimates, the Census County Divisions (CCD) of Compton, Los Angeles, and South Gate-East Los Angles in **Environmental Justice Table 1** and presented **Environmental Justice Figure 2**, have a higher percent of people living below the federal poverty level when compared with Los Angeles County and thus the below-poverty-level population in the three CCDs 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 Table 1
Low Income Data within the Project Area

CENSUS GEOGRAPHY IN THE SIX-MILE RADIUS	Total	Income in the past 12 months below poverty level	Percent below poverty level (%)
	Estimate*	Estimate	Estimate
Compton CCD	342,469	70,609	20.60
	±2,089	±3,362	±1
Los Angeles CCD	2,509,690	615,787	24.50
	±6,428	±7,078	±0.3
South Gate-East Los Angeles CCD	501,184	133,941	26.70
	±2,917	±3,990	±.08
Southwest San Gabriel Valley CCD	321,405	50,869	15.80
	±1,382	±2,275	±0.7
Reference geography			
Los Angeles County	9,886,133	1,800,265	18.20
	±3,427	±14,598	±0.1
Notes: * Population for whom poverty status is determined. Staff's analysis of the 2011 – 2015 estimates returned CV values less than 15, indicating the data is reliable. **Source:** US Census ACS 5-Year Estimates, S1701: Poverty status in the past 12 months, <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>			

ENVIRONMENTAL JUSTICE CONCLUSIONS

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, and Waste Management.

Staff has determined that there are no environmental justice issues related to the proposed facility modifications and no minority or low-income populations would be significantly or adversely impacted. Impacts would be less than significant for any population in the project's six-mile radius, including the EJ population.

STAFF RECOMMENDATIONS AND CONCLUSIONS

Staff concludes that the proposed changes would not result in a significant impact on the environment or cause the project to not comply with applicable LORS and would not result in significant air quality impacts.

Air Quality staff recommends modifications to several air quality conditions of certification. The details of the proposed changes are found under the **Air Quality** section in the Staff Analysis.

Bold underline indicates new language in the condition of certification, whereas ~~strikethrough~~ is used to indicate deleted language.

REFERENCES

MGS 2017 – Bicent (California) Malburg LLC. Petition of Amend Malburg Generating Station (01-AFC-25C), November 21, 2017.

CEC 2003 – California Energy Commission. Commission Decision of Malburg Generating Station (01-AFC-25C). May 20, 2003.

CEC 2004 – California Energy Commission, Notice of Exemption for Malburg Generating Station for Petition to Add a Temporary Fabrication Area at Malburg Generating Station (01-AFC-25C). October 22, 2004.

CEC 2008 – California Energy Commission. Order Approving a Petition for New Cold Startup Emission Rates for Malburg Generating Station (01-AFC-25C). August 13, 2008.

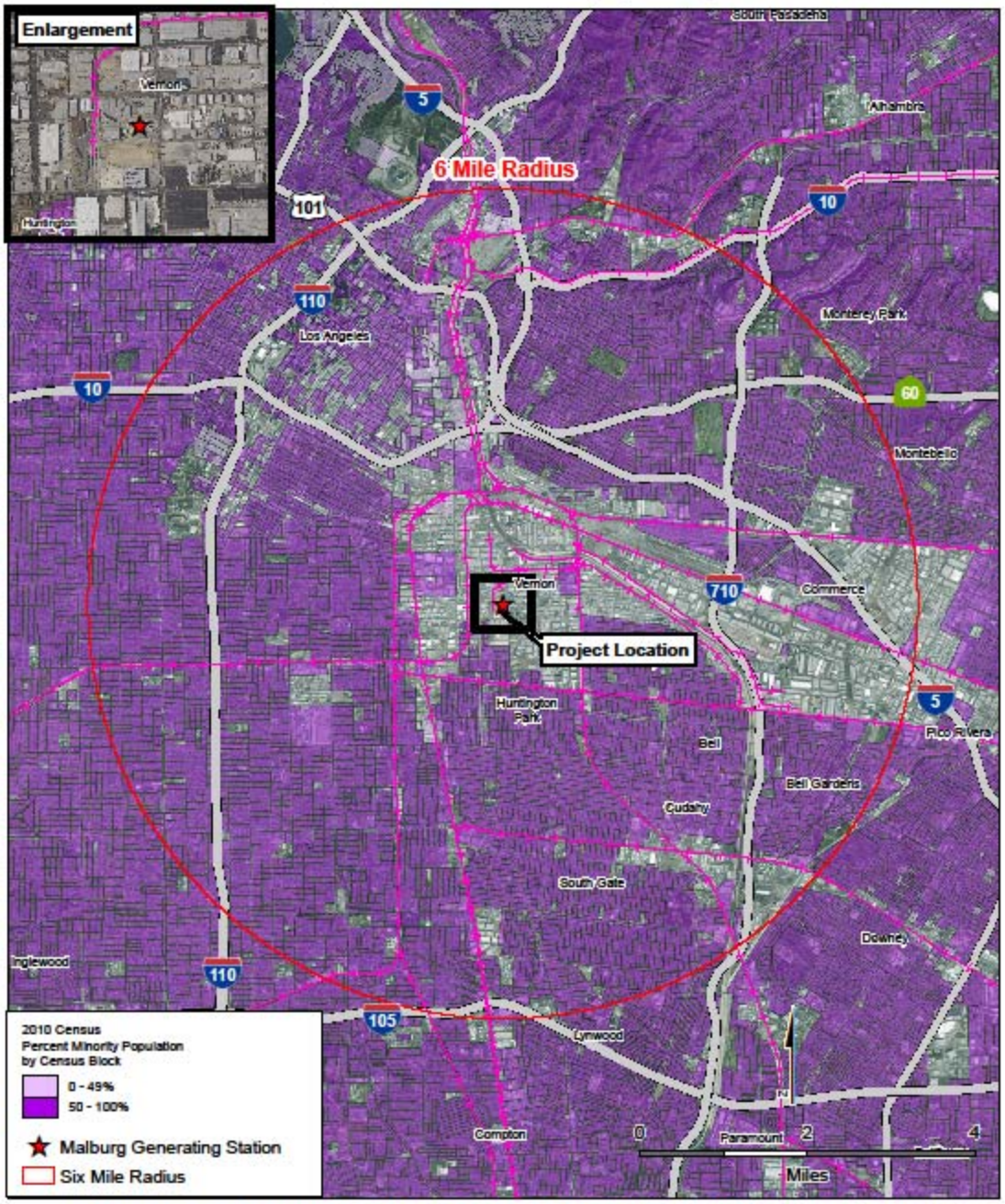
US Census 2010 – United States Census Bureau, QT-PL-Race, Hispanic or Latino, Age, and Housing Occupancy: 2010 – Census Redistricting Data (Public Law 94-171) Summary File, <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>.

US Census 2017 – United States Census Bureau, S1701 POVERTY STATUS IN THE PAST 12 MONTHS- 2011 – 2015 American Community Survey 5-Year Estimates, <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>.

US EPA 2017 – United States Environmental Protection Agency, Guidance on Considering Environmental Justice During the Development of Regulatory Actions, May 2015, <https://www.epa.gov/environmentaljustice/guidance-considering-environmental-justice-during-development-action>.

ENVIRONMENTAL JUSTICE - FIGURE 1

Malburg Generating Station - Census 2010 Minority Population by Census Block

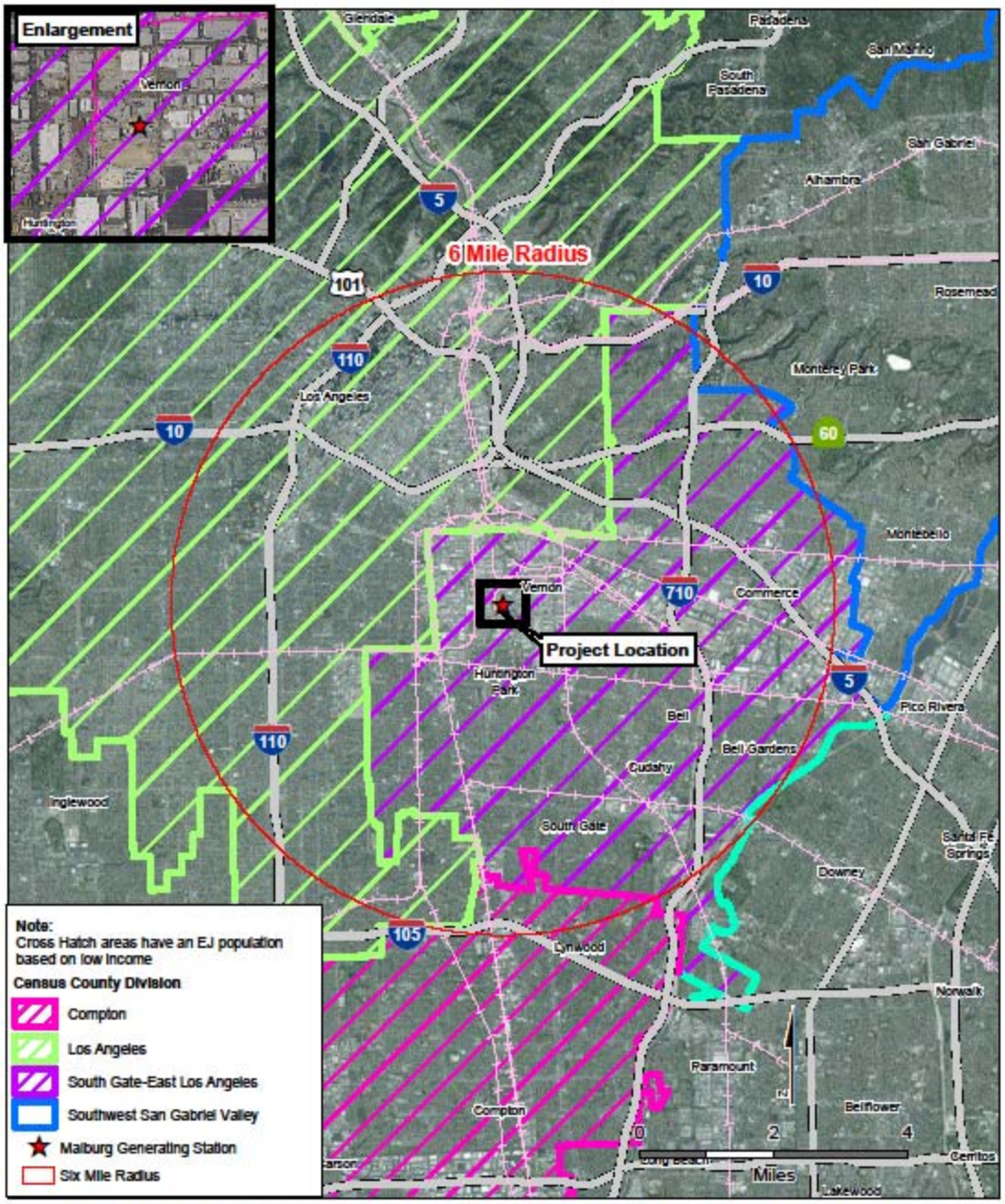


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCES: Census 2010 PL 94-171 Data

ENVIRONMENTAL JUSTICE - FIGURE 2

Malburg Generating Station - Environmental Justice Population Based on Low Income



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SOURCES: TIGER Data, S1701 ACS 5-Year Estimates

STAFF ANALYSIS
MALBURG GENERATING STATION (01-AFC-25C)
Petition to Amend the Final Commission Decision
AIR QUALITY
Nancy Fletcher

INTRODUCTION

On November 21, 2017, , Bicent (California), Malburg, LLC filed a Petition (Malburg 2017) with the California Energy Commission (Energy Commission) requesting to modify the existing Malburg Generating Station (MGS) Final decision.

MGS is a 134-megawatt (MW) natural gas-fired, combined-cycle power plant located in the City of Vernon in Los Angeles County. The facility consists of two identical Siemens SGT-800[1] combustion turbine generators (CTGs) rated at 454.05 million British thermal units per hour (MMBtu/hr) and two heat recovery steam generators (HRSGs) with supplemental duct burners each rated at 81.2 MMBtu/hr. The steam from the two HRSGs drives a shared steam turbine generator (STG). Additional equipment includes a three cell cooling tower, a 173 brake horsepower (BHP) emergency diesel-fired fire pump engine, and various support equipment. Each combustion turbine is equipped with a dry, low-NOx (nitrogen oxides) combustor, and emissions from each HRSG are controlled by a selective catalytic reduction (SCR) system and a carbon monoxide (CO) catalyst.

MGS was certified by the Energy Commission on May 20, 2003 (Decision), and began commercial operation on October 17, 2005. The conditions of certification were modified on August 13, 2008, increasing the startup emissions limits to reflect the operational startup characteristics of the facility's combustion turbines. In addition, the conditions of certification were recently modified on February 18, 2014, amending the number of allowable startup and shutdown events, and the duration of the startup events. MGS operates under an existing South Coast Air Quality Management District (SCAQMD) Title V operating permit.

In the current petition, Bicent is requesting the Energy Commission approve the following:

- The installation and operation of a Siemens SGT-800 A-Plus package (A+ Turbine Upgrade) to both combustion turbines.
- The incorporation of changes made to the SCAQMD permit conditions.
- Modifications to the fire pump testing restriction.

[1] At the time of licensing, the existing MGS CTGs were considered Alstom Power Model GTX 100. Siemens Power Corporation purchased Alstom Power and the Alstom GTX 100 turbines were re-designated as SGT-800 to conform to Siemens naming convention.

On February 21, 2018, Bicent submitted an updated request to the Energy Commission regarding the proposed A+ Turbine Upgrade. The A+ Turbine Upgrade consists of two phases. The first phase of the A+ Turbine Upgrade includes the installation of the enhanced turbine and compressor blades. The second phase includes the tuning and installation of engineering software necessary to operate with the enhanced performance upgrades.

Bicent requested to complete the first phase during the Spring 2018 outage in March. Bicent stated completion of the first phase would not require any modification to the license or SCAQMD issued permits. Bicent clarified MGS could not operate utilizing the upgrades until the second phase is compete. The second phase would occur after the license and permits are amended. On March 5, 2018, Energy Commission staff approved the completion of the first phase of the A+ Turbine Upgrade – the physical installation of the upgraded hardware.

On November 14, 2017, Bicent filed an application with the SCAQMD to modify the SCAQMD issued operating permit. The SCAQMD completed an analysis and drafted the proposed operating permit incorporating the proposed changes. The requested changes trigger a 45-day United States Environmental Protection Agency (U.S. EPA) regulatory review and 30-day public noticing period. On March 22, 2019 the SCAQMD evaluation package was submitted to the U.S. EPA for review. The review period closed May 7, 2019.

During the amendment review, staff noted additional inconsistencies with the SCAQMD permit conditions and Energy Commissions Air Quality Conditions of Certification. Staff is proposing changes to clarify Energy Commission requirements. These changes would better align the Title V permit and the Energy Commission license requirements.

MGS is considered a base load facility and is usually operated at more than a 60 percent annual capacity factor. The facility was licensed in 2003 and has been in operation since 2005 prior to the applicable date of the Greenhouse Gases Emission Performance Standard (Title 20, California Code of Regulations, section 2900 et seq.). The regulation considers power plants licensed prior to June 30, 2007 as ‘deemed–compliant’ power plants. Therefore, the plant would continue to be classified as a ‘deemed–compliant’ power plant. The Greenhouse Gas (GHG) emissions would still be subject to the California Air Resources Board (ARB) adopted regulations implementing cap-and-trade. The cap-and-trade program became active in January 2012, with enforcement beginning in January 2013. The proposed facility modifications would be subject to federal and state mandatory GHG reporting and state cap-and-trade requirements.

Air quality impacts from the proposed changes are considered less than significant including impacts to environmental justice populations. No changes to the project mitigation are being proposed including Emission Reduction Credits (ERCs) or Regional Clean Air Incentives Market (RECLAIM) trading credits. Therefore, there are no air

quality environmental justice issues related to the proposed facility modifications and no minority or low-income populations would be significantly or adversely impacted.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS COMPLIANCE

The proposed amendment incorporates the installation of the A+ Turbine Upgrade package and increases the monthly operating schedule for MGS. The proposed amendment is considered a significant permit revision under Title V and SCAQMD New Source Review (NSR) requirements. The amendment does not trigger a Prevention of Significant Deterioration (PSD) review. The proposed amendment includes changes to some emission limitations but does not trigger additional mitigation or changes to the NOx RECLAIM requirements. MGS is considered a major source and requires a Title V operating permit. SCAQMD reviewed the requested modifications and determined the changes would comply with their regulations.

Air Quality Table 1 includes a summary of the air quality laws, ordinances, regulations and standards (LORS) applicable to the MGS facility. The requested changes, and clarifications proposed by staff were evaluated by staff for consistency with the following LORS. The conditions of certification in the original Decision and any and all amendments thereafter ensure that the facility would remain in compliance with all LORS.

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

Applicable Law	Description and Compliance
Federal	**U.S. Environmental Protection Agency (U.S. EPA)**
Federal Clean Air Act Amendments of 1990 (FCAAA), Title 40 Code of Federal Regulations (CFR) Part 50	National Ambient Air Quality Standards (NAAQS) are set in this part. NAAQS define levels of air quality that are necessary to protect public health.
Title 40 CFR Part 51 (Requirements for Preparation Adoption and Submittal of Implementation Plans)	Requires NSR facility permitting for construction or modification of specified stationary sources. NSR applies to sources of designated nonattainment pollutants. This requirement is addressed through SCAQMD Regulation XIII.
Title 40 CFR Part 52 (Approval and Promulgation of Implementation Plans)	Prevention of Significant Deterioration (PSD)–Establishes requirements for attainment emissions. PSD requirements apply on a pollutant specific basis for major stationary sources. Twenty-eight source categories are subject to PSD requirements for attainment pollutants if facility annual emissions exceed 100 tons per year. SCAQMD has partial delegation of PSD authority from the U.S. EPA depending on the calculation methodology and plant wide applicability limits.

Applicable Law	Description and Compliance
Title 40 CFR Part 60, Subpart A (General Provisions)	Outlines general requirements for facilities subject to standards of performance including notification, work practice, monitoring and testing requirements. Staff is proposing modifications to the conditions of certification to ensure continued compliance.
40 CFR 60, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Establishes requirements for small steam generators with heat inputs between 10 and 100 MMBtu/hr. The duct burners are each rated at 81.2 MMBtu/hr. The CTGs meet the requirements of Subpart KKKK and are therefore exempt from this Subpart.
40 CFR 60, Subpart GG	Standards of Performance for Stationary Combustion Turbines– Requires the turbines to meet emission standards. This subpart is superseded by Subpart KKKK. Staff is proposing modifications to the conditions of certification to ensure compliance.
40 CFR 60, Subpart KKKK	New Source Performance Standards (NSPS) for Stationary Gas Turbines – Establishes emission standards for turbines installed after February 18, 2005 with heat inputs greater than 10 MMBtu/hr. Although the turbines were installed prior to 2005, the modification would be subject to this subpart. Compliance with the emission standards is expected. The current CEMS systems meet the CEMS monitoring requirements. Compliance with all other provisions including recordkeeping is expected. Staff is proposing additional requirements in the conditions of certification to ensure compliance.
40 CFR 60, Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions For Electric Generating Units. Establishes emission standards for units installed after January 8, 2014. The modification would not qualify the upgraded turbines to be subject to this Subpart as the project does not meet the definition of reconstruction.
40 CFR 60, Subpart UUUU	Emission Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units – Establishes emission guidelines and approval criteria for State or multi-State plans that address emission standards limiting GHG emissions from an affected unit. The state plan has not been approved and therefore there are no currently applicable requirements. The facility will be required to comply with the plan if and when it becomes applicable.
40 CFR 63, Subpart YYYY	National Emission Standards for Hazardous Air Pollutants for Stationary Gas Turbines. This subpart establishes requirements for facilities that are major sources of hazardous air pollutants (HAPS). The facility is considered an area source and not a major source of HAPS since HAP emissions are less than the 25 ton/year threshold.

Applicable Law	Description and Compliance
40 CFR 64	Compliance Assurance Monitoring (CAM)–CAM regulations apply to major stationary sources that use control equipment to achieve emission limits. The combined-cycle turbines are located at a major source. The combined-cycle turbines are subject to Best Available Control Technology (BACT) requirements for NOx, CO, and volatile organic compound (VOC) emissions. Applicable BACT limits are met by using external control equipment consisting of SCR and oxidation catalysts. Compliance for CO and NOx is demonstrated by continuous emission monitoring systems (CEMS). The oxidation catalysts also control VOC emissions at specified temperatures. Compliance with the VOC emission limit is demonstrated through source testing. Continued compliance with the monitoring requirements is expected.
40 CFR 70	State Operating Permits Program–Part 70 establishes the Title V permitting program. MGS currently operates under a Title V permit. An updated Title V application has been submitted as part of SCAQMD requirements. Continued compliance is expected.
40 CFR 72	Permits Regulation–Part 72 establishes the Acid Rain Permit Program. 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. MGS is subject to the acid rain program. The facility permit indicates emissions of SO_2 are subject to 40 CFR provisions. NOx will be added to the facility permit 'Emissions and Requirements' column. The NOx requirements are in compliance with the applicable Acid Rain limitation. The Acid Rain NOx limitations are included in 40 CFR 76 (see below). The facility would continue to comply with SO_2 allowances and emissions monitoring requirements. MGS would be required to submit updated applications for inclusion in the acid rain program. Continued compliance is expected.
40 CFR 73	Sulfur Dioxide Allowance System–Part 73 establishes requirements for SO_2 allowances. Bicent is requesting to potentially increase monthly operating hours. The modifications would result in a small potential increase for monthly sulfur oxide (SOx) emissions. The SOx emissions increase would not impact the acid rain permit. Bicent would forward a notice to U.S. EPA of the increase. Bicent would continue to acquire the necessary SO_2 allowances including any resulting increase. Continued compliance is expected.

Applicable Law	Description and Compliance
40 CFR 75	Continuous Emission Monitoring–Part 75 establishes monitoring, recordkeeping, and reporting requirements. MGS is currently in compliance with all acid rain requirements. The facility's Continuous Emissions Monitoring System Quality Assurance/Quality Control (QA/QC) Plan includes acid rain requirements. MGS would continue to measure and record SO_2 emissions using fuel combusted measurements with fuel sulfur contents in accordance with Appendix D. Staff is proposing modifications to the conditions of certification to ensure continued compliance.
40 CFR 76	Acid Rain Nitrogen Oxides Emission Reduction Program–Part 76 establishes requirements for NOx reduction. Part 76 outlines requirements for coal-fired utilities. MGS turbines combust natural gas and is not subject to the requirements.
State	**California Air Resources Board and Energy Commission**
California Health & Safety Code §41700 (Nuisance Regulation)	Prohibits discharge of such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance.
California Health & Safety Code 40910-40930	Permitting of source needs to be consistent with approved clean air plan.
California Code of Regulations	Greenhouse Gases Emission Performance Standard (EPS), Article 1 –Provisions Applicable to Power Plants 10 MW and Larger (SB1368) —The facility is considered a deemed-compliant power plant.
Local	**South Coast Air Quality Management District (SCAQMD)**
Regulation I General Provisions Rule 118	Emergencies—Establishes the ability for the SCAQMD to suspend District rules, regulations or orders during a state or federally declared State of Emergency.
Regulation II Permits Rules 201, 202 and 203	Permit to Construct, Temporary Permit to Operate, Permit to Operate. Written authorizations shall be obtained prior to the use or replacement of any equipment which may eliminate, reduce or control air contaminants. The permit to construct serves as a temporary permit to operate prior to the issuance of the final permit.
Regulation II Permits Rules 204	Permit Conditions—Establishes the ability for the SCAQMD to impose conditions on any permit as needed to assure compliance with all applicable regulations.
Regulation II Permits Rule 212	Standards for Approving Permits and Issuing Public Notice—Outlines specific criteria for approving permits and issuing public notice. Outlines requirements for RECLAIM facilities. The proposed changes did not trigger Rule 212 public noticing requirements. MGS is not located within 1,000 feet of a school and the proposed changes will not result in an increase in emissions of toxic contaminants that would expose a person to levels above noticing thresholds.

Applicable Law	Description and Compliance
Regulation II Permits Rule 217	Provisions For Sampling and Testing Facilities—Establishes requirements for providing and maintaining facilities needed for sampling and testing. Continued compliance is expected.
Regulation II Permits Rule 218	Continuous Emission Monitoring (CEM)—Establishes requirements for CEMS. Only the CO CEMS are subject to Rule 218 requirements. The NOx CEMs is subject to Regulation XX. Each CTG is already operating with a compliant CO CEMS. Retention of record and reporting requirements are followed. Continued compliance is expected.
Regulation II Permits Rule 219	Equipment Not Requiring A Written Permit Pursuant to Regulation II—Exempts categories of equipment from requiring a SCAQMD permit. Categories could include abrasive blasting and coating operations. Rule 219 exempts the cooling tower from SCAQMD permitting. Rule 222 requires the cooling tower to be registered with the SCAQMD.
Regulation II Permits Rule 222	Filing Requirements For Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II—Provides an alternate to written permits. MGS filed a registration application with the SCAQMD. The SCAQMD reported the MGS cooling tower is now certified.
Regulation IV Prohibitions Rule 401	Visible Emissions—Establishes limits on visible emissions. Visible emissions are not expected from MGS. Continued compliance is expected.
Regulation IV Prohibitions Rule 402	Nuisance—Prohibits the discharge of air contaminants or other material which could detrimentally impact the public. MGS uses ammonia (NH_3) for the SCR. The facility maintains a 5 parts per million (ppm) ammonia slip level. Nuisance problems are not expected from MGS under normal operations. The SCAQMD Complaint Tracking Database shows the facility has not received any public complaints in the past five years.
Regulation IV Prohibitions Rule 403	Fugitive Dust-Requires the prevention, reduction or mitigation of fugitive dust emission from project sites. Continued compliance is expected.
Regulation IV Prohibitions Rule 404	Particulate Matter Concentration—Restricts discharging of particulate matter is excess of 0.196 grain per cubic foot. Turbines combusting gaseous or liquid fuels are exempt from these requirements.
Regulation IV Prohibitions Rule 405	Solid Particulate Matter-Weight—Establishes requirement for particulate emissions by process weight. Continued compliance is expected.
Regulation IV Prohibitions Rule 407	Liquid and Gaseous Air Contaminants—Establishes a CO emission limit of 2,000 parts per million by volume (ppmv) from the turbines. The CO emissions from the turbines are subject to a more stringent CO emission limit of 2 ppmv at 15 percent oxygen (% O_2), meeting this rule.

Applicable Law	Description and Compliance
Regulation IV Prohibitions Rule 408	Fugitive Dust-Requires the prevention, reduction or mitigation of fugitive dust emission from project sites. Continued compliance is expected.
Regulation IV Prohibitions Rule 409	Combustion Contaminants—Establishes restrictions on particulate matter emissions from the turbines to 0.1 grain per cubic foot at 12% O_2. Previous analysis demonstrated the current particulate matter (PM) emission limit is in compliance. This amendment proposes to lower the hourly emission rate for particulate matter less than ten microns (PM10). In addition, source testing data indicates compliance below the rule limit. This rule does not apply to the fire pump engine.
Regulation IV Prohibitions Rule 431.1	Sulfur Content of Gaseous Fuels—Limits the sulfur concentration to 16 ppmv (calculated as hydrogen sulfide) in natural gas. Continued compliance is expected because commercial grade natural gas has an average sulfur content of 4 ppm.
Regulation IV Prohibitions Rule 431.2	Sulfur Content of Liquid Fuels—Limits the sulfur concentration to 0.05 percent by weight in liquid fuels (diesel). Prohibits the purchase of diesel fuel with a sulfur content greater than 15 ppm by weight. Continued compliance is expected.
Regulation IV Prohibitions Rule 474	Fuel Burning Equipment-Oxides of Nitrogen—This rule is superseded by NOx RECLAIM pursuant to Rule 2001, Table 1.
Regulation IV Prohibitions Rule 475	Electric Power generating Equipment—Limits combustion contaminants to 11 pounds per hour (lbs/hr) or 0.01 grains per standard cubic feet (gr/scf) for power generating equipment greater than 10 MW. Continued compliance is expected.
Regulation VII Emergencies Rule 701	Air Pollution Emergency Contingency Actions—Establishes requirements during air pollution episodes.
Regulation XI Source Specific Standards Rule 1110.2	Emissions From Gaseous- and Liquid-Fueled Engines—This regulation established NOx, VOC, and CO emission limits for stationary and portable engines over 50 brake horsepower (BHP) in rated capacity. Continued compliance is expected.
Regulation XI Source Specific Standards Rule 1113	Architectural Coatings—This regulation limits the VOC content of architectural coatings used in the SCAQMD. This is a general facility requirement. Continued compliance is expected.
Regulation XI Source Specific Standards Rule 1134	Emissions of NOx from Stationary Gas Turbines—This rule is superseded by NOx RECLAIM pursuant to Rule 2001, Table 1.

Applicable Law	Description and Compliance
Regulation XI Source Specific Standards Rule 1135	Emissions of Oxides of Nitrogen from Electricity Generating Facilities—Establishes emission limitations to reduce NOx. The facility complies with the NOx and NH_3 emission limitations for gas turbines and the applicable startup, shutdown, and tuning requirements. The facility is a RECLAIM facility and reports accordingly. Staff is proposing updated NH_3 testing requirements to ensure compliance.
Regulation XI Source Specific Standards Rule 1171	Solvent Cleaning Operations—This regulation establishes requirements to limit VOCs, toxic air contaminants, and stratospheric ozone-depleting or global warming compound from solvent cleaning operations. This is a general facility requirement. Continued compliance is expected.
Regulation XIII New Source Review	New Source Review for Criteria Pollutants—This regulation applies to new or modified sources that may emit any nonattainment air contaminant, ozone depleting compound, or NH_3. Precursors are treated as nonattainment pollutants. This regulation establishes BACT/Lowest Achievable Emission Rate (LAER), modeling, and offset requirements. NOx emissions are regulated under Regulation XX (RECLAIM). The proposed A+ Turbine Upgrade would comply with BACT/LAER requirements. Modeling was performed and the SCAQMD determined additional offsets would not be required per their rules and regulations. See the Analysis section for details.
Regulation XIII New Source Review Rule 1325	Federal PM2.5 New Source Review Program—Outlines requirements for particulate matter less than 2.5 microns (PM2.5) for any new major polluting facility or major modification to a major polluting facility located in areas designated as non-attainment for PM2.5. PM2.5 precursors, VOC, NH_3, NOx, and SO_2, are included. The A+ Turbine Upgrade is not considered a major modification to a major polluting facility.
Regulation XIV Toxics and Other Non-Criteria Pollutants Rule 1401	New Source Review of Toxic Air Contaminants (TAC)—Specifies limits for maximum individual cancer risk and acute and chronic hazard index for modifications to existing facilities emitting toxic air contaminants. The proposed project is expected to comply with requirements. See Public Health for further analysis.
Regulation XIV Toxics and Other Non-Criteria Pollutants Rule 1404	Hexavalent Chromium Emissions from Cooling Towers—Specifies requirements for hexavalent chromium concentrations in circulating cooling water tower. Hexavalent chromium is not used.
Regulation XIV Toxics and Other Non-Criteria Pollutants Rule 1470	Requirements For Stationary Diesel-Fueled Internal Combustion And Other Compression Ignition Engines—Specifies fuel and operation requirements for compression ignitions engines operation.

Applicable Law	Description and Compliance
Regulation XVII Prevention of Significant Deterioration (PSD)	A series of rules establishing requirements for attainment emissions. SCAB is in attainment of the nitrogen dioxide (NO_2), SO_2, CO, and particulate matter less than ten microns (PM10) national ambient air quality standards. SCAQMD has partial delegation of PSD authority from the U.S. EPA depending on the calculation methodology and plant wide applicability limits. This project emission levels are below the PSD threshold and does not trigger a PSD review.
Regulation XVII Prevention of Significant Deterioration (PSD) Rule 1714	Prevention of Significant Deterioration (PSD) for Greenhouse Gases (GHGs)— A PSD permit for greenhouse gases is not required for this project.
Regulation XX Regional Clean Air Incentives Market (RECLAIM)	A series of rules establishing requirements for RECLAIM facilities. Rule 2005-New Source Review for RECLAIM— Establishes review requirements for new or modified facilities subject to the RECLAIM program. Rule 2012-Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions. Establishes criteria for monitoring and source testing for major sources, large sources and process units. The proposed amendment would result in a potential increase in NOx emissions. Therefore, modeling is required to demonstrate the amendment would not result in a significant increase in NO_2 concentrations specified in Appendix A of the rule. See the Analysis section for the modeling discussion and results. The increase did not require additional RECLAIM Trade Credits (RTCs) to be purchased. Staff notes the amendment was evaluated according to current SCAQMD RECLAIM requirements.
Regulation XXX Title V Permits	A series of rules establishing general requirements and application procedures for facilities subject to Title V requirements. The SCAQMD determined that the requested amendment is considered a significant permit revision and requires a 45-day U.S. EPA review. In addition, the requested amendment triggers a 30-day public review.
Regulation XXXI Acid Rain Permit Program	A series of rules establishing the Acid Rain Permit Program. Requires a subject facility to obtain emission allowances for SOx as well as monitoring for SOx, NOx, and CO_2 emissions. These rules adopt 40 CFR Part 72 by reference.

SETTING

AMBIENT AIR QUALITY STANDARDS

The U.S. EPA and the ARB have both established allowable maximum ambient concentrations of criteria air pollutants. Ambient air quality standards are designed to protect people who are most susceptible to respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and

people engaged in strenuous work or exercise. The ambient air quality standards are also set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The California Ambient Air Quality Standards, established by ARB, are typically lower (more stringent) than the federally established NAAQS. See **Air Quality Table 2.** The averaging time for the various ambient air quality standards (the duration of time the measurements are taken and averaged) ranges from one hour to one year. The standards are read as a concentration, in 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 (O_3)	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 (PM10)	Annual	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter (PM2.5)	Annual	12 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3 [b]	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Rolling 3-Month Average	1.5 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: ARB 2017a, U.S. EPA 2017b
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

METEOROLOGICAL CONDITIONS

MGS is located in the City of Vernon, in Los Angeles County, and is part of the South Coast Air Basin. MGS is located on approximately 3.4 acres in the western portion of Vernon, and the surrounding land is largely industrial use. Vernon is bordered on the north and west by Los Angeles, on the east by the cities of Commerce and Bell and on the south by the cities of Huntington Park and Maywood.

Large-scale wind flow patterns in the South Coast Air Basin (SCAB) are driven by the differences in temperature between the land and the ocean as well as the mountainous terrain surrounding the basin. The wind patterns near MGS site are predominantly from the west. The terrain surrounding MGS site location is mostly flat and gradually increases in elevation towards the north and northeast. The site elevation is approximately 190 feet above sea level and is approximately 15 miles north of the San Pedro and Long Beach harbors. There is no significant terrain between the ocean and the project site.

AMBIENT AIR QUALITY ATTAINMENT STATUS

For convenience, staff includes **Air Quality Table 3**, which summarizes the area's attainment status for current state and federal ambient air quality standards (AAQS) for the SCAB. The air quality standards are health-based standards established by the U.S. EPA and ARB, and are set at levels to protect the health of all members of the public including those most sensitive to adverse air quality impacts such as the elderly, people with existing illnesses, children, and infants.

Air Quality Table 3
SCAQMD Attainment Status

Pollutants	Attainment Status	
	Federal Classification	**State Classification**
Ozone (1-hr)	**Nonattainment[a]**	**Nonattainment**
Ozone (8-hr)	**Nonattainment[b]**	**Nonattainment**
CO	Attainment/Maintenance	Attainment
NO_2 (1-hr)	Unclassified/Attainment	Attainment
NO_2 (annual)	Attainment/Maintenance	Attainment
SO_2	Unclassified/Attainment	Attainment
PM10	Attainment/Maintenance[c]	**Nonattainment**
PM2.5	**Nonattainment**	**Nonattainment**
Lead	**Nonattainment/Partial[d]**	Attainment
Hydrogen Sulfide	No Federal Standard	Attainment
Sulfates	No Federal Standard	Attainment
Vinyl Chloride	No Federal Standard	Attainment
Visibility Reducing Particulates	No Federal Standard	Unclassified

Source: ARB 2019a

Note: Unclassified means the area is treated as if it is in attainment.

Note [a] 1-hour NAAQ ozone standard was revoked effective June 15, 2005. SCAB has not attained this standard and is still subject to anti-backsliding requirements.

[b.] 2015 8-hour NAAQ standard designation are still pending.

[c.] SCAQMD attainment re-designation and PM10 maintenance plan effective July 26, 2013.

[d.] Partial nonattainment is Los Angeles County portion of SCAB only for near-source monitors.

The SCAQMD is classified as nonattainment for the 24-hr and annual California Air Quality Standards (CAAQS) for PM10, the 24-hr and annual National Ambient Air quality Standards (NAAQS) and annual CAAQS standards for PM2.5, and both CAAQS and NAAQS for ozone. NOx, SOx, and VOC are considered precursors to non-attainment pollutants. NOx and VOC are precursors to ozone, and NOx and SOx are precursors to PM10 and PM2.5. SCAQMD considers precursor pollutants as nonattainment for the purposes of SCAQMD Regulation XIII NSR review. See PM2.5 Federal new Source Review analysis for ammonia discussion.

ANALYSIS

OPERATION SUMMARY AND EMISSIONS ANALYSIS

Bicent is proposing A+ Turbine Upgrades for both combustion turbines to increase generation capacity and operational efficiency. Operational efficiency would improve through increasing the turbine firing temperature and using redesigned compressor blades. The A+ Turbine Upgrade would raise each turbine's output from 44.2 to 48.4 MW, result in an approximate two percent decrease in fuel consumption per kilowatt-hour, and increase the turbine rating from 454.05 to 491.76 MMBtu/hr. The duct burner and steam turbine would remain unchanged at 81.20 MMBtu/hr and 55 MW respectively.

Staff approved the first phase of the A+ Turbine Upgrade during the Spring 2018 outage with the understanding Bicent would operate without the enhanced performance capabilities until the second phase was complete and the necessary conditions of certification were amended. The first phase of the A+ Turbine Upgrade was completed during the Spring 2018 outage to allow the facility to complete the work during the scheduled outage while staff processed the PTA in coordination with the modification to the SCAQMD issued permits.

The first phase of the A+ Turbine Upgrade activities included replacing the compressor blades with an upgraded design to increase airflow. First phase activities included coating and redesigning the turbine vanes with vent holes to accommodate the heat and airflow changes, and an optimized cooling air system. Construction related emissions for the first phase of the A+ Turbine Upgrade were minimal as there were no earthmoving activities, trenching, drilling, or structure erection. Bicent disassembled, upgraded, and re-assembled the turbines in the same manner as normal routine maintenance activities.

The proposed second phase includes installing and tuning the engineering software necessary to operate with enhanced performance capabilities. The A+ logic based software would require installation by Siemens engineers. The installation would require

the shutdown and re-programming of the gas turbine's primary fuel and emissions systems.

After the software is installed, a commissioning period would follow. This period would be less extensive than the original MGS commissioning period approved in the Decision. Bicent submitted a description of the commissioning activities to the SCAQMD in May 2018. Based on information provided by Siemens, total commissioning hours are estimated at 57 hours per turbine. The commissioning hours without emission controls are estimated at 32.5 hours per turbine. The duration of the commissioning period is expected to last eight calendar days. Bicent expects the proposed project would comply with the existing monthly emission limits in the license (Condition of Certification **AQ-5**) during the commissioning process.

The SCAQMD-issued permit to operate does not currently include limits to commissioning periods. The U.S. EPA currently accepts limited exceptions to steady state BACT requirements during periods when steady state BACT is unachievable. The SCAQMD is proposing to incorporate limitations in the SCAQMD-issued permit conditions to minimize emissions during the commissioning period following the A+ Turbine Upgrade.

The Energy Commission license currently includes initial commissioning conditions of certification and verifications. Condition of Certification **AQ-C10** includes annual emission limitations from the first year of the initial commissioning and operation, and hourly, daily, and annual emission limitations post-commissioning. Condition of Certification **AQ-36** requires the project owner to record the amount of natural gas combusted during the original commissioning. Condition of Certification **AQ-6** verification requires the project owner to report fuel use, emissions, and emission calculations during the original commissioning period on a monthly basis.

The air quality conditions of certification reference to commissioning periods in the license are not reflective of the limited commissioning that would be required after the A+ Turbine Upgrade. Staff recommends deleting the current commissioning requirements and incorporating the updated commissioning limitations designed to minimize emissions during the commissioning period following the A+ Turbine Upgrade.

Staff proposes to incorporate Condition of Certification **AQ-38**. Condition of Certification **AQ-38** would limit the commissioning period following the A+ Turbine Upgrade to 56.25 hours of fired operation and 32.5 hours of uncontrolled operation per turbine. Condition of Certification **AQ-38** includes clear language indicating the 32.5 hours is part of the 56.25 hours as opposed to additional firing hours. Condition of Certification **AQ-38** proposes to limit the commissioning to one turbine at a time, require the commissioning for both turbines to be completed prior to normal operation for either turbine, restrict testing of the emergency fire pump engine during commissioning, require the NOx and CO CEMS to be fully calibrated and operational during commissioning, require the use of the emission control equipment following commissioning, and maintain records to demonstrate compliance with these requirements.

Staff is proposing to incorporate additional emission factors in Condition of Certification **AQ-5** for the A+ Turbine Upgrade commissioning period. These emission factors would be used to determine compliance with the total monthly emission limits. Staff proposed language would clarify if a month contains both normal operation and commissioning; compliance with the monthly emission limits is determined by adding the normal emissions with the commissioning limits.

Staff is proposing to add language exempting the commissioning period from the steady state emission requirements in Condition of Certification **AQ-6**. The proposed addition of Condition of Certification **AQ-38** and changes to Condition of Certification **AQ-5** provide necessary limitations to accommodate exempting the commissioning period from steady state emission requirements. Staff recommends approving the changes together as a unit. These changes are consistent with the proposed changes to the SCAQMD-issued operating permit.

Based on data provided by Siemens, the petition originally proposed a potential increase in short-term (hourly) combined–cycle emissions of NOx, CO, VOCs, and SO_2 due to a potential increase in fuel use and higher firing temperature. The petition proposed a slight increase to potential annual NOx emissions. The petition originally proposed to retain the current monthly emission limits for the combined-cycle units in Condition of Certification **AQ-5**. The petition requested to retain these monthly limits although Table 1 and Table 2 in the petition to amend indicate a potential monthly emission decrease for CO and PM10 and increase for VOC and SOx.

Several data requests between SCAQMD and Bicent resulted in updated proposals used for the SCAQMD analysis. SCAQMD noted the fuel limit for the combined-cycle turbines would need to be increased due to the increased fuel requirements for the A+ Turbine Upgrade and an increase in the monthly operating profile used to determine the monthly maximum limits. The emissions analysis includes an increase in the monthly steady state operations, an increase to the monthly fuel limit (fuel limits are included in the GHG analysis), and an increase to the potential monthly SOx emissions. Staff is proposing changes to Condition of Certification **AQ-5** and Condition of Certification **AQ-27** to incorporate these changes discussed in more detail below.

The current monthly emission limits are based off the following scenarios:

- CO: Daily emissions from the second month of the MGS original commissioning,
- PM10: Maximum monthly emission for offset requirements,
- VOC: Daily emissions from the first month of the original commissioning, and
- SOx: Daily emissions from SCAQMD standard procedure for maximum monthly emissions. Scenario S13 was used.

The petition states the existing monthly combined-cycle emission limits provide an adequate safety margin for operation of the MGS after the A+ Turbine Upgrade. Bicent attributes the margin of safety for monthly emissions to the current potential monthly combined-cycle emission limits accounting for periods of operation when NOx, CO, and

VOC emissions are not fully controlled. In addition, the petition states the actual monthly emissions based on CEMS and source test data demonstrate historic emissions have been below the permitted potential to emit levels.

Bicent provided the expected upgraded hourly emission rates for 16 cases of turbine operation over various loads and temperatures established by Siemens. Maximum worst-case steady-state hourly emission factors are based on Case S13 (38 degrees Fahrenheit, 100% load with the duct burners on). The maximum hourly steady-state emission rates for Case S13 are included in **Air Quality Table 4**. The current steady-state emission rates from the original analysis are included for comparison. Staff notes the steady-state emission rates in **Air Quality Table 4** are listed on a per turbine basis and do not represent startup or shutdown events.

Air Quality Table 4
Post-Upgrade Maximum MGS Steady-State Emission Rates Comparison

Per Turbine	Maximum Hourly Steady-State Emission Rates					
	NOx	CO	VOC [a]	Sox	PM10/2.5	NH_3
Post Catalyst/BACT Concentration (ppmvd)	2.0	2.0	1.2/2.0	N/A	N/A	5.0
Current Emission Rates (lb/hr)	4.081	2.48	0.85	0.15	3.89	3.80
Upgraded Siemens Emission Rates (lb/hr)	4.158	2.529	0.869	0.160	2.407 [b]	3.841
Proposed Emission Rates (lb/hour)	4.158	2.529	0.869	0.160	3.386 [b]	3.841

Source: Malburg 2017, SCAQMD 2019, and staff analysis

Note:[a] MGS VOC BACT limit is 2.0 ppmvd. Current SCAQMD permitting practice is to adjust the emission rate. However, the SCAQMD final determination of compliance (FDOC) accepted the emission rates based on 1.2 ppmvd. This does not impact the 30-day average. SCAQMD will retain the emission rate from 1.2 ppmvd without adjusting upwards. BACT will remain 2.0 ppmvd.

[b] See text below for discussion of these values.

The Siemens supplied upgraded PM10 emission rate in **Air Quality Table 4** is 2.407 pounds per hour. The current steady-state emission rate of 3.89 pounds per hour was determined during the licensing period. The SCAQMD noted the FDOC indicated the 3.89 pounds per PM10 emission rate is based on Case S13 operating parameters and on U.S. EPA's AP-42: Compilation of Air Emission Factors (AP-42). SCAQMD reviewed the current AP-42 edition and determined the current emission factor for PM10 is 3.53 pounds per hour. SCAQMD requested a basis and a guarantee of the PM10 emission rate provided from Siemens. Bicent worked with Siemens to provide a basis and provided background on the original emission rate.

In addition, Bicent responded the original emission factor was conservatively based on AP-42 data and was originally adjusted to reflect the conversion of SOx to secondary particulate matter. Bicent stated the MGS source test results supported the request to lower the PM 10 emission rate. Subsequently, Bicent proposed a compromise of 3.386

pounds per hour for the maximum hourly PM10 emission rate. Bicent provided additional source test data from other facilities with the same turbine model. Specific source test data is generally preferred over AP-42 emission factors. In addition, Siemens provided additional information on the basis of the PM10 emission rate. SCAQMD accepted the proposed steady-state PM10 emission rate of 3.386 pounds per hour. Therefore, staff is proposing the use of the steady-state PM10 emission rate of 3.386 pounds per hour.

To verify the lower PM10 emission rate, SCAQMD is proposing to reset the timing of the triennial source testing requirement for PM10, VOC, and SOx. SCAQMD is proposing to require the PM10, VOC, and SOx source test within 180 days after startup of the A+ Turbine Upgrade. In addition, SCAQMD is planning to reset the annual NH_3 testing requirement for 180 days after the A+ Turbine Upgrade. Staff is proposing to include these testing requirements in Conditions of Certification **AQ-23** and **AQ-24**.

Steady state emission rates do not apply during non-steady-state operations such as turbine startup and shutdown. Additional emission rates are used during these events to calculate potential emissions. The MGS turbine startup events are classified as cold and non-cold. Bicent is not proposing changes to the startup and shutdown emission rates. **Air Quality Table 5** summarizes the current cold startup, non-cold startup and shutdown emission rates. The emission rates in **Air Quality Table 5** reflect the previously approved startup and shutdown emission limits. The cold startup and non-cold startup emission factors for NOx, CO, and VOC are included in Condition of Certification **AQ-6**.

Air Quality Table 5
MGS CTG Startup and Shutdown Emission Rates

	Startup and Shutdown Emission Rates (lb/event)				
	NOx	**CO**	**VOC**	**SOx**	**PM10/2.5**
Cold Startup	122.8	204.8	1.75	0.2	3.62
Non-Cold Startup	51.3	59.9	1.55	0.16	2.72
Shutdown	4.5	10.8	0.71	0.03	0.92

Source: Source: Malburg 2017, SCAQMD 2019, CEC 2013, CEC 2008, and staff analysis

Air Quality Table 5 includes the emission rates for startup and shutdown events per turbine. The proposed number of events and event durations are included in **Air Quality Table 6**. An operating profile is used in combination with the proposed maximum steady state, cold startup, non-cold startup, and shutdown emission rates to determine the expected maximum daily, monthly, and annual emissions for the turbines after the A+ Turbine Upgrade. Condition of Certification **AQ-6** includes limitations on the duration of startup and shutdown periods as well as limitations on the number of events. Bicent is not proposing any changes to the duration or permitted number of startup and shutdown events. The SCAQMD reviewed change to the monthly steady-state operating hours is incorporated.

Air Quality Table 6
Combined-Cycle Operating Profile

Operating Parameters	Events	Duration (hours)
Daily		
Cold Startup	1	2
Non-Cold Startup	1	1.5
Shutdown	1	0.5
Steady-State	--	20
Total Daily	--	24
Monthly		
Cold Startup	5	10
Non-Cold Startup	5	7.5
Shutdown	10	5
Steady-State	--	697.5
Total Monthly	--	720
Annual		
Cold Startup	30	60
Non-Cold Startup	26	39
Shutdown	56	28
Steady-State	--	8,633
Total Annually		8,760

Source: Malburg 2017, SCAQMD 2019, and staff analysis.

Condition of Certification **AQ-6** limits each turbine to two startup events per day. By definition, a turbine cannot undergo two cold startups in 24 hours. Therefore, one cold startup and one non-cold startup is assumed for the startup contribution to the maximum potential daily emission calculations.

Potential daily emissions are calculated by determining the worst case daily operating scenario. The worst-case potential daily emissions for NOx, CO, and VOC are based on potential startup and shutdown events. The worst case potential emissions for SOx and PM10/PM2.5 are based on continuous steady-state operation. Staff calculated potential daily emissions are included in **Air Quality Table 9**.The SCAQMD calculates 30-day emission averages for offset determinations. The SCAQMD 30-day averages are calculated differently than potential daily emissions. Detail on the 30-day calculations are included in the California Environmental Quality Act (CEQA) Mitigation section. Staff calculated potential daily emissions are included in **Air Quality Table 9**.

Potential monthly emissions are calculated by determining the worst case and reasonable monthly operating scenarios. Monthly emission limits for CO, PM10, VOC, and SOx are included in Condition of Certification **AQ-5**. **Air Quality Table 7** summarizes the current and proposed NOx, CO, PM10, VOC, and SOx monthly emission limitation for both gas fired turbines. Staff notes the current license includes explicit monthly emission limits for CO, PM10, VOC, and SOx. Monthly emissions for

NOx are limited by steady state concentration limits, non-steady state emission limits and operation constraints. The current NOx limit is calculated based on the pre-upgrade steady-state emission rate.

Air Quality Table 7
Current Monthly, Upgraded, and Proposed Emission Limits

Both Turbines	NOx[a]	CO	VOC	SOx[b]	PM10
Current Monthly (lbs/month)	7,522	7,633	3,236	214	4,876
Upgraded Monthly (lbs/month)	7,631	6,391	1,259	227	4,876
Proposed Monthly (lbs/month)	7,631	7,633	3,236	227	4,876

Source: Source: SCAQMD 2019, and staff analysis

Note: [a] Included for informational purposes.

Note: [b] The current monthly SOx limit was based on the potential monthly startup and shutdown operating profile. For consistency, the upgraded monthly emission limit is calculated the same way. Typically the SOx emission limits are based on sulfur content of fuel. Based on the conservative nature of the calculation no additional operation constraints are proposed.

The calculated monthly limits after the A+ Turbine Upgrade are below the current Condition of Certification **AQ-5** emission limits for CO and VOC. The monthly PM10 emission limit does not change. The calculated monthly SOx limit is higher than the current monthly limit in Condition of Certification **AQ-5**. Bicent is proposing to maintain monthly limits for CO, VOC, and PM10 and increase the monthly emission limit for SOx. The CO, VOC, and PM10 were mitigated based on potential monthly emission limits. The mitigation details are included in the California Environmental Quality Act (CEQA) Mitigation section.

Staff calculated the annual emissions based on the potential annual profile including startups and shutdown scenarios. Staff compared these values with the annual emissions extrapolated from the monthly emission limitations in Condition of Certification **AQ-5**. **Air Quality Table 8** summarizes the annual emissions calculated from the annual operating scenario, annual emissions extrapolated, and the proposed annual emissions.

Air Quality Table 8
Calculated Annual and Proposed Emission Limits

Both Turbines (tons/year)	NOx	CO	VOC	SOx [a]	PM10/2.5	NH_3
Annual Operating Scenario [b]	41.17	30.14	7.63	1.39	29.66	33.16
Extrapolated (Monthly Limits)	NA	45.80	19.42	1.36	29.26	NA
Proposed Annual	41.17	45.80	19.42	1.36	29.66	33.16

Source: Source: SCAQMD 2019, and staff analysis

Note: [a] The SCAQMD calculations propose 1.36 tons per year of SOx. The SCAQMD calculation is based on extrapolating annual emissions from the monthly limitation. The difference does not impact any other calculation or conclusion in the analysis.

[b] Includes turbine startup and shutdown emissions and 8,633 hours of duct burners

The differences in the CO and VOC emissions are based on the request to maintain the monthly emission limits. The differences in the PM10/2.5 and SOx are based on rounding in the two calculation methodologies. The monthly emission restriction will limit the annual potential emissions for PM10/2.5 and SOx.

The overall design of the three cell cooling tower would not need to be changed to accommodate the Siemens, the A+ Turbine Upgrade. However, the cooling tower operation would need to be adjusted resulting in a slight increase to the potential PM10 emissions. Bicent is proposing to run the cooling tower circulating pumps at a slightly higher capacity in order to increase heat rejection from the modified turbine trains.

Condition of Certification **AQ-C7** includes a daily PM10 emission limit from the cooling tower. Condition of Certification **AQ-C10** includes the same daily cooling tower PM10 emission limit, as well as hourly and annual cooling tower PM10 emission limits. The emission limits are consistent and assume the cooling tower operates at full load for 24 hours per day.

Bicent originally proposed to increase the daily cooling tower PM10 emission limit in Condition of Certification **AQ-C7** from 6.2 pounds per day to 7.3 pounds per day. This increase is derived from increases in both the water circulation rate (25,000 gallons per minute to 26,952.4 gallons per minute) and the total dissolved solids (TDS) concentration (4,000 milligrams per liter to 4,500 milligrams per liter). The water analysis used to determine the proposed TDS concentration indicated the total TDS concentration should be based on 1,020 milligrams per day per cycle instead of the 1,125 milligrams per day per cycle used to determine the proposed increase (the calculations assume four cycles). Using 1,020 milligrams per liter per cycle and the 26,952.4 gallon per minute water circulation, the potential PM10 emission rate from the cooling tower would be 0.27 pounds per hour, 6.6 pounds per day, and 1.2 tons per year. Staff is proposing to use the corrected TDS of 1,020 milligrams per liter (4,080 total) to calculate the potential PM10 emissions from the cooling tower. Emissions from the cooling tower are included in **Air Quality Table 9**.

In addition to the modifications required for the A+ Turbine Upgrade, Bicent is proposing to modify a restriction on the readiness testing of the emergency fire pump. Condition of Certification **AQ-C8** restricts testing the emergency diesel fired fire pump on days the combustion turbines undergo startup or shutdown periods. This restriction was added during licensing and is not included in the SCAQMD issued MGS permits. The Final Commission Decision stated information on the fire pump was not available for inclusion in the modeling performed to assess potential impacts from MGS. The original Staff Assessment included two impact tables. One table included the combustion turbines and cooling towers referenced in the Final Commission Decision and an additional table included hourly and annual emissions from the combustion turbines, cooling tower, and emergency engine. The analysis notes the original modeling performed for the Final Commission Decision included the engines, but did not include non-steady state turbine operation. Therefore, the restriction was added to minimize emissions and potential impacts. Bicent performed modeling to support the A+ Turbine Upgrade analysis and

included concurrent engine and turbine operation scenarios. Details and conclusions are included in the Impacts Analysis section.

Condition of Certification **AQ-C10** includes projected emissions from the emergency fire pump operation, assuming the testing of the emergency fire pump to last ½ hour. The analysis stated the SCAQMD restricts the annual operation of the engine to 199.99 hours. The analysis stated staff modeled the annual emissions according to the SCAQMD restrictions. However, Condition of Certification **AQ-C10** includes 199 hours of operation in the assumptions and Condition of Certification **AQ-16** limits the fire pump operation to 199 hours per year. It is not clear if 199 or 199.99 hours of operation was assumed. The SCAQMD analysis stated the SCAQMD rules and regulations original operating limit for emergency engines was 199 hours per year but it has subsequently been increased to 200 hours per year.

Staff is proposing to calculate the potential emissions from the emergency fire pump assuming 1-hour for testing and 200 hours of operation per year consistent with both Bicent and SCAQMD current emission and modeling analyses. In addition, the original Staff Analysis stated the engine was 266 BHP and did not identify the emission factors used to assess emissions. The SCAQMD operating permits and analysis identify the engine by model and include the appropriate emissions factors. Staff is proposing to reassess the engine emissions based on the updated engine information and operating assumptions. Staff is proposing to update the restrictions in Condition of Certification **AQ-16** to current requirements. The emissions from the fire pump are included in **Air Quality Table 9**. Greenhouse gas emissions and fuel use from the emergency fire pump is included in the Greenhouse Gas section.

Air Quality Table 9 summarizes the MGS potential emissions after the proposed A+ Turbine Upgrade.

Air Quality Table 9
MGS Post Upgrade Potential Emissions

	NOx	CO	VOC	SOx	PM10/2.5	NH_3
Both Turbines and Duct Burners						
Hourly[a] (lbs/hour)	122.8	204.8	1.74	0.32	6.77	7.68
Daily[a] (lbs/day)	524	652	43	8	163	154
Monthly[b] (lbs/month)	7,631	7,633	3,236	227	4,876	5,358
Annual (lbs/year)	82,332	91,596	38,832	2,729	58,512	66,319
Annual (tons/year)	41.17	45.80	19.42	1.36	29.26	33.16
Fire Pump						
Hourly (lbs/hour)	1.49	0.15	0.04	0.0019	0.03	----
Daily (lbs/day)	1.49	0.15	0.04	0.0019	0.03	----
Annual (lbs/year)	297.49	30.51	7.63	0.3594	6.87	----
Annual (tons/year)	0.15	0.02	0.004	0.0002	0.003	---
Cooling Tower						
Hourly (lbs/hour)	----	----	----	----	0.275	----
Daily (lbs/day)	----	----	----	----	6.598	----
Annual (lbs/year)	----	----	----	----	2,408	----
Annual (tons/year)	----	----	----	----	1.20	----
Covered Equipment Total						
Total (tons/year)	**41.32**	**45.82**	**19.42**	**1.36**	**30.46**	**33.16**

Source: Malburg 2017 (revised), SCAQMD 2018, staff analysis

Notes: [a] Startup and shutdown emissions included in the maximum hour

[b] Monthly emissions include 720 total hours, including 5 cold starts, 5 non-cold starts, 10 shutdowns and 697.5 hours full load duct burning

Condition of Certification **AQ-C10** includes emission limits for the combustion turbines on an hourly, daily, and annual basis. Condition of Certification **AQ-C10** lists the assumptions used to determine the emission limits. Staff notes the assumptions listed do not match the emission limits in the condition for all pollutants. For example, the daily PM10 emission limit included in the decision was based on averaged monthly scenarios. These were expected to reasonably represent daily emission limits. The assumptions in Condition of Certification **AQ-C10** from the decision stated the daily PM10 emission limit was based off of 1 warm startup per month, 8 hours per day of full load operation with duct firing, 16 hours per day of full load without duct firing, and 0.5 hour of shutdown per month averaged over 29 days per month. Condition of Certification **AQ-C10** was amended in 2008. The only daily emission limits modified were NOx and CO; the assumption was changed to indicate the daily emission limits were based on 1 cold startup per day and 22 hours of full load operation with duct firing. This assumption is linked to all pollutants not just NOx and CO. The NOx and CO annual emissions were also modified in 2008 and the assumptions were amended in the same manner. Condition of Certification **AQ-C10** does not restrict operation according to the assumptions and is not included in the SCAQMD issued operating permit.

The NOx and CO emission limits included in Condition of Certification **AQ-C10** were amended in the Energy Commission's 2008 Amended Decision to reflect the actual, rather than potential, operational startup characteristics of the facility's combustion turbines. The emission limits in the Final Commission Decision were based of emission estimates provided by the turbine vendor and negotiated operating schedules. The analysis stated the amended limits were based off CEMS data and assumptions used for the same model turbine at the Roseville Energy Center. In 2008, the emission limits were calculated differently for NOx and CO than the other pollutants listed in Condition of Certification **AQ-C10**. In the Final Commission Decision, the hourly emission limits were intended to be maximum limits however, the daily emission limits were calculated as average daily limits. The 2008 revised daily emission limits for NOx and CO represent maximum actual limits.

According to the original analysis, Condition of Certification **AQ-C10** was included to ensure the facility operated under original mitigated levels. However, Condition of Certification **AQ-C10** includes emission limits that are more restrictive than the mitigated emissions. The original SCAQMD mitigation analysis included potential emission limits from commissioning. Condition of Certification **AQ-C10** includes separate tables for commissioning emissions and post commissioning emission limits.

Air Quality Table 10 compares the post A+ Turbine Upgrade potential emissions with the current emission limits. Staff notes the change in the operation emission rates from the A+ Turbine Upgrade impacts the steady state emissions rates. **Air Quality Table 10** includes the proposed facility totals. Staff notes the proposed emission limits do not represent the potential to emit from the equipment for all pollutants. In some cases, the applicant wished to retain the current emission limit even if it is higher than the expected emissions after the A+ Turbine Upgrade. **Air Quality Table 10** also includes the proposed changes to the SCAQMD-issued permits.

Air Quality Table 10
MGS Post Upgrade Proposed Emissions Comparison

Malburg	NOx	CO	VOC	SOx	PM10/2.5	NH_3
Siemens Case S13 Steady State Hourly Emission Rate (per turbine)						
Original	4.08	2.48	0.85	0.15	3.89	
Proposed	4.158	2.529	0.869	0.16	2.407	
Limited AQ-C10 Hourly Emissions –Both Turbines (lbs/hour)						
Turbines	55	140	3.3	0.3	7.78	7.60
Fire Pump	1.73	0.59	0.05	0.002	0.08	----
Cooling Tower	----	----	----	----	0.26	----
Total	**55**	**140**	**3.3**	**0.3**	**8.12**	**7.60**
Proposed Hourly Emissions –Both Turbines (lbs/hour)						
Turbines	122.8	204.8	1.75	0.32	6.77	7.68
Fire Pump	1.49	0.15	0.04	0.0019	0.03	----
Cooling Tower	----	----	----	----	0.275	----
Total	**73.33**	**83.33**	**6.08**	**1.7**	**16.22**	**7.68**
Limited AQ-C10 Daily Emissions –Both Turbines (lbs/day)						
Turbines	230	245	36	6	158	182.40
Fire Pump	1.73	0.59	0.05	0.002	0.08	----
Cooling Tower	----	----	----	----	6.2	----
Total	**230**	**245**	**36**	**6**	**158**	**182.40**
Proposed Daily Emissions –Both Turbines (lbs/day)						
Turbines	524	652	43	8	163	153.64
Fire Pump	1.49	0.15	0.04	0.0019	0.03	----
Cooling Tower	----	----	----	----	6.598	----
Total	**55**	**140**	**3.3**	**0.3**	**8.12**	**153.64**
Limited AQ-C10 Annual Emissions –Both Turbines (lbs/year)						
Turbines	53,044	37,768	13,027	2,122	56,676	66,576
Fire Pump	689	235	20	1	32	----
Cooling Tower	----	----	----	----	2,278	----
Total	**53,733**	**38,003**	**13,047**	**2,123**	**58,986**	**66,576**
Proposed Annual Emissions –Both Turbines (lbs/year)						
Turbines	82,332	91,596	38,832	2,729	58,512	66,319
Fire Pump	297.49	30.51	7.63	0.3594	6.87	----
Cooling Tower	----	----	----	----	2,408	----
Total	82,629	91,627	38,840	2,729	60,927	66,319
Annual Emission Comparison (tons/year)						
Limited AQ-C10	26.87	19	6.52	1.06	29.49	3.29[a]
SCAQMD Current	40.65	45.82	19.42	1.28	29.26	33.20
SCAQMD Proposed	41.31	45.82	19.42	1.36	29.26	33.20
Proposed Project	41.32	45.82	19.42	1.36	30.46[c]	33.16

Source: Malburg 2017 (revised), SCAQMD 2018, staff analysis

Notes: [a] Included in the Decision. Staff believes this is a typo. 66,576 pounds of NH_3 is equivalent to 33.29 tons.

[b] The SCAQMD calculations propose 1.36 tons per year of SOx. The SCAQMD calculation is based on a different methodology and rounding assumptions. The differences do not impact any other calculation or conclusion in the analysis.

[c] The SCAQMD total excludes emissions from the cooling tower since it is not permitted by the SCAQMD. The SCAQMD registers the equipment. The SCAQMD calculation of PM10 from the cooling tower matches the Energy Commission calculations.

BACT/LAER ANALYSIS

A facility is considered a major polluting facility if the potentials to emit exceeds set thresholds. The SMAQMD major source determination is summarized in **Air Quality Table 11**.

Air Quality Table 11
SMAQMD Major Polluting Facility Determination

	Major Polluting Facility Determination (tons/year)				
	NOx	**CO**	**VOC**	**SO_2**	**PM10**
MGS Potential to Emit	40.65	45.82	19.42	1.28	29.26
Rule 1302 Thresholds	10	50	10	70	70
Exceed Thresholds?	Yes	No	Yes	No	No
Determination	Yes	Yes	Yes	Yes	Yes

Source: SCAQMD 2019 and staff analysis

If a facility is considered a major polluting facility for any one criteria pollutant, it is considered a major polluting facility for all criteria pollutants. Per SCAQMD Rule 1303(a)(1), BACT/LAER is required for nonattainment pollutants and precursors. SCAQMD determined BACT/LAER is required for NOx, PM10/PM2.5, SO_2, VOC, and NH_3 per Rule 1303. Per Rule 2005, BACT/LAER is required for NOx. Per Rule 1701(b) a BACT/LAER determination is required for CO. **Air Quality Table 12** compares MGS permitted BACT/LAER limits and current SCAQMD BACT/LAER limits recently determined for combined-cycles.

Air Quality Table 12
Combined Cycle BACT Requirements

	BACT/LAER (15% O_2)				
	NOx	**CO**	**VOC**	**PM10/SOx**	**NH_3**
Current BACT/LAER	2.0 ppmvd	1.5 ppmvd	2.0 ppmvd	PUC quality[a]	5.0 ppmvd
	1-hr average	1-hr average	1-hr average	------	1-hr average
MGS Permitted Limits	2.0 ppmvd	2.0 ppmvd	2.0 ppmvd	PUC quality[a]	5.0 ppmvd
	1-hr average	3-hr average	1-hr average	-------	1-hr average

Source: SCAQMD 2019 and staff analysis

Note: [a] PUC quality natural gas with a sulfur content less than or equal to 1 grain per 100 standard cubic feet.

Per **Air Quality Table 12**, MGS permit limits meet the current SCAQMD BACT/LAER requirements with the exception of CO. However, SCAQMD policy requires BACT only for emission increases greater than or equal to 1.0 pounds per day. SCAQMD

determined the CO increase would result in a daily emission increase of 0.98 pounds per hour. Therefore, a CO BACT limit decrease from 2 ppm to 1.5 ppm is not required for this proposed action. SCAQMD stated the 2010 startup and shutdown revisions processed by SCAQMD resulted in a 242.53 pounds per day increase for CO. Based on the previous increase, SCAQMD will be decreasing the averaging time imposed from 3-hour to 1-hour. The SCAQMD is including this adjustment into the SCAQMD issued operating permit. Staff is proposing the same adjustment in Condition of Certification **AQ-10**.

PM2.5 FEDERAL NEW SOURCE REVIEW PROGRAM

The SCAQMD adopted Rule 1325 to incorporate U. S. EPA requirements for PM2.5 into SCAQMD rules and regulations. Rule 1325 established offset ratios, LAER compliance and control of PM2.5 precursors. Rule 1325 was amended on January 4, 2019 to expand the definition of 'precursors' to include VOC and NH_3 to the existing list of PM2.5.

Rule 1325 does not apply to NOx, SO_2, VOC, NH_3, and PM2.5 emissions from MGS because MGS would not be considered a new major polluting facility, the A+ Turbine Upgrade modification is not considered a major modification to a major polluting facility, and the A+ Turbine Upgrade does not constitute a major polluting facility in and of itself.

IMPACTS ANALYSIS

Ambient air quality impacts occur when project emissions cause the ambient concentrations of a pollutant to increase. Emissions associated with the MGS are the actual mass of emitted pollutants dispersed in the atmosphere before reaching the ground. Impacts refer to the concentration of pollutants at ground level. An impact analysis includes quantifying the emissions released from the equipment during operation and the use of an atmospheric dispersion model to determine the probable impact at ground level.

Air dispersion models provide a means of predicting the location and ground level magnitude of the impacts of a new emissions source. These models consist of several complex series of mathematical equations, which are repeatedly calculated by a computer for many ambient conditions to provide theoretical maximum offsite pollutant concentrations for short-term (one-hour, three-hour, eight-hour, and 24-hour) and annual periods. The model results are generally described as maximum concentrations, often described as a unit of mass per volume of air, such as micrograms per cubic meter ($\mu g/m^3$).

The project owner conducted air dispersion modeling using American Meteorological Society/Environmental Protection Agency Regulatory Model known as AERMOD to analyze potential ambient air quality impacts associated with the operation of MGS. The U.S. EPA designates AERMOD as a "preferred" model for refined modeling in all types of terrain. AERMOD considers emissions in the context of various ambient meteorological conditions, local terrain and nearby structures that could affect air flow.

Bicent used AERMOD version 16216r to perform the modeling and followed the SCAQMD Modeling Guidance for AERMOD. The original analysis includes the following:

- Use of AERMOD meteorological data for the nearest representative site found on the SCAQMD website;
- Default model option using the u-star adjustment (low wind speed adjustment) and URBAN options using Los Angeles County population of 9,862,049 for all sources; and
- Receptor grids referenced in NAD83 coordinates, with locations and spacing meeting SCAQMD requirements, and elevations and hill slope factors computed by AERMAP from National Elevation Database files.

The SCAQMD reviewed the modeling and requested revisions based on NSR and Energy Commission CEQA requirements. On May 1, 2018, the SCAQMD requested changes to the worst case modeling scenario and emission rates used for the dispersion modeling, clarification on the modeling performed and a complete health risk assessment (HRA). On May 17, 2018, Bicent provided responses and made revisions to both the modeling and HRA analysis. On September 26, 2018, the SCAQMD requested clarification on the commissioning and fumigation analyses. On October 20, 2018 Bicent provided responses and revised modeling for the commissioning of the A+ Turbine Upgrade. On January 9, 2019 SCAQMD requested clarification on the commissioning analysis. On January 23, 2019, Bicent provided clarification and confirmation the commissioning modeling provided in October 2018 was correct.

On February 4, 2019 Bicent submitted a separate petition with the Energy Commission to delineate the site boundary. The current boundary includes a section of property owned by the City of Vernon. This section includes a natural gas pipeline and landscaping. Bicent does not have control over this southern portion of the property. The proposed property boundary is smaller than the current property. The modeling performed for the A+ Turbine Upgrade used the current boundary in the modeling analysis. Staff notified the petitioner that the Energy Commission would need more information regarding the choice in boundary used for the A+ Turbine Upgrade modeling. Bicent informed the Energy Commission they planned to add additional receptors in the portion of property proposed to be removed from the current site boundary. In addition, Bicent stated they were working with the SCAQMD to address the boundary change. Staff notes the property delineation amendment is still pending.

On February 27, 2019 the SCAQMD held a conference call with Bicent staff to discuss the SCAQMD preliminary review of Bicent's modeling analysis. The SCAQMD summarized SCAQMD modeling recommendations as follows:

- SCAQMD recommends Bicent re-submit the modeling due to the pending fence line change; and
- SCAQMD indicated five years of meteorological data should be used from the most representative meteorological station to model impacts.

Bicent revised the modeling files to include additional receptors due to the pending change in the fence line. In addition, Bicent contacted the U.S. EPA to request confirmation that the three years of meteorological data set used from the selected station was sufficient. Additional background regarding the meteorological data selection follows.

The SCAQMD provides meteorological data sets developed using site specific surface characteristics and modified as appropriate for urban conditions. Considerations for choosing a representative meteorological station incudes meteorological conditions for the site such as prevailing winds, mixing height, surrounding land use and surface characteristics, and proximity. The closest meteorological site is the Central LA or Los Angeles-North Main Street site, located 7.3 kilometers north from the project site in downtown Los Angeles. However, the surrounding terrain and land use of the Central LA site was not considered by Bicent to be the most representative of the project site. This was demonstrated by comparing the wind roses from the monitoring site and the project site on a terrain map.

The Lynwood and Compton sites are identified as the next closest meteorological monitoring stations at 8.0 and 10.9 kilometers to the south of the MGS site respectively. Bicent considers the wind roses for both these stations more representative of the project site than the Central LA site. AERSURFACE was used to compare the surface characteristics between the Compton and Lynwood sites and the MGS project site. The surface roughness, combined low and high intensity, and commercial-industrial-transportation categories of the Compton meteorological site are closer to the MGS project site. Bicent determined that the Compton meteorological data would be the most representative of the MGS site. The Compton station did not have five years of data that meet the quality assurance procedures on the SCAQMD website. Therefore, 3-years of processed meteorological data (2012, 2015 and 2016) from the Compton station was provided by SCAQMD for the analysis.

The U.S. EPA could not comment on the validity of using the three years of meteorological data from the Compton station until after their review of the complete modeling analysis. Bicent maintains the 3-year meteorological data set selected is technically the most representative, satisfies the use of site-specific data and the 3-year record length satisfies the calculation methodology of the 1-hour probabilistic form of the federal NO_2 standard.

On March 22, 2019 the SCAQMD provided comments on the Bicent analysis. The SCAQMD commented the meteorological data was inadequate, the station selected was not the most representative, the background air monitoring data was incorrect and outdated, and the near field receptors had incorrect elevations. Due to time restraints SCAQMD remodeled the air quality analysis and HRA for the A+ Turbine Upgrade using a 5-year meteorological data set from the Central LA monitor. In addition, the SCAQMD modeling includes updated 2017 background data, additional receptors due to the fence line change, adjusted heights for near field receptors, adjusted screening and scenario selection, and impacts from individual equipment.

Varying operating conditions such as temperature and source load were examined to identify which operating condition would cause worst-case ambient air impacts. The inputs for the air dispersion models include stack information (exhaust flow rate, temperature, and stack dimensions), specific emission data and meteorological data, such as wind speed and atmospheric conditions, and site elevation. A screening model was used to determine which operating scenario would result in the highest modeled concentrations for all averaging periods. Bicent determined the worst-case operating scenario is Case S14 (59 degrees Fahrenheit, 100% load with the duct burners on) for all short-term impacts. Bicent used Case S15 (65 degrees Fahrenheit, 100% load with the duct burners on) for annual impacts and Case S1 (38 degrees Fahrenheit, 60% load with the duct burners off) for startup modeling. SCAQMD determined Case S14 produces the worst impacts for all pollutants and all averaging times.

Bicent performed a refined modeling analysis and compared the results to the Significant Impact Levels (SILS) and AAQS. Bicent performed a normal operation analysis and a startup and shutdown analysis. Bicent also analyzed commissioning and fumigation impacts. The fire pump and the cooling tower emissions were evaluated in the refined analyses. SCAQMD remodeled the normal, startup and commissioning operations. The SCAQMD found the fumigation modeling acceptable.

Bicent's normal operation analysis includes the two combined-cycle turbines, the emergency fire pump engine, and the cooling tower. The normal operation modeling does not include startup and shutdown periods in the short-term averaging periods. Startup and shutdown emissions are included for the annual averaging periods. SCAQMD requested the PM10 emissions rate for the 24-hour averaging period be revised. The PM10 emission rate was originally based on the monthly emission limit in Condition of Certification **AQ-5**. However, the monthly emission limits were based on the mitigation for PM10 and not the maximum hourly rate. Bicent revised the modeling to reflect the revised hourly PM10 emission rate of 3.386 pounds per hour.

In addition, SCAQMD noted the emergency fire pump engine operation in the air dispersion modeling was based on 52 hours of operation and the HRA was based on 199 hours of operation. SCAQMD consulted with Energy Commission staff. Energy Commission staff noted the original MGS modeling and HRA were based on 199 hours of operation for the emergency fire pump. Bicent stated they would revise the modeling to reflect 199 hours of operation. SCAMQD noted per their updated rules the SCAQMD permits now reflect a 200 hour limit for emergency fire pump operation. Bicent revised the modeling to include 200 hours of emergency fire pump operation.

The three-cell cooling tower was modeled as three separate point sources. The modeling was based on the original proposal PM10 emission limit 7.3 pounds per day. It is noted the current proposed PM10 emission rate is 6.6 pounds per day. Cooling tower modeling revisions were not requested since the revised limit is less than the limit included in the modeling.

Bicent's startup and shutdown analysis was used to determine worst case potential short-term emissions. The analysis included only NOx and CO because these are the

pollutants impacted by the startup and shutdown periods. PM10/2.5 and SO_2 emissions are not expected to be any greater during startup and shutdown operations than normal operations. Worst case emissions for PM10/2.5 and SO_2 are evaluated under the normal load scenario. The emergency fire pump engine is included in the 8-hour averaging period and is not included in 1-hour averaging period. This supports Bicent's proposal to allow the fire pump to be tested on the same day a turbine startup or shutdown event but not during the same hour.

The first 1-hour averaging scenario included one turbine undergoing the first hour of a cold start. A cold start is limited by emissions and a 2-hour duration. The Bicent assumed CO and NOx emission rate for the first hour was half of the total emission allotted for a cold start. The SCAQMD commented that the estimated emission rate for the first hour of cold startups should be higher for the first hour instead of averaged over the allowed duration. Bicent revised the cold startup modeling to increase the modeled hourly emission rates for NOx and CO over the cold start scenario. In addition, SCAQMD requested the short term modeling include a second turbine operating simultaneously. MGS is designed so only one turbine can operate in the first hour of a cold start mode at a time. However, Bicent revised the modeling to include a second turbine in the second hour of a cold start for NOx and the second turbine in baseload operation for CO.

The second 1-hour averaging scenario is based on two turbines undergoing a non-cold start. Bicent conservatively used the entire non-cold emissions for NOx and CO in the 1-hour averaging.

The Malburg 2017 impact analysis compared potential impacts with state and federal ambient air quality standards (AAQS) and applicable SCAQMD significance criteria. SCAQMD requires projects in nonattainment areas to demonstrate through modeling the project would not cause exceedances of the significant change thresholds specified in Rule 1303. For projects located in attainment areas, SCAQMD requires a demonstration that the project emissions plus background concentrations would not potentially cause a violation to any AAQS.

Background or baseline concentrations are determined from the measured values at the surrounding representative air monitoring sties. The closest monitoring site is the Central LA station. Bicent reported the Central LA monitoring site is surrounded by larger buildings, a higher concentration of businesses, and a denser population than the Malburg site. The Compton monitoring site is the next nearest monitoring site. The surrounding land use at the Compton monitoring site is comparable to the surrounding land use at the Malburg site. Bicent selected 2014 -2106 data from the Compton monitoring site to establish the baseline pollutant concentrations for the pollutants measured at that location. For pollutants not measured at the Compton monitoring site, data from the Central LA monitoring site was proposed. At the time Bicent filed the petition to amend, 2017 data was not available.

SCAQMD concluded the Central LA site was the most representative. SCAQMD analyzed background data from 2015-2017. **Air Quality Table 13** contains background

concentrations from the Compton and Central LA East monitoring stations from 2014 to 2017.

Air Quality Table 13
Criteria Pollutants Concentrations, 2014-2016 (ppm or µg/m^3)

Pollutant	Averaging Time	Station	2014	2015	2016	2017
NO_2 (ppm)	1-hour (Max)	Compton	0.0682	0.0736	0.0637	0.0991
		Central LA	0.0821	0.0791	0.064	0.0806
NO_2 (ppm)	1-hour (98th)	Compton	0.0592	0.0587	0.0584	0.0668
		Central LA	0.0674	0.0624	0.0610	0.0617
NO_2 (ppm)	Annual	Compton	0.0156	0.0169	0.0156	0.0161
		Central LA	0.0222	0.0222	0.0208	0.0205
PM10 (µg/m^3)	24-hour	Central LA	87	88	67	96
PM10 (µg/m^3)	Annual	Central LA	35.4	33.0	32.4	34.4
PM2.5 (µg/m^3)	24-hour (Max)	Compton	35.8	41.3	36.35	66.7
		Central LA	59.9	56.4	44.39	49.2
PM2.5 (µg/m^3)	24-hour (98th)	Compton	30.9	37.2	26.35	41.3
		Central LA	34.5	38.0	27.3	27.8
PM2.5 (µg/m^3)	Annual	Compton	12.64	11.78	11.13	12.92
		Central LA	12.36	12.38	11.83	11.94
CO (ppm)	1-hour (Max)	Compton	6	4.4	4.4	6.1
		Central LA	3	3.2	1.9	1.9
CO (ppm)	8-hour (Max)	Compton	3.8	3.3	3.9	4.6
		Central LA	2.0	1.8	1.4	1.6
SO_2 (ppm)	1-hour (Max)	Central LA	0.0054	0.0126	0.0134	0.0057
SO_2 (ppm)	1-hour (99th)	Central LA	0.0044	0.0063	0.0025	0.0026
SO_2 (ppm)	24-hour	Central LA	0.0014	0.0011	0.0013	0.0015

Source:, Malburg 2017, ARB 2018a, and U.S. EPA 2018b

Staff selected the greater criteria pollutant concentration from the last three years of available data collected from the Compton or Central LA monitoring stations to represent background values for attainment. Staff selected maximum concentration values with the exception of the federal 1-hour NO_2 standard. This standard is attained using 3-year average set. Therefore, staff refined the background analysis for the federal 1 hour NO_2 by calculating the 3-year average. Staff used the most recent data available. Staff proposed background values at the facility are included in **Air Quality Table 14**.

Air quality Table 14
Staff-Recommended Background Attainment Concentrations (µg/m^3)

Pollutant	Averaging Time	Recommended Background	Limiting Standard	Percent of Standard
NO_2	State 1-hour	186	339	55%
	Federal 1-hour	116	188	62%
	State Annual	42	57	74%
	Federal Annual	40	100	40%
PM10	24-hour	96	150	64%
CO	1-hour	6,986	23,000	30%
	8-hour	5,268	10,000	53%
SO_2	State 1-hour	35	655	5%
	Federal 1-hour	16	196	8%
	24 hour	4	105	4%

Source: Malburg 2017, SCAQMD 2019, ARB 2016a, U.S. EPA 2016b, and staff analysis

The predicted attainment pollutant concentrations from the revised Bicent modeling for normal operation and startup, shutdown scenarios are summarized in **Air Quality Table 15. Air Quality Table 15** includes the staff selected background values and compares the total impact to the limiting AAQS.

Air Quality Table 15
Bicent Proposed Operation Impacts –Attainment Pollutants

Pollutant	Averaging Period	Modeled Impact (μg/m³)	Background (μg/m³)[a]	Total Impact (μg/m³)	CAAQS (μg/m³)	NAAQS (μg/m³)	Exceeds Threshold
Normal Operating Conditions Analysis							
NO_2[a]	1-hour	126.5	186	313	339		No
	1-hr (98th)	3.48	116	119		188	No
	Annual	0.50	42	43	57	100	No
SO_2	1-hour	0.42	35	35	655		No
	1-hr (99th)	0.14	16	16		196	No
	3-hour	0.15	35	35		1,300	No
	24-hour	0.04	4	4	105		No
CO	1-hour	33.0	6,986	7,019	23,000		No
	8-hour	1.89	5,268	5,270	10,000		No
PM10	24-hour	0.86	96	97		150	No
Startup and Shutdown: Scenario One -One Turbine in Cold Startup, Second Turbine in Cold Startup (NOx) or Max Baseload (CO), No Fire Pump Operation							
NO_2[a]	1-hour	85.58	186	272	339		No
	1-hr (98th)	65.78	116	182		188	No
CO	1-hour	143.6	6,986	7,130	23,000		No
Startup and Shutdown: Scenario Two –Two Turbines in Non-Cold Startup (Warm or Hot), No Fire Pump Operation							
NO_2[a]	1-hour	70.74	186	257	339		No
	1-hr (98th)	54.90	116	171		188	No
CO	1-hour	82.60	6,986	7,069	23,000		No
Two Turbines Complete Cold Start, Non-Cold Start, Shutdown, and Balance at Normal Operations Complete, 1-hour of Fire Pump Operation							
CO	8-hour	32.14	5,268	5,300	10,000		No

Source: Malburg 2017, SCAQMD 2019, and staff analysis.

Notes: [a] 1-hour NO_2 impacts for comparison to CAAQS under Normal Operating Conditions evaluated with the Ozone Limiting Method (OLM) for CAAQS. All other NO_2 1-hour and annual impacts evaluated assuming 100% conversion of NOx.

Bicent's modeled results for nonattainment pollutants under normal operating conditions are included in **Air Quality Table 16.**

Air Quality Table 16
Bicent Proposed Operation Impacts –Nonattainment Pollutants

Pollutant	Averaging Period	Project Impact ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)[a]	NAAQS ($\mu g/m^3$)	Rule 1303 Threshold ($\mu g/m^3$)	Exceeds Threshold
Normal Operating Conditions Analysis						
PM10	24 hour	0.98	50		2.5	No
	Annual	0.35	20		1	No
PM2.5	24-hour	0.70		35	2.5	No
	Annual	0.35	12		1	No
	3-year	0.31		12	1	

Source: Malburg 2017, SCAQMD 2019, and staff analysis.

The predicted attainment pollutant concentrations from the SCAQMD remodeling is summarized in **Air Quality Table 17. Air Quality Table 17** includes the staff selected background values and compares the total impact to the limiting AAQS.

Air Quality Table 17
SCAQMD Proposed Operation Impacts –Attainment Pollutants

Pollutant	Averaging Period	Modeled Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Exceeds Threshold
Normal Operating Conditions Analysis							
NO_2[a]	1-hour	80.54	186	267	339		No
	1-hr (98th)	3.78	116	120		188	No
	Annual[b]	0.478	42	40	57		No
	Annual[c]	0.507	40	42		100	No
SO_2	1-hour	0.16	35	36	655		No
	1-hr (99th)	0.16	16	16		196	No
	3-hour	0.12	35	35		1,300	No
	24-hour	0.05	4	4	105		No
CO	1-hour	9.01	6,986	6,995	23,000		No
	8-hour	1.23	5,268	5,269	10,000		No
PM10	24-hour	0.84	96	97		150	No
Startup and Shutdown: Scenario One -One Turbine in Cold Startup, Second Turbine in Cold Startup (NOx) or Max Baseload (CO), No Fire Pump Operation							
NO_2[a]	1-hour	78.11	186	264	339		No
	1-hr (98th)	57.31	116	173		188	No
CO	1-hour	131.21	6,986	7,117	23,000		No
Startup and Shutdown: Scenario Two –Two Turbines in Non-Cold Startup (Warm or Hot), No Fire Pump Operation							
NO_2[a]	1-hour	65.12	186	257	339		No
	1-hr (98th)	47.85	116	164		188	No
CO	1-hour	76.04	6,986	7,062	23,000		No
Two Turbines Complete Cold Start, Non-Cold Start, Shutdown, and Balance at Normal Operations Complete, 1-hour of Fire Pump Operation							
CO	8-hour	31.31	5,268	5,299	10,000		No

Source: SCAQMD 2019 and staff analysis.

Notes: [a] 1-hour NO_2 impacts for comparison to CAAQS under Normal Operating Conditions evaluated with the Ozone Limiting Method (OLM) for CAAQS. All other NO_2 1-hour and annual impacts evaluated assuming 100% conversion of NOx.

[b] State annual NO_2

[c] Federal annual NO_2

SCAQMD's modeled results for nonattainment pollutants are included in **Air Quality Table 18.**

Air Quality Table 18
SCAQMD Proposed Operation Impacts –Nonattainment Pollutants

Pollutant	Averaging Period	Project Impact ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)[a]	NAAQS ($\mu g/m^3$)	Rule 1303 Threshold ($\mu g/m^3$)	Exceeds Threshold
Normal Operating Conditions Analysis						
PM10	24 hour	1.07	50		2.5	No
	Annual	0.35	20		1	No
PM2.5	24-hour	0.77		35	2.5	No
	Annual	0.35	12		1	No

Source: SCAQMD 2019 and staff analysis.

In addition, Bicent modeled potential impacts from the brief commissioning period due to the A+ Turbine Upgrade. The worst case scenario for the 1-hour averaging period for both NOx and CO is assumed as one turbine in commissioning while the second turbine is not in operation. The assumed emission rates were revised twice based on SCAQMD feedback. The maximum assumed 1-hour emission rates for NOx and CO are based on the first hour of a cold start. The worst case scenario for the 8-hour CO averaging period is one turbine undergoing two non-cold starts, two shutdowns, and 7.5 hours of steady state uncontrolled emissions. Operations from this scenario account for more than 8 hours of operation. The 7.5 hours of uncontrolled emissions was used to compensate for the non-cold starts. Both scenarios assume the second turbine is not in operation.

Air Quality Table 19 includes potential commissioning impacts from the Bicent commissioning analysis. **Air Quality Table 19** includes staff selected background values and compares the total impact to the limiting AAQS. The federal NO_2 1-hour averaging period is not included in **Air Quality Table 19**. Bicent originally modeled for the federal 1-hour NO_2 standard. However, the potential impacts for the 1-hour NO_2 federal standard was removed since commissioning activities will be less than 50 hours per year. Therefore, the commissioning operation would not be considered statistically significant for the probalistic form of the 1-hour NO_2 standard averaged over three years. Staff notes the total predicted impact for the federal NO_2 1-hour standard modeled by Bicent was below the corresponding NAAQS. Staff is including the federal 1-hour standard modeled in strikeout form for reference.

Air Quality Table 19
Bicent Proposed A+ Turbine Upgrade Commissioning Impacts

Pollutant	Averaging Period	Modeled Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)[a]	Total Impact ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Exceeds Threshold
Commissioning Analysis –One Turbine in Commissioning, First Hour of a Cold Start							
NO_2[a]	1-hour	71.69	186	258	339		No
	~~1-hr (98th)~~	~~62.3~~	~~116~~	~~178.3~~		~~188~~	~~No~~
CO	1-hour	142.57	6,986	7,129	23,000		No
Commissioning Analysis –One Turbine in Commissioning, Two Non-Cold Starts, Two Shutdowns, 7.5 Hours of Uncontrolled Steady-State							
CO	8-hour	53.1	5,268	5,321	10,000		No

Source: Malburg 2017, SCAQMD 2019, and staff analysis.

Notes: [a] 1-hour NO_2 impacts for comparison to CAAQS under commissioning evaluated with ARM_2 model option with default conversion of NOx to NO_2.

SCAQMD's modeled results for the A+ Turbine Upgrade commissioning are included in **Air Quality Table 20.**

Air Quality Table 20
SCAQMD Proposed A+ Turbine Upgrade Commissioning Impacts

Pollutant	Averaging Period	Modeled Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)[a]	Total Impact ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Exceeds Threshold
Commissioning Analysis –One Turbine in Commissioning, First Hour of a Cold Start							
NO_2[a]	1-hour	129.98	186	316	339		No
CO	1-hour	257.86	6,986	7,244	23,000		No
Commissioning Analysis –One Turbine in Commissioning, Two Non-Cold Starts, Two Shutdowns, 7.5 Hours of Uncontrolled Steady-State							
CO	8-hour	102.2	5,268	5,370	10,000		No

Source: SCAQMD 2019 and staff analysis.

[a] 1-hour NO_2 impacts for comparison to CAAQS under commissioning evaluated with ARM_2 model option with default conversion of NOx to NO_2.

The worst case short-term operating conditions from the screening results (Case S14) were modeled for fumigation using AERSCREEN. The results indicated there would be no fumigation impacts due to the project.

Bicent MGS does not meet the criteria for a shoreline fumigation assessment because the nearest distance to the shoreline of any large body of water is greater than 3 kilometers. Based on AERSCREEN results, Bicent determined there were no meteorological conditions fitting the inversion breakup criteria. All fumigation impacts are less than the AERSCREEN maxima predicted to occur under normal dispersion conditions. No further analysis is required.

Per both the Bicent and SCAQMD modeling analyses, **Air Quality Tables 15, 16, 17, 18, 19,** and **20** demonstrate that the A+ Turbine Upgrade is not expected to cause a significant impact. Routine Operation Impacts could contribute to existing violations of annual PM10 and PM2.5 ambient air quality standards. However, the modeled project impacts are below the SCAQMD Rule 1303 significant change threshold for PM10 and PM2.5.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) MITIGATION

As documented in **Air Quality Table 3**, SCAQMD is in non-attainment with the state and federal AAQS for ozone and PM2.5, state AAQS for PM10, and federal AAQS for lead. The Energy Commission generally requires mitigation for the emissions of pollutants and/or their precursors that are in non-attainment with state and federal air quality standards or may result in any violation of any air quality standard. Therefore, the Energy Commission generally requires the mitigation of PM10, PM2.5, SOx, NOx, and VOC emissions in areas designated as non-attainment for ozone, PM10 and PM2.5 standards. Staff notes non-attainment status for lead is only for portions of Los Angeles County near source monitors. This does not include the MGS site. The Public Health section concluded there are no significant impacts from potential MGS lead emissions.

The Final Commission Decision required the project to be offset under the SCAQMD requirements. The SCAQMD rules and regulations require net emission increases of nonattainment pollutants to be offset unless specifically exempted. Offset determinations are made on a 30-day average basis for CO, PM10, VOC, and SOx. The 30-day average is not used to calculate mitigation for NOx since the facility is subject to RECLAIM requirements. Normal operating and commissioning periods were reviewed to determine the maximum monthly emissions. The 30-day averages were based on the maximum worst case monthly emissions with the exception of PM10. PM10 emissions were determined using a SCAQMD and applicant agreed upon methodology. **Air Quality Table 21** includes the 30-day averages for each turbine and the basis for the 30-day average at the time of the Decision. NOx is included for informational purposes only.

Air Quality Table 21
MGS Original 30-Day Averages

Pollutant	Turbine 1 (lb/day)	Turbine 2 (lb/day)	Basis
NOx	99	99	Normal operating emissions, maximum monthly, Scenario S13
CO	117	137	Commissioning period, 2nd month
PM10	81	81	Normal operating emissions, 240 hours of normal operation with duct burner, 480 hours of normal operation without duct burner, 65 degrees Fahrenheit, agreed methodology
VOC	59	49	Commissioning period, 1st month
SOx	4	4	Normal operating emissions, maximum monthly

Source: SCAQMD 2019, and staff analysis

The SCAQMD applies an offset ratio of 1.2 to 1 for all non-attainment pollutants and precursors (CO, PM10, SOx, and VOC). NOx emissions are regulated by RECLAIM requirements. The mitigation can be met by buying ERCs on the open market or purchasing priority reserve credits (PRCs) from the SCAQMD Priority Reserve. In specific cases where the post modification PTE for non-attainment pollutants is below established emission thresholds, SCAQMD Rule 1304 exempts the applicant from procuring offsets. However, the SCAQMD still deducts credits from a separate account to cover any offset requirement.

The mitigation package for MGS included BACT requirements, purchased ERCs for CO, VOC, and PM10, purchased PM10 credits from the SCAQMD priority reserve, and RECLAIM Trading Credits for NOx emissions. The annual SOx emissions fell below four tons per year. MGS was exempt from procuring SOx offsets; however, the SCAQMD was responsible for providing the offsets from their internal account at a ratio of 1.2:1. NOx emission offsets were required to be provided in the form of RTCs at a 1 to 1 ratio. **Air Quality Table 22** summarizes the SCAQMD original offset requirement amounts included in the Final Commission Decision.

Air Quality Table 22
Original MGS Mitigation Requirements

Pollutant	30-Day Ave			Total Offsets Required
	Turbine 1	Turbine 2	Both	
	(lb/day)	(lb/day)	(lb/day)	(lb/day)
CO	117	137	254	305
PM10	81	81	162	163
VOC	59	49	108	133
SOx[a]	----	----	7	7
				RECLAIM (lb/year)
NOx[c]	99	99	-----	229,531

Source: Decision, SCAQMD 2019, and staff analysis

Notes: [a] Priority reserve credits are purchased at a one to one ratio. The SCAQMD provides additional credits from an internal account to meet offset requirement.

[b] The Decision lists 7 pounds per day total. SCAQMD documents list 4 pounds per day per turbine. Energy Commission staff assessment addendum clarified the SCAQMD would deduct 8 pounds per day of SOx emissions from the SCAQMD account (7 * 1.2 = 8 pounds required).

[c] The Decision lists the first year NOx RECLAIM requirement. This includes commissioning emissions. Energy Commission staff assessment addendum lists both the 1st and the expected 2nd year requirements.

Air Quality Table 2 from the final addendum to the staff assessment provides an in depth summary of the mitigation package. **Air Quality Table 23** summarizes the information in **Air Quality Table 2**. **Air Quality Table 23** includes offsets surrendered by the applicant, additional mitigation provided by the District, and total Mitigation for each pollutant. **Air Quality Table 2** included a separate column for additional mitigation recommended by staff for CEQA compliance. Staff did not recommend any additional mitigation in the staff analysis. Therefore, the column is not included below.

Air Quality Table 23
Air Quality Table 2 MGS Mitigation Description

	Offset Description	Applicant Surrendered	District Provided	Total Mitigation
NOx[a]	RTCs at a 1:1 ratio reviewed annually	229,531 lbs (1st Year) 71, 215 lbs (2nd Year)	0 lbs/year	229,531 lbs (1st Year) 71,215 lbs (2nd Year 1:1)
SOx	Rule 1304 exemption	0 lbs/day	8 lbs/day (exempted SOx at a 1.2 to 1 ratio)	8 lbs/day (1.2:1)
CO	ERC at 1.2:1 ratio	305 lbs/day	0 lbs/day	305 lbs/day (1.2:1)
VOC	ERC at 1.2:1 ratio	130 lbs/day	0 lbs/day	305 lbs/day (1.2:1)
PM10	ERC at 1.2:1 ratio	3 lbs/day	0 lbs/day	3.0 lb/day (1.2:1) + 160 lb/day PRCs + 32 lb/day (0.2:1) = 194 lbs/day (total)
	PRC at 1:1 ratio	PRCs	32 lbs/day (increase ratio from 1:1 to 1.2:1)	

CEC 2003c, and staff analysis

Notes: [a] Per SCAQMD RTC requirements the Decision required MGS to hold sufficient RTC for the first year of operation and hold sufficient RTCs equal to the emission increase for following compliance years.

The Final Commission Decision states staff determined the implementation of the MGS offset package would fully mitigate potential project impacts under CEQA. The Final Commission Decision references two amended tables, **Air Quality Table 25 Amended** and **Air Quality Table 26 Amended**, as supporting documentation. The tables compare estimated MGS emissions on daily and annual basis with the mitigation provided for CEQA purposes only. The language clarified the excess was for CEQA purposes only and did not refer to the offset requirements under the SCAQMD NSR program. **Air Quality Table 24** summarizes the information presented in **Air Quality Table 25 Amended.**

Air Quality Table 24
Air Quality Table 25 Amended Comparison of Expected Annual Emissions to Mitigation Provided for CEQA Purposes Only (lbs/year)

	Liability	Offsets	District Mitigation	Mitigation	
				Excess	Shortfall
CO	37,380	99,098	12,154	73,872	None
NOx	53,363	71,215	0	17,852	None
PM10	58,986	59,130	11,826	11,970	None
VOC	13,047	47,450	0	34,403	None
Sox	2,123	0	3,154	1,031	None

Source: CEC 2003, CEC 2003a, CEC 2003b, CEC 2003c, SCAQMD 2019, and staff analysis

Air Quality Table 25 summarizes the information presented in **Air Quality Table 26 Amended.**

Air Quality Table 25
Air Quality Table 26 Amended Comparison of Expected Daily Emissions to Mitigation Provided for CEQA Purposes Only (pounds/day)

	Liability	Offsets		District Mitigation	Mitigation	
					Excess	Shortfall
CO	104.59	271.5		33.3	200.21	None
NOx	176.73	195.1		0	18.38	None
PM10	164.28	162.0		32.4	30.12	None
VOC	36.05	130.0		0	93.95	None
SOx	6.00	0		8.66	2.66	None

Source: CEC 2003, CEC 2003a, CEC 2003b, CEC 2003c, SCAQMD 2019, and staff analysis

Air Quality Table 26 compares the offset requirement at the time of the Final Commission Decision based on the 30-day averages with the post decision SCAQMD amendment increases and the proposed 30-day average from the A+ Turbine Upgrade.

Air Quality Table 26
MGS 30-Day Average per SCAQMD

SCAQMD	NOx (lbs/day)		CO (lbs/day)		VOC (lbs/day)		SOx (lbs/day)		PM10 (lbs/day)	
30-Day Average Original	99	99	117	137	59	49	4	4	81	81
30-Day Average Amended	125	125	117	137	59	49	4	4	81	81
30-Day Average Proposed	127	127	117	137	59	49	4	4	81	81
30-Day Emission Increase	Yes		No		No		No		No	

Source: SCAQMD 2019, staff analysis
[a] NOx included for information purposes.

RECLAIM requirements for NOx are determined on an annual basis. The SCAQMD has amended the MGS RECLAIM holding requirement since the Final Commission Decision. The SCAQMD-issued operating permit now lists the required RTC holding per equipment. In addition, per SCAQMD rules and requirements, MGS was required to purchase additional RTCs to cover the revised startup and shutdown operations in the previous SCAQMD MGS amendment.

The proposed A+ Turbine Upgrade would result in a potential increase in NOx emissions based on the increase in the hourly NOx rating. Current SCAQMD permitting practice uses average operating rates to determine the RTCs required and not the maximum potential to emit. Therefore, the SCAQMD has determined MGS currently holds sufficient RTCs and RECLAIM holding requirements do not need revision. If MGS actual annual NOx emissions exceed their RTC holdings, MGS would be required to purchase additional credits.

The SCAQMD will not require Bicent to obtain ERCs or RTCs for the A+ Turbine Upgrade. Offsets for PM10, VOC, and SOx are not required because there are no changes to the SCAQMD calculated 30-day average. **Air Quality Table 27** summarizes the mitigation previously and currently required, the proposed amended facility total, and proposed additional mitigation for the A+ Turbine Upgrade.

Air Quality Table 27
Proposed Mitigation Requirements

Offsets		Annual				
		NOx (lb/year)	CO (lb/year)	VOC (lb/year)	SOx (lb/year)	PM10 (lb/year)
Original Mitigation	1st year:	229,531	111,252	47,450	3,154	70,956
	2nd year:	71,215				
Current RECLAIM Holding		81,673	----	----	----	----
Amended Facility Potential		82,629	91,627	38,840	2,729	60,927
Difference (surplus)		-965	19,625	8,610	425	10,029
Additional Mitigation		None	None	None	None	None

Source: CEC 2003, CEC 2003a, CEC 2003b, CEC 2003c, SCAQMD 2019, and staff analysis

The proposed A+ Turbine Upgrade could potentially increase annual NOx emissions. MGS has been operating well below the calculated potential emissions and the facility RECLAIM holdings. **Air Quality Table 28** summarizes the reported annual NOx from the MGS over the last three years. No changes are proposed to the SCAQMD RTC holding requirement. MGS uses a certified NOx continuous emission monitor to ensure the facility operates in compliance with all RECLAIM requirements. Staff is proposing to update the language in Condition of Certification **AQ-32** to reflect current SCAQMD RECLAIM NSR offset requirements.

Air Quality Table 28
MGS Reported Annual NOx

Year	Turbines (lb/year)	Fire Pump (lb/year)	Total (lb/year)
2018	28,810	95.41	28,905
2017	35,739	94.4	35,834
2016	41,819	38.25	41,857

Source: Malburg Annual Compliance Reports and staff analysis

Staff does not propose any additional mitigation for the propose A+ Turbine Upgrade. The staff-proposed CEQA mitigation measures noted as conditions of certification would reduce the direct and cumulative air quality impacts of the proposed facility modifications to a less than significant level, including impacts to any environmental justice population. There are no air quality environmental justice issues related to the proposed facility modifications and no minority or low-income populations would be significantly or adversely impacted.

GREENHOUSE GAS

GHG emissions were not calculated in the Final Commission Decision or subsequent amendments. However, staff estimated GHG emissions for the proposed changes for completeness. The GHG emission calculations are based on fuel combustion for the covered equipment including the combustion turbines, duct burners, and emergency fire pump engine.

Condition of Certification **AQ-27** currently limits fuel usage to 330 million cubic feet per month per turbine-duct burner pair corresponding to an annual fuel usage limitation of 3,960 million cubic feet per year per turbine-duct burner pair. According to the SCAQMD evaluation, the monthly limit was based on the same assumptions used to limit the monthly PM10 emissions. Both the maximum monthly PM10 emissions and fuel usage was based on 240 hours per month of normal operation at 65 degrees Fahrenheit and 480 hours per month of no duct burning. **Air Quality Table 29** summarizes the estimated current fuel use for the covered MGS equipment.

Air Quality Table 29
MGS Potential Fuel Use and Heat Rate

System	Case	Hourly	Monthly	Annual
Per Turbine-Duct Burner Pair (mmscf)	Duct Firing	0.511	330	3,960
	w/o Duct Firing	0.432		
Per Turbine-Duct Burner Pair (MMBtu)	-----	-----	-----	4,031,280
Emergency Diesel Fire Pump (gallons)	-----	8.72	1,744	1,744

Malburg 2017, SCAQMD 2019, and staff analysis
Notes: mmscf = million standard cubic feet; Based on a higher heating value of 1,018 British thermal units per standard cubic feet

For the proposed amendment, the average hourly heat input was coupled with conservative operational scenarios. Case S15 was used to assess normal operation. Case S15 includes 100 percent load with duct firing at 65 degrees Fahrenheit. Duct firing does not occur during startup and shutdown operations. Case S11 (65 degrees Fahrenheit, 100% load with the duct burners off) was used for startup and shutdown periods. Case S11 assumes 100 percent load with no duct firing at 65 degrees Fahrenheit. Case S15 was assumed to occur for 6,633 hours per year per turbine-duct burner pair. Case S11 was assumed to occur for 127 hours per year per turbine-duct burner pair. Staff used the proposed 200 operating hours per year for the emergency fire pump.

Air Quality Table 30 summarizes the heat input for the proposed MGS A+ Turbine Upgrade.

Air Quality Table 30
MGS Potential Heat Rate and Fuel Use

System	Case	Hourly	Annual
Per Turbine-Duct Burner Pair (MMBtu)	S15 -Duct Firing	555.61	4,856,857
	S11 -w/o Duct Firing	474.61	
Emergency Diesel Fire Pump (gallons)	-----	8.72	1,744

Malburg 2017, SCAQMD 2019, and staff analysis
Notes: [a.] Based on 8,633 hours of operation,127 hours startup/shutdown

The estimated heat input or fuel use are used along with emission factors to calculate potential GHG emissions. Different emission factors are required depending on the fuel type. The carbon dioxide equivalent (CO_2e) is calculated by applying the global warming potential factors with the GHG emissions included in the table. Current and proposed estimated GHG emissions for the Turbine-Duct Burner Pair are included in **Air Quality Table 31**.

Air Quality Table 31
Estimated Potential Greenhouse Gas Emissions

CURRENT POTENTIAL OPERATIONS				
Natural Gas Combustion - Turbine-Duct Burner Pair				
Pollutant	**Emission Factor[a]**	**Global Warming Potential[b]**	**CO_2eEmissions**	
	(kg/MMBtu)	**--------**	**(lbs/year)**	**(tons/year)**
CO_2	53.06	1	471,567,594	235,784
CH4	0.001	25	222,186	111
N2O	0.0001	298	264,846	132
Total CO_2e Per Turbine-Duct Burner Pair:			472,054,625	236,027
Total CO_2e Both Turbine-Duct Burner Pairs:			944,109,251	472,055
Diesel Combustion – Emergency Fire Pump Engine				
Pollutant	**Emission Factor[a]**	**Global Warming Potential[b]**	**CO_2eEmissions**	
	(kg/gallon)	**--------**	**(lbs/year)**	**(tons/year)**
CO2	10.21	1	39,060	19.53
CH4	0.00041	25	39	0.02
N2O	0.00008	298	91	0.05
Total CO_2e for Fire Pump:			39,190	19.60
Total Turbine, Duct Burner, and Fire Pump:			**944,148,441**	**472,074**
PROPOSED A+ TURBINE UPGRADE				
Natural Gas Combustion - Turbine-Duct Burner Pair				
Pollutant	**Emission Factor[a]**	**Global Warming Potential[b]**	**CO_2e Emissions**	
	(kg/MMBtu)	**--------**	**(lbs/year)**	**(tons/year)**
CO2	53.06	1	568,141,181	284,071
CH4	0.001	25	267,688	134
N2O	0.0001	298	319,084	160
Total CO_2e Per Turbine-Duct Burner Pair:			568,727,953	284,364
Total CO_2e Both Turbine-Duct Burner Pairs:			1,137,455,906	568,728
Diesel Combustion – Emergency Fire Pump Engine				
Pollutant	**Emission Factor[a]**	**Global Warming Potential[b]**	**CO_2e Emissions**	
	(kg/gallon)	**--------**	**(lbs/year)**	**(tons/year)**
CO2	10.21	1	39,256	19.63
CH4	0.00041	25	39	0.02
N2O	0.00008	298	92	0.05
Total CO_2e for Fire Pump:			39,387	19.69
Total Turbine, Duct Burner, and Fire Pump:			**1,137,495,293**	**568,748**

Source: Malburg 2017, SCAQMD 2019, staff analysis
Kg/MMBtu = kilograms per million British thermal units
Notes: [a] Emission factors from Table 1 of U.S. EPA's Emission Factors for Greenhouse Gas Inventories
[b] Table A-1 of 40 CFR Part 98, Subpart A

Senate Bill 1368,[2] enacted in 2006, and regulations adopted by the Energy Commission and the California Public Utility Commission pursuant to that bill, prohibits California utilities from entering into long-term commitments with any base load facilities that exceed the EPS of 0.5 metric tonnes CO_2 per megawatt-hour[3] (1,100 pounds CO_2/MWh). If a project, instate or out-of-state, plans to sell base load electricity to California utilities, those utilities will have to demonstrate that the project meets the EPS. Base load units are defined as units that are expected to operate at a capacity factor higher than 60 percent. Compliance with the EPS is determined by dividing the annual average carbon dioxide emissions by the annual average net electricity production in MWh.

MGS is considered a base load facility. However, the facility was licensed in May 2003 and commenced operation in October 2005, prior to the applicability date for the Greenhouse Gases Emission Performance Standard (Title 20, California Code of Regulations, section 2900 et seq.). The regulation considers power plants licensed prior to June 30, 2007 as 'deemed–compliant' power plants. The amendment does not propose a potential capacity increase above 50 MW therefore, the plant would continue to be classified as a 'deemed–compliant' power plant.

PREVENTION OF SIGNIFICANT DETERIORATION

The Prevention of Significant Deterioration (PSD) program has been established to protect the deterioration of air quality in areas that already meet the primary NAAQS. The SCAQMD is partially delegated to issue initial PSD permits and for PSD permit modifications. As noted in **Air Quality Table 3**, the SCAB is classified as attainment for NO_2, SO_2, CO, and PM10 NAAQS. Therefore, the PSD regulation applies to NO_2, SO_2, CO, and PM10 emissions.

PSD requirements apply to significant increases in emissions from a major stationary source, or a major modification to a minor source on a pollutant specific basis for attainment emissions. Combined-cycle power plants are considered major sources if the potential or actual emissions are greater than 100 tons per year. Significant emission increases are defined as potential annual emission increases of 100 tons or more for CO, 40 tons or more of NOx or SO_2, and 15 tons or more for PM10. The A+ Turbine Upgrade would not result in a significant emission increase for PSD purposes.

In addition, GHGs are a regulated pollutant under the PSD major source permitting program. A PSD analysis for GHG alone is not required if a PSD review is not required for criteria pollutants. In May 2010, U.S. EPA issued the Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule establishing thresholds for GHG emissions. The regulation includes criteria for two phase-in steps with a commitment to develop a third step if necessary. Step 1 affected existing facilities that were already subject to PSD requirements and modifications that increased carbon dioxide equivalent (CO_2e) emissions over 75,000 tons per year. Step 2 affected new

[2] Public Utilities Code § 8340 et seq.
[3] The Emission Performance Standard only applies to carbon dioxide and does not include emissions of other greenhouse gases converted to carbon dioxide equivalent.

facilities with proposed CO_2e emissions over 100,000 tons per year and modifications at existing facilities with increases in CO_2e emissions over 75,000 tons per year. On June 23, 2014, the U.S. Supreme Court issued a decision regarding the application of stationary source permitting requirements to GHGs. The decision determined that GHGs could not be considered as an air pollutant for determining if a source is a major source requiring a PSD or Title V permit. The decision clarified that PSD permits required based on emissions of conventional pollutants may continue to require limitations on GHG emissions based on the application of BACT. The proposed A+ Turbine Upgrade does not trigger a PSD review for criteria pollutants. Therefore, the A+ Turbine Upgrade does not trigger a GHG PSD review.

PROPOSED CONDITION CHANGES

SCAQMD provided the Energy Commission with a draft engineering evaluation for the proposed A+ Turbine Upgrade. The SCAQMD is proposing the following changes to the Title V permit for the MGS:

- Modifying equipment descriptions to include the A+ Turbine Upgrade and corresponding rating change;
- Updating the SCAQMD condition numbers;
- Updating the rule citations in the conditions;
- Updating the application numbers;
- Adding PM2.5 to the monthly emission limits;
- Increasing the monthly SOx emission limit;
- Lowering the PM10/PM2.5 and VOC emission factors used with monthly fuel data for emission calculations;
- Adding emission factors to calculate emission during the A+ Turbine Upgrade commissioning period;
- Adding clarifying language regarding monthly calculations if the month contains both commissioning and normal operations;
- Adding exemptions to emissions limits for commissioning periods;
- Clarifying the significant figures for NOx, VOC, and CO emission concentration limits;
- Increasing the monthly fuel usage limitation;
- Clarifying the fuel usage limitation is for both turbines and associated duct burners;
- Amending the explanation of the purpose of the fuel limitation to ensure compliance for all the monthly emission limits;
- Updating the source test methods to current source testing requirements;

- Adding a requirement to source test within 180 days of the initial startup of the Siemens A+ Turbine Upgrade;
- Adding a sampling time requirements for PM10;
- Updating and clarifying VOC testing requirements and methods;
- Clarifying language the NOx concentration shall be simultaneously recorded during ammonia slip test;
- Adding a limitation to the commissioning hours for the A+ Turbine Upgrade;
- Clarifying only one turbine can be commissioned at a time;
- Adding language restricting the testing of the emergency fire pump engine during the turbine commissioning;
- Clarifying the equipment shall vent to the CO oxidation catalyst and SCR control system after commissioning is completed;
- Requiring the project owner to maintain records to ensure the commissioning requirements are met;
- The addition of a condition clarifying the equipment is subject to the requirements in 40 CFR 60 Subpart KKKK; and,
- The addition of a condition clarifying the equipment is subject to the requirements in 40 CFR Part 75.

Staff is proposing to incorporate these same changes to the MGS Air Quality Conditions of Certification with the exception of updating the application numbers since the application numbers are not included in the Energy Commission license. Staff notes that language specific to these changes has not yet been finalized. Staff is not expecting any major changes to the conditions provided by the SCAQMD.

Staff is also proposing additional changes to update the Air Quality Conditions of Certifications applicable to ongoing operation with the current requirements in SCAQMD issued operating permits to ensure the facility operates in compliance with all LORS.

Staff is proposing to define and update several acronyms to current Energy Commission practice. Staff is proposing to define the South Coast Air Quality Management District as AQMD or District to identify the appropriate facility permitting agency in the conditions of certification. Staff is proposing to update the acronyms used for ARB, U.S. EPA, and Energy Commission to current Energy Commission practice. Staff is proposing to define other common acronyms as needed.

Staff is proposing the addition of headers to distinguish Energy Commission proposed conditions and conditions included in the SCAMQD issued operating permit.

Staff is proposing to add equipment descriptions and equipment identifiers in the Air Quality Conditions of Certification. The descriptions include operational parameters such as heat rates and generating capacities and form the basis of the environmental

analysis. These equipment descriptions are enforceable parts of the license and must be updated if the equipment or operation of the equipment changes outside the parameters included in the descriptions. The equipment descriptions also include identifiers that link the units to emission and reporting requirements and provide a road map to the licensed equipment configuration. The equipment descriptions reflect all updates to the equipment associated with the A+ Turbine Upgrade. Staff is proposing to add the equipment descriptions in the form of a table between the **AQ-C** series Conditions of Certification and the **AQ-**numbered Conditions of Certification. This format is consistent with recent SCAQMD projects.

Staff is proposing to add the SCAQMD rule citations to corresponding conditions of certification to clarify the basis of each requirement. Additionally, staff is proposing to add the specific device identifiers to all applicable conditions of certification in order to clearly identify which specific equipment is applicable to the condition. Some conditions of certification are general conditions applicable to the entire facility and identifiers are not proposed for these conditions. These changes would provide a more accurate accounting of the facility equipment and requirements.

Staff is proposing to update verification language in **AQ-1**, **18**, **25**, **26**, **28**, **29**, **30**, **31**, **34**, and **35** to ensure both records and the site are accessible if needed to determine compliance.

Staff is proposing to amend Condition of Certification **AQ-C8.** Condition of Certification **AQ-C8** includes an operating restriction for the fire pump engine. The fire pump engine is restricted from operating on the same day a gas fired turbine is undergoing a startup or shutdown. Based on the updated modeling, staff is proposing to change the restriction from the same day to the same hour.

Staff is proposing to delete Condition of Certification **AQ-C10.** Condition of Certification **AQ-C10** establishes emission limitations based on specified scenarios. These emission limits do not reflect the potential emission limits mitigated by the original decision and following amendments. The original staff analysis included these limits as expected emissions from the facility. During the licensing process, it was noted the modeling did not include overlap scenarios. Therefore, in order to limit potential impacts emissions restrictions were included. Revised modeling was not required for subsequent amendments. When the NOx and CO startup emissions limits were increased, ratios were applied to the original modeling to support the finding the increase would not reasonably cause a significant impact. Limitations were placed on the startup increases to support the analysis methodology. The SCAQMD-issued operating permits do not include the same limitations. The A+ Turbine Upgrade was modeled to determine potential impacts of worst case scenarios with concurrent operation of the emergency engine and cooling tower. The modeling was performed using the higher emission limits proposed included in the SCAQMD-issued permit to operate. The modeling results indicate operation is not expected to cause a significant impact. As discussed in the CEQA mitigation section, the MGS proposed operations are fully mitigated. The updated permit conditions would provide adequate restrictions to ensure the facility

operated in compliance with the proposed emission limits. Therefore, it is no longer necessary to include separate emission limits included in Condition of Certification **AQ-C10**.

Staff is proposing to clarify reporting requirements in Condition of Certification **AQ-C11**. Staff is proposing to delete language referring to annual emission limits. Although staff is proposing to delete the explicit annual emission limits Condition of Certification **AQ-C10**, staff is still requiring Bicent to report annual emissions in the fourth quarter report.

Staff is proposing additional language in Condition of Certification **AQ-2**. Condition of Certification **AQ-2** establishes fuel sulfur requirements. The proposed additional language contains fuel sulfur requirements established in SCAQMD Rule 431.2. The facility is currently in compliance with this requirement and continued compliance is expected.

Staff is proposing to delete Condition of Certification **AQ-4**. Condition of Certification **AQ-4** establishes accidental release prevention requirements in 40 CFR Part 68. Condition of Certification **AQ-4** was originally as part of the SCAQMD-issued permit conditions. SCAQMD removed the requirement from the SCAQMD-issued operating permit in 2009.

Staff is proposing delete Condition of Certification **AQ-8**. Condition of Certification **AQ-8** is only applicable to an interim period that could not exceed 12 months from the initial start-up date. The condition requirements have been met and are not applicable to any turbine start-up after that period and therefore should be deleted for clarity.

Staff is proposing to update Condition of Certification **AQ-12**. Condition of Certification **AQ-12** includes a detailed calculation used to determine the ammonia slip. The calculation uses a correction factor derived by comparing the measured NH_3 and calculated NH_3 during the annual compliance testing.

Staff is proposing to replace the engine lube oil ash content limitation in Condition of Certification **AQ-14** with a sulfur weight requirement. Engine lube oil is composed of base oil and an additive package which contribute to lube oil ash. Engine lube oil influences the kinetics on diesel particle oxidation. The ash content limitation is an example of early emissions control for diesel engines. Since the time MGS was originally permitted, regulations for diesel engine emissions have become more rigorous. Currently emissions are controlled through performance based standards, strict maintenance requirements, and limitations on the fuel content.

Staff is proposing to increase the permitted annual operating hours for the diesel fueled engine in Condition of Certification **AQ-15** from 199 to 200 for consistency with current SCAQMD requirements.

Staff is proposing the addition of the effective NH_3 injection rate in Condition of Certification **AQ-19** for consistency with the updated requirements included in the 2015

SCAQMD Title V renewal. Condition of Certification **AQ-19** is applicable to the SCR emission control devices used to control NOx. SCR utilizes NH_3 as a reductant. The effective operating range for NH_3 injection was added during the recent revision to the Title V permit. The addition of the effective operating range for NH_3 injection is currently standard for SCAQMD power projects utilizing SCR for emission control.

Staff is proposing the addition of the effective temperature range of the exhaust at the inlet of the SCR/CO catalyst in Condition of Certification **AQ-20** for consistency with the updated requirements included in the 2015 SCAQMD Title V renewal. Condition of Certification **AQ-20** is applicable to the SCR reactor. SCR/CO catalyst systems have two stages, the oxidation stage for CO and VOC reduction and the SCR stage for NOx reduction. The oxidation stage uses catalyst elements to control CO emissions. The effective temperature range for the CO catalyst was added during the recent revision to the Title V permit. The addition of the effective temperature range for the CO catalyst is currently standard for SCAQMD power projects utilizing SCR/CO catalyst systems for emission control.

Staff is proposing the addition of the effective pressure range of the SCR catalyst bed in Condition of Certification **AQ-21** for consistency with the updated requirements included in the 2015 SCAQMD Title V renewal. Condition of Certification **AQ-21** is applicable to the SCR catalyst bed. As exhaust travels over a SCR catalyst bed, there is a loss in pressure. A larger drop in pressure could indicate the system in not functioning as designed for emission control. The effective pressure range for the SCR catalyst bed catalyst was added during the recent revision to the Title V permit. The addition of the effective pressure range for the SCR catalyst bed is currently standard for SCAQMD power projects utilizing SCR/CO catalyst systems for emission control.

Staff is proposing to delete Condition of Certification **AQ-22**. Condition of Certification **AQ-22** includes initial source test requirements. The initial source testing requirements have been met. Condition of Certification **AQ-22** does not currently include ongoing source testing requirements. Ongoing testing requirements for VOCs, SOx, PM, and NH_3 emissions are included in Conditions of Certification **AQ-23** and **AQ-24.** Condition of Certification **AQ-26** requires the operation of a CEMS to measure NOx but does not include additional testing requirements. The SCAQMD facility permit outlines monitoring and source testing requirements for RECLAIM facilities under Section F. Staff is proposing to update Condition of Certification **AQ-26** to ensure all RECLAIM requirements are met.

Staff is proposing additional language providing additional specifications for the VOC testing requirement in Condition of Certification **AQ-23**. Condition of Certification **AQ-23** currently requires a SCAQMD approved test method for the ongoing VOC emission source test. The additional language would clarify that the VOC testing would need to use summa canisters and provides additional details to ensure the integrity of the sample. These detailed requirements are already imposed by the SCAQMD.

Staff is proposing to delete portions of the language from Conditions of Certification **AQ-25** and **AQ-26**. Conditions of Certification **AQ-25** and **AQ-26** provide initial requirements for the CO and NOx CEMS. These requirements are no longer needed for ongoing operation of the CEMS. As discussed above, staff is proposing to additional language to Condition of Certification **AQ-26** to ensure the NOx CEMS is compliant with all LORS.

Staff is proposing to add clarifying language to Condition of Certification **AQ-27**. Condition of Certification **AQ-27** limits the fuel usage for each turbine-duct burner pair. The SCAQMD permit includes a statement of the purpose of this condition in the corresponding SCAQMD permit condition. Staff is proposing to add the language, clarifying the purpose of the conditions is to ensure the total PM10 emissions shall not exceed 2,438 pounds per month per turbine.

Staff is proposing to update the conditions referenced in Conditions of Certification **AQ-30** and **AQ-31.** Conditions of Certification **AQ- 30** and **AQ-31** clarify the meaning of continuously record and should reference **AQ-18** and **AQ-19.** These changes are included in the updated SCAQMD permits.

Staff is proposing to update the language in Condition of Certification **AQ-32** to reflect current SCAQMD RECLAIM requirements. There is no change to the required RECLAIM holdings as a result of the A+ Turbine Upgrade.

Staff is proposing to update the source test requirements included in Condition of Certification **AQ-33**. Condition of Certification **AQ-33** requires source test emission data to be reported in terms of parts per million corrected to 15 percent oxygen on a dry basis. Staff is proposing to add requirements for the emission data to also be reported in terms of pounds per hour and pounds per million cubic feet. In addition, solid PM emissions, if required, would be reported in terms of grains per dry standard cubic feet. These additions would assist in determining compliance and are already required by the SCAQMD.

Staff is proposing the addition of language clarifying reporting requirements for the fire pump included in Condition of Certification **AQ-35**. The additional language provides additional detail to ensure the engine continues to operate in compliance with all LORS.

Staff is proposing to revise the record keeping requirements for the duct burner included in Condition of Certification **AQ-36**. Condition of Certification **AQ-36** currently requires records of natural gas usage in the HRSGs during the commissioning period. Staff is proposing to update Conditions of Certification **AQ- 36** to require records for operational status and natural gas usage. This requirement is already imposed by the SCAQMD.

Staff is proposing the addition of Condition of Certification **AQ-37**. Condition of Certification **AQ-37** includes federal operational requirements for the emergency diesel fire pump. The operation requirements are already included in the SCAQMD Title V permit.

CONCLUSIONS AND RECOMMENDATIONS

Energy Commission staff recommends approval of the second phase of the A+ Turbine Upgrade and the proposed changes to the Air Quality Conditions of Certification for MGS. The proposed potential emission increases would not require additional mitigation. All proposed changes would conform to the applicable LORS related to air quality and would not result in significant air quality impacts. The requested changes have already been analyzed by SCAQMD staff and a draft Title V permit incorporating the A+ Turbine Upgrade is currently in regulatory review.

PROPOSED AND AMENDED CONDITIONS OF CERTIFICATION

Staff recommends the following modifications to the Air Quality Conditions of Certification. **Bold underline** is used to indicate new language. ~~Strikethrough~~ is used to indicate deleted language.

The SCAQMD has a unique system of structuring and numbering permit conditions. In order for the reader to avoid confusion between the SCAQMD numbering and Energy Commission numbering, a table is included below that cross references the conditions in the SCAQMD permit to the conditions in the license and subsequent amendments as proposed.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD, AQMD OR DISTRICT) PERMIT CONDITIONS WITH CORRESPONDING ENERGY COMMISSION CONDITIONS OF CERTIFICATION:

SCAQMD Permit Conditions	Energy Commission Conditions of Certification	Condition Description
NA	**AQ-C1-C14**	Staff Conditions
F9.1	**AQ-1**	Equipment Ringelmann and opacity requirements.
F14.1	**AQ-2**	Diesel use sulfur content requirements.
F14.2	**AQ-2**	Diesel use sulfur content requirements. Subsumed by AQ-2.
F16.2	**AQ-3**	Record keeping requirements for fuel oil.
A63.4	**AQ-5**	Monthly contaminant emission limits (CO, VOC, PM10, and SOx). Includes emissions calculation direction and emission factors.
A99.6	**AQ-6**	NOx emission limit of 2.0 ppm does not apply during startup, and shutdown periods. Includes startup and shutdown definitions and limitations.

SCAQMD Permit Conditions	Energy Commission Conditions of Certification	Condition Description
A99.7	**AQ-6**	CO emission limit of 2.0 ppm does not apply during startup, and shutdown periods. Includes startup and shutdown definitions and limitations.
A99.8	**AQ-6**	VOC emission limit of 2.0 ppm does not apply during startup, and shutdown periods. Includes startup and shutdown definitions and limitations.
A195.5	**AQ-9**	NOx emission limit of 2.0 ppm @ 15% O_2 averaged over 1-hour.
A195.6	**AQ-10**	CO emission limit of 2.0 ppm @ 15% O_2 averaged over 1-hour.
A195.7	**AQ-11**	VOC emission limit of 2.0 ppm @ 15% O_2 averaged over 1-hour.
A195.4	**AQ-12**	NH_3 limit of 5 ppmv @ 15% O_2 averaged over 1-hour. Includes slip calculation equation.
A327.1	**AQ-13**	Under Rule 475; project may violate either the mass emission limit or concentration emission limit, but not both at the same time.
B61.2	**AQ-14**	Diesel fuel sulfur content limited to 15 ppm by weight.
C1.5	**AQ-15**	Limit emergency engine operation to 200 hours per year, no more than 50 hours for maintenance and testing.
C1.6	**AQ-27**	Limit fuel usage to 405 million cubic feet per month.
C157.1	**AQ-16**	Storage tank pressure relief valve set to 25 psig.
D12.2	**AQ-17**	Requires a non-resettable time meter to indicate elapsed operating time of the engine.
D12.3	**AQ-18**	Requires a non-resettable fuel meter to indicate fuel usage of the turbine.
D12.4	**AQ-19**	Requirements for a flow meter to monitor NH_3 injection.
D12.5	**AQ-20**	Requirements for a temperature gauge for the SCR.
D12.6	**AQ-21**	Requirements for a pressure gauge for the SCR.
D29.4	**AQ-23**	Ongoing source testing requirements.
D29.5	**AQ-24**	Ongoing NH_3 source testing requirements.
D82.1	**AQ-25**	CEMS CO monitoring requirements.
D82.2	**AQ-26**	CEMS NOx monitoring requirements.

SCAQMD Permit Conditions	Energy Commission Conditions of Certification	Condition Description
E57.1	**AQ-28**	Vent to emission control when in operation.
E144.1	**AQ-29**	Venting limitation for NH_3 storage tank.
E179.4	**AQ-30**	Requirements for continuous recording.
E179.5	**AQ-31**	Requirements for continuous recording.
E193.1	**AQ-37**	Operation and maintenance requirements for the emergency fire pump.
E193.2	**AQ-38**	Commissioning requirements for the A+ Turbine Upgrade.
H23.2	**AQ-39**	40 CFR 60 Subpart KKKK emission requirements.
H23.3	**AQ-40**	40 CFR 75 acid rain requirement.
I298.1 I298.5	**AQ-32**	Outlines RECLAIM Trade Credit requirements.
K40.1	**AQ-33**	Source testing recordkeeping and reporting.
K48.1	**AQ-35**	Record keeping requirements for fire pump engine.
K67.1	**AQ-34**	Record keeping requirements for architectural coatings.
K67.2	**AQ-35**	Record keeping requirements for fire pump engine.
K67.4	**AQ-36**	Record keeping requirements for duct burner operation.

CONDITIONS OF CERTIFICATION

Equipment

ID No.	Equipment Descriptions
Internal Combustion – Power Generation	
MGS Power Island No.1	
D27	**SiemensSGT800 Natural Gas Turbine with A-Plus Upgrade, No.1, 491.76 million British thermal units per hour (MMBtu/hr) at 38 degrees Fahrenheit (F), with 48.4 megawatt (MW) Gross at 38 F Generator CTG No.1 (B28), Heat Exchanger, Heat Recovery Steam Generator (HRSG) No.1 (B29), and 55 MW Gross Steam Turbine Generator (STG) (B30), common with HRSG No.2. Connected to C32 and C33.**
D31	**Duct Burner, No.1,-serving HRSG No.1, 81.2 MMBtu/hr. Connected to C32 and C33.**

C32	**Carbon Monoxide (CO) Oxidation Catalyst, No.1, volume 63 cubic feet. Serving turbine No.1, Connected to D27 and D31.**
C33	**Selective Catalytic Reduction (SCR), No. 1, volume 537.1 cubic feet, width: 10 feet 11 inches, height: 47 feet 7 inches, length: 3 feet 6 inches, with ammonia injection. Connected to D27 and D31.**
D35	**Stack No.1, serving No.1, height: 110 feet, diameter: 12 feet.**
MGS Power Island No.2	
D36	**SiemensSGT800 Natural Gas Turbine with A-Plus Upgrade, No.2, 491.76 MMBtu/hr at 38 F, with 48.4 MW Gross at 38 F Generator CTG No.2 (B37), Heat Exchanger, Heat Recovery Steam Generator No.2 (B38), and 55 MW Gross Steam Turbine Generator (STG), common with HRSG No.2. Connected to C40 and C41.**
D39	**Duct Burner, No.2,-serving HRSG No.2, 81.2 MMBtu/hr. Connected to C40 and C41.**
C40	**CO Oxidation Catalyst, No.2, volume 63 cubic feet. Serving turbine No.2, Connected to D36 and D39.**
C41	**Selective Catalytic Reduction (SCR), No. 2, volume 537.1 cubic feet, width: 10 feet 11 inches, height: 47 feet 7 inches, length: 3 feet 6 inches, with ammonia injection. Connected to D36 and D39.**
D43	**Stack No.2, serving No.2, height: 110 feet, diameter: 12 feet.**
Internal Combustion – Diesel Engines	
D48	**Internal Combustion Engine, emergency fire, diesel Deutz Model BF6M2012Clarke with aftercooler and turbocharger, 175 brake horsepower (BHP).**
Inorganic Chemical Storage	
D44	**Aqueous Ammonia Tank, 19 percent solution with vapor return line, 8,800 gallon, diameter: 10 feet, height: 15 feet.**
Oil Water Separation	
D45	**Oil Water Separator**
Other Provisions	
E47	**SCAQMD Exempt Equipment: Architectural Coatings.**
Cooling Tower	
NA	**Cooling Tower, drift rate of 0.0005 percent.**

Staff Conditions

AQ-C1 The project owner shall develop and submit to the **Energy Commission Compliance Project Manager (**CPM**)** for approval an Air Quality Construction Mitigation Plan (AQCMP) using any or all of the elements listed below to maintain construction-related emissions so that the difference between upwind and downwind ambient air concentration does not exceed 235 ug/m^3 (averaged over 1 hour) for NO_2 and 50 ug/m^3 (averaged over 24 hours) for PM10. The project owner shall identify the placement of upwind and downwind monitoring for NO_2 and PM10 in the AQCMP. In addition to the measures described below, the project owner may develop supplemental measures to be approved by the CPM in order to achieve the identified goals.

1. Redirect pedestrian traffic from the square block area described by the intersections of Leonis, 50th, Seville and Soto Avenues.
2. Restrict the use of multiple heavy construction equipment at the MGS project site.
3. Unless shown to be impractical, use a water emulsion diesel fuel in all diesel powered construction equipment to reduce both **particulate matter less than 10 microns (**PM10**)** and **nitrogen oxides (**NOx) emissions (equipment tanks must be emptied and refilled with this fuel prior to operation on-site). Otherwise, use ultra low sulfur diesel fuel (equipment tanks must be emptied and refilled with this fuel prior to operation on-site).
4. Use only 1996 ARB or EPA-certified or better diesel engines. In the event that a 1996 ARB or EPA-certified engine is not available, use in conjunction with ultra low sulfur diesel fuel, catalyzed diesel particulate filters (CDPF) on all diesel engines over 100 bhp with the exemptions listed. All exempted equipment must use water emulsion diesel fuel if available on-site. If water emulsion diesel fuel is not available on-site, then all exempted equipment must use ARB-certified ultra low sulfur diesel fuel. Exempted equipment includes:
   - Cranes;
   - On-road licensed vehicles; and,
   - Loaders, skiffs, or backhoes that operate less than 2 hours at a time.
5. Identify the employee parking area(s) and surface composition of those parking area(s).
6. Watering of all disturbed areas twice daily.
7. Use sandbags to prevent run off.
8. Use wheel-washing areas prior to large trucks leaving the project site.
9. Describe methods that will be used to clean mud and dirt that has been tracked-out from the project site onto public roads.
10. For any transportation of solid bulk material:
    - Use vehicle covers;
    - Wet the transported material; and
    - Use appropriate amount of freeboard.
11. Identify methods for the stabilization of storage piles and disturbed areas.
12. Employ windbreaks at appropriate locations.

Verification: The project owner shall submit the AQCMP for approval to the CPM no later than 45 days prior to site mobilization.

AQ-C2 The project owner shall identify the individual(s), for approval by the CPM, that will be on-site during all construction activities to ensure that all measures called for in the AQCMP are carried out.

Verification: The project owner shall submit the name and contact information along with a resume of the individual(s) for approval to the CPM 10 days prior to site mobilization.

AQ-C3 The project owner shall submit to the CPM for approval a monthly compliance report signed by the individual(s) identified in Condition of Certification **AQ-C2**, that identifies all upwind-downwind monitoring results and mitigation measures implemented per the AQCMP. The project owner shall submit for approval the format of this monthly report to the CPM.

Verification: The project owner shall submit the format for the Monthly Compliance Report to the CPM no later than 10 days prior to site mobilization. The project owner shall submit the Monthly Compliance Report for each month that construction activities occur for approval by the CPM no later than the 15th of the following month.

AQ-C4 The project owner shall submit to the CPM for approval prior to construction of the cooling tower, the cooling tower design details including following elements:

1. Materials of construction;
2. Drift eliminator design and details (to be designed to a drift rate of 0.0005%);
3. Vendor specific justification for the correction factor to be used to correlate blowdown total dissolved solid (TDS) to drift TDS in Condition of Certification **AQ-C7**; and
4. The circulating water recirculation rate.

Verification: The project owner shall submit the information required above for approval to the CPM, no later than 45 days prior to commencement of construction of the cooling towers.

AQ-C5 No chromium containing compounds shall be added to cooling tower circulating water.

Verification: ~~The project owner shall make the site available for inspection by representatives of the South Coast Air Quality Management District (District), ARB and the Commission.~~ **The project owner shall make the site and records available for inspection by representatives of the South Coast Air Quality Management District (SCAQMD or District), California Air Resources Board (ARB), United States Environmental Protection Agency (U.S. EPA or EPA), and Energy Commission upon request**

AQ-C6 The project owner shall determine the TDS level~~s~~ in the blowdown water by independent laboratory testing prior to initial operation and periodically thereafter.

Verification: The project owner shall submit for approval to the CPM, a protocol for initial and weekly testing and the identification of the independent laboratory to be used 90 days prior to cooling tower operation. The project owner shall submit weekly TDS reports for the blowdown water as part of the quarterly emission report to the CPM for approval.

AQ-C7 PM10 emissions from the cooling tower (in total) shall not exceed 6.2 **pounds per day (**lb/day**)**.

Protocol: Compliance with the PM10 daily emission limit shall be demonstrated as follows:

PM10 lb/day = A*B*C*D where:

A = circulating water recirculation rate (Condition of Certification **AQ-C4**)
B = total dissolved solids concentration in the blowdown water to be updated on a weekly basis (Condition of Certification **AQ-C6**)
C = design drift rate (Condition of Certification **AQ-C4**)
D = correction factor (Condition of Certification **AQ-C4**)

Verification: The project owner shall calculate the daily PM10 emissions from the cooling tower and submit all calculations and results on a quarterly basis in the quarterly emission reports to the CPM for approval.

AQ-C8 The project owner shall refrain from testing the firewater pump ~~on~~ **during** the same ~~day~~ **hour** as either gas fired combustion turbines ~~have been~~ **is in** start~~ed~~ up or shutdown as defined by Condition of Certification **AQ-C9**.

Verification: The project owner shall submit to the CPM for approval all testing times and results of the diesel fired emergency firewater pump in the quarterly emissions report.

AQ-C9 The project owner shall use the following definitions to determine compliance with startup, shutdown and any related emission or operational limitations.

Startup is defined as beginning when fuel is first delivered to the combustors of the combustion turbine and ending when the combustion turbine reaches all NOx and CO emission limits for normal operation.

Shutdown is defined as beginning during normal operation with the intent to shutdown and ends with the secession of fuel being delivered to the combustors of the combustion turbine.

Verification: See Verification for Condition of Certification **AQ-6**.

AQ-C10 DELETED The project owner shall commission and operate the Malburg Generating Station within the following emission limits.

Commissioning

During the first year of commissioning and operation, the following emission limits shall apply.

Annual Commissioning Emission Limits

Units are in pounds per year

	Gas Turbines (2)	Cooling Tower	Firewater Pump	Facility Total	Assumptions
CO	112,743	0	478	113,221	a,b,c
NOx	229,531	0	1,377	230,908	a,b,c
PM10	48,873	2,190	58	51,121	a,b,c
ROG	40,518	0	35	40,553	a,b,c
SOx	4,294	0	2	4,296	a,b,c
Ammonia	49,514	0	0	49,514	a,b,c

Assumptions

a The gas turbines are undergoing initial commissioning for three months (2,160 hours) then 3 cold startups, 39 warm startups,
42 shutdowns and 4,355 hours at full load with the duct burners on @ 65 deg F.
b The cooling tower at full load for 8760 hours/year.
c The Firewater pump is being tested 199 hours/year.

Post-Commissioning

After the end of the commissioning period, the following hourly and daily emission limits shall apply. The following annual emission limits shall only apply until after the first calendar year of operation is complete.

Hourly Emission Limits

Units are in pounds per hour

	Gas Turbines (2)	Cooling Tower	Firewater Pump	Facility Total	Assumptions
CO	140	0	0.59	140[e]	a,c,d
NOx	55	0	1.73	55[e]	a,c,d
PM10	7.78	0.26	0.08	8.12	b,c,d
VOC	3.3	0	0.05	3.35	a,c,d
SOx	0.3	0	0.002	0.30	b,c,d
Ammonia	7.6	0	0.00	7.60	b,c,d

Assumptions

a The gas turbines are undergoing a cold startup
b The gas turbines are at full load @ 38 deg F with the duct burners on.
c The cooling tower is at full load.
d The Firewater pump is being tested for ½ hour.
e. The "Facility Total" limit does not explicitly include the "Firewater Pump" and the "Gas Turbine (2)" emissions as the test firing of the firewater pump is infrequent and not expected to coincide with the infrequent high CO and NO_x emissions events from the gas turbines.

Daily Emission Limits

Units are in pounds per day

	Gas Turbines (2)	Cooling Tower	Firewater Pump	Facility Total	Assumptions
CO	245	0	0.59	245[f]	a,d,e,f
NOx	230	0	1.73	230[f]	a,d,e,f
PM10	158.00	6.20	0.08	164.28	a,d,e
VOC	36.00	0	0.05	36.05	a,d,e
SOx	6.00	0	0.002	6.00	a,d,e
Ammonia	182.4	0	0.00	182.40	a,d,e

Assumptions

a. The gas turbines are undergoing 1 cold startup (2 hours) per day and22 hours of full load with duct firing, @ 65 deg F.
b. The gas turbines are at full load for 24 hours @ 38 deg F with the duct burners on
c. The gas turbines are undergoing cold startup (2 hours) and baseload operation for 22 hours @ 38 deg F.
d. The cooling tower is at full load for 24 hours/day
e. The Firewater pump is being tested 0.5 hours/day
f. The "Facility Total" limit does not explicitly include the "Firewater Pump" and the "Gas Turbine(2)" emissions as the test firing of the firewater pump is infrequent and not expected to coincide with the infrequent high CO and NO**x** emissions events from the gas turbines.

Annual Emission Limits

Units are in pounds per year

	Gas Turbines (2)	Cooling Tower	Firewater Pump	Facility Total		Assumptions
				Lbs/yr	Tons/yr	
CO	37,768	0	235	38,003	19.00	a,c,d
NOx	53,044	0	689	53,733	26.87	b,c,d
PM10	56,676	2,278	32	58,986	29.49	a,c,d
VOC	13,027	0	20	13,047	6.52	a,c,d
SOx	2,122	0	1	2,123	1.06	a,c,d
Ammonia	66,576	0	0	66,576	3.29	a,c,d

Assumptions

a. The gas turbines are undergoing 4cold starts per turbine per year with the balance of full load operation with the duct burner, and one shutdown per month.
b. The gas turbines are undergoing 4 cold starts (2 hours), 52 warm starts (1.5 hours) 1314 hours of full load operation with the duct burner, 5782 hours of full load operation without the duct burner and 56 shutdowns (0.5 hours) per year.
c. The cooling tower at full load for 8760 hours/year.
d. The Firewater Pump is being tested 199 hours/year.

Verification: The project owner shall submit to the CPM for approval on a quarterly basis all emission records and calculations to demonstrate compliance with the emission limits stated herein as part of the quarterly emissions report.

AQ-C11 The project owner shall submit a quarterly emissions report on a quarterly basis to the CPM for approval. The quarterly emissions report shall generally report all ammonia, NOx, **sulfur oxides (**SOx**)**, CO, PM10 and **volatile organic compounds (**VOC**)** emissions from the Malburg Generating Station as necessary to demonstrate compliance with all emission limits. The fourth quarter emission report shall include an annual summary of all emissions of

ammonia, NOx, SOx, CO, PM10 and VOC ~~as necessary to demonstrate compliance with all annual emission limits~~.

Verification: The project owner shall submit to the CPM the quarterly emissions report no less than 30 days after the end of each calendar quarter.

AQ-C12 The project owner shall commit specific emission reduction credit~~s~~ **(ERC)** certificates for the MGS to offset the project emissions provided as provided for in **Table AQ-C12-1**. The project owner shall not use any ERCs identified in **Table AQ-C12-1** for purposes other than offsetting the MGS.

TABLE AQ-C12-1 – Emission Offset Requirements

Certificate Number	Amount (lbs/day)	Pollutant
AQ004457	8	CO
AQ004458	13	CO
AQ004466	13	CO
AQ004474	2	CO
AQ004475	4	CO
AQ004847	14	CO
AQ004840	60	CO
AQ004801	45	CO
AQ004798	2	CO
Additional ERCs Certificate numbers not available, but are purchased and total	144	CO
Total	305	CO
AQ004367	108	VOC
AQ004493	22	VOC
Total	130	VOC
AQ004763	3	PM10
Priority Reserve – Purchased by the City	160	PM10
Priority Reserve – Provided by the District	32	PM10
Total	195	PM10
1304 Exempted Emissions – Provided by the District	7	SO_2

The project owner shall request from the District a report of the NSR Ledger Account for the MGS after the District has granted the project owner a Permit to Construct and Temporary Permit to Operate. This report is to specifically identify the ERCs, Priority Reserve Credits and Rule 1304 Exempted Emissions used to offset the project emissions. The project owner shall submit this report to the CPM prior to turbine first fire.

Verification: No more than 15 days following the issuance of the District's Permit to Construct, the project owner shall request from the District the report of the NSR Ledger

Account for the MGS. The project shall submit the report of the NSR Ledger Account for the MGS to the CPM no less than 30 days prior to turbine first fire.

AQ-C13 The project owner shall submit to the CPM for review and approval any modification proposed by either the project owner or issuing agency to any project air permit.

Verification: The project owner shall submit any proposed air permit modification to the CPM within five working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

AQ-C14 The project owner shall install an oxidation catalyst prior to initiating operation for commissioning.

Verification: The project owner shall submit engineering drawing or other such material showing the intended location of installation of the oxidation catalyst 90 days prior to initial startup to the CPM and District for review and approval. The project owner shall notify the CPM of the intended installation date at least 30 days prior to the date of installation. The project owner shall notify the CPM of the date of completed installation no less than 10 days following the date of completed installation.

South Coast Air Quality management District Conditions of Certification

AQ-1 Except for open abrasive blasting operations, the project owner shall not discharge into the atmosphere from any single source of emissions whatsoever any contaminant for a period or periods aggregating more than three minutes in any one hour which is:

a) As dark or darker in shade as that designated No. 1 on the Ringle**l**mann Chart, as published by the United States Bureau of Mines; or

b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subparagraph (a) of this condition.

[Rule 401]

Verification: The project owner shall make the Malburg Generating Station site accessible for inspection to the District, ARB and Commission. **The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.**

AQ-2 The project owner shall not use diesel oil containing sulfur compounds in excess of 15 **parts per million (**ppm**)** by weight as supplied by the supplier.

The operator shall not use diesel fuel containing sulfur compounds in excess of 0.05 percent by weight.

[Rule 1303(a)(1)-BACT, Rule 1303(b)(1)-Modeling, Rule 431.2]

Verification: The project owner shall submit fuel purchase records for approval to the CPM on a quarterly basis in the quarterly emissions report.

AQ-3 The project owner shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Purchase records of fuel oil and sulfur content of the fuel.

[Rule 1303(a)(1)-BACT, Rule 1303(b)(2)-Offset, Rule 431.2]

Verification: The project owner shall submit fuel purchase records for approval to the CPM on a quarterly basis in the quarterly emissions report.

AQ-4 **DELETED** ~~Accident release prevention requirements of Section 112 (r)(7):~~

~~a). The project owner shall comply with the accidental release prevention requirements pursuant to 40CFR Part 68 and shall submit to the Executive Officer and the CPM, as a part of an annual compliance certification, a statement that certifies compliance with all of the requirements of 40 CFR Part 68, including the registration and admission of a risk management plan (RMP).~~

~~b). The project owner shall submit any additional relevant information requested by the Executive Officer, designated agency or CPM.~~

~~**Verification:** The project owner shall submit for approval to the CPM the above required statement of compliance and any further information requested on an annual basis as part of the annual compliance report.~~

AQ-5 The project owner shall limit the emissions from both gas fired combustion turbine-heat recovery steam generator train exhaust stacks as follows:

Contaminant	Emissions Limit
CO	7,633 lbs in any one month
PM10	4,876 lbs in any one month
PM2.5	**4,876 lbs in any one month**
VOC	3,236 lbs in any one month
SOx	~~214~~ **227** lbs in any one month

PM2.5 = Particulate matter less than 2.5 microns
SOx = sulfur ocxides

For the purpose of this condition, the limit(s) shall be based on the total combined emissions from ~~the exhaust stacks for~~ **equipment D27, D36 (**both gas turbines**)** and **D31, D39 (**both duct burners**)**.

The project owner shall calculate the emissions for CO after the CO CEMS certification, based on readings from the certified **CO** CEMS. In the event the CO CEMS is not operating or the emissions exceed the valid upper range of

the analyzer, the emissions shall be calculated in accordance with the approved CEMS plan.

For normal operation, ~~T~~**t**he project owner shall calculate the emissions by using the monthly fuel use data **for normal operation** and the following emission factors: PM10**/PM2.5** = ~~7.397~~ **6.014 pounds per million standard cubic feet (**lb/mmscf**)**; VOC = ~~1.63~~ **1.54** lb/mmscf; and SOx = 0.28lb/mmscf.

For the commissioning of the Siemens A-Plus Turbine Upgrade project, the project owner shall calculate the emissions by using monthly fuel use data for the commissioning and the following emission factors: PM10/PM2.5 = 6.014 lbs/mmscf, VOC = 22.26 lbs/mmscf, and SOx 0.6 = lb/mmscf.

For a month during which both commissioning and normal operation take place, the monthly emissions shall be the sum of the commissioning emissions and the normal operation emissions.

The project owner shall maintain records in a manner approved by the District to demonstrate compliance with this condition and the records shall be made available to District upon request.

[Rule 1303(b)(2)-Offset]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: The project owner shall submit all emission calculations, fuel use, CEM records and a summary demonstrating compliance of all emission limits stated in this Condition for approval to the CPM on a quarterly basis in the quarterly emissions report.

AQ-6 The 2**.0** ppm NOx, CO, and VOC emission limits shall not apply during turbine **commissioning,** startups**,** and shutdowns.

For the purposes of this condition, a startup begins with the initiation of combustion and concludes at the end of the 15-minute quadrant in which BACT is achieved or the startup is aborted by a trip. A startup may include one or more trips and restart attempts. A trip is an event in which the turbine experiences an automatic equipment shutdown to prevent equipment damage or as a result of equipment malfunction.

A cold startup shall be defined as a startup which occurs after the turbine has been shut down for more than 48 hours. Each cold startup, without a trip, shall not exceed 120 minutes. Each cold startup, with one or more trips shall not exceed 150 minutes. Emissions for a cold startup, with or without trips, shall not exceed the following:

Contaminant	Cold Startup Emissions Limit
NOx	122.8 lbs

CO	204.8 lbs
VOC	1.75 lbs

A non-cold startup shall be defined as a startup which occurs after the turbine has been shut down for 48 hours or less. Each non-cold startup, without a trip, shall not exceed 90 minutes. Each non-cold startup, with one or more trips, shall not exceed 120 minutes. Emissions for a non-cold startup, with or without trip(s), shall not exceed the following:

Contaminant	Non-Cold Startup Emissions Limit
NOx	51.3 lbs
CO	59.9 lbs
VOC	1.55 lbs

A shutdown is a controlled process of unloading the turbine/generator and opening the generator breaker. A shutdown begins 30 minutes prior to cessation of combustion and ends with cessation of combustion. Each shutdown shall not exceed 30 minutes. Emissions for a shutdown shall not exceed the following:

Contaminant	~~Non-Cold Startup~~ **Shutdown** Emissions Limit
NOx	4.5 lbs
CO	10.8 lbs
VOC	0.71lbs

The turbine shall be limited to a maximum of 10 startups per month, which includes no more than 5 cold starts per month, with no more than 2 startups in any day. The turbine shall be limited to a maximum of 56 startups per year, which includes no more than 30 cold startups per year.

The project owner shall maintain records in a manner approved by the District to demonstrate compliance with this condition, and the records shall be made available to the District upon request.

[Rule 2005, Rule 1303(a)(1)-BACT, Rule 1703(a)(2)-PSD-BACT]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: ~~The project owner shall report to the CPM for approval all emissions, fuel use and emission calculations during the commissioning period on a monthly basis as part of the monthly compliance report.~~ The project owner shall submit to the CPM for approval all required records including a record of all startups and shutdowns including duration and date of occurrence on a quarterly basis as part of the quarterly emission report.

AQ-7 ~~RESERVED~~ **DELETED**

AQ-8 **DELETED** ~~The 80.13 lb/mmscf NOx emission limit(s) shall only apply during interim period to report RECLAIM emissions. The interim period shall not exceed 12 months from the initial start-up date.~~

Verification: ~~The project owner shall submit to the CPM for approval all emissions and emission calculations on a quarterly basis as part of the quarterly emissions report.~~

AQ-9 The 2**.0** ~~PPM~~**ppmv** NOx emissions limit(s) are averaged over 1 hour at 15 percent oxygen, dry basis.

[Rule 2005]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: The project owner shall submit to the CPM for approval all emissions and emission calculations on a quarterly basis as part of the quarterly emissions report.

AQ-10 The 2**.0** ppm**v** CO emission limit(s) are averaged over ~~3~~ **1** hour~~s~~ at 15 percent oxygen, dry basis.

[Rule 1303(a)(1)-BACT, Rule 1703(a)(2)-PSD-BACT]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: The project owner shall submit to the CPM for approval all emissions and emission calculations on a quarterly basis as part of the quarterly emissions report.

AQ-11 The 2**.0** ppm**v** ~~ROG~~**VOC** emission limit(s) are averaged over 1 hour at 15 percent oxygen, dry basis.

[Rule 1303(a)(1)-BACT]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: The project owner shall submit to the CPM for approval all emissions and emission calculations on a quarterly basis as part of the quarterly emissions report.

AQ-12 The 5 ppm **ammonia (**NH_3**)** emission limit(s) are averaged over 1 hour at 15 percent oxygen, dry basis. The project owner shall calculate and continuously record the ammonia slip concentration using the following **formula**:

NH_3 (ppmv) = [a-(b*c/1,000,000)*(1,000,000***d**/b)] where

a = ammonia injection rate (lbs/hr)/17 (lbs/lb-mole)

b = dry exhaust gas flow rate (lbs/hr)/29 (lbs/lb-mole)

c = change in measured NOx across the SCR (ppmv dry basis)

d = correction derived by comparing the measured and calculated NH_3 slip concentrations during annual compliance testing

The project owner shall install and maintain a NOx analyzer to measure the SCR inlet NOx ppmv accurate to plus or minus 5 percent and calibrated at least once every 12 months.

The calculated NH_3 value may not be used for compliance determination without corroborative data using an approved reference method for determination of ammonia.

[Rule 1303(a)(1)-BACT]
[Devices subject to this condition: C33, C41]

Verification: The project owner shall submit to the CPM for approval all emissions and emission calculations on a quarterly basis as part of the quarterly emissions report.

AQ-13 For the purpose of determining compliance with District Rule 475, combustion contaminant emissions may exceed the concentration limit or the mass emission limit listed, but not both emission limits at the same time.

[Rule 475]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: The project owner shall submit to the CPM for approval all emissions and emission calculations on a quarterly basis as part of the quarterly emissions report.

AQ-14 The project owner shall ~~not~~ **only** use ~~engine cylinder lubricating oil~~ **diesel fuel** containing the following specified compounds:

Compound	~~Weight percent~~ **ppm by weight**
~~Ash Content~~ **sulfur less than or equal to**	~~0.038~~ **15**

[Rule 1303(a)(1)-BACT, Rule 1303(b)(2)-Offset]
[Devices subject to this condition: D48]

Verification: The project owner shall submit fuel purchase records for approval to the CPM on a quarterly basis in the quarterly emissions report.

AQ-15 The project owner shall limit the operating time ~~of the diesel fueled emergency backup generators and the firewater pump~~ to no more than ~~199~~ **200** hours each in any one year.

Operations for maintenance and testing as defined in Rule 1470 shall not exceed 50 hours in any one calendar year. The total annual operating time includes all operations including maintenance and testing.

[Rule 1110.2, Rule 1304(a)-Modeling and Offset Exemption, Rule 2012]
[Devices subject to this condition: D48]

Verification: See Verification for Condition of Certification **AQ-C8**.

AQ-16 The project owner shall install and maintain a pressure relief valve set at 25 psig ~~in the ammonia storage tank~~.

[Rule 1303(a)(1)-BACT]
[Devices subject to this condition: D44]

Verification: The project owner shall make the ammonia storage tank available for inspection by the District, Commission or ARB.

AQ-17 The project owner shall install and maintain a(n) non-resettable elapsed time meter ~~into the firewater pump~~ to accurately indicate the elapsed operating time of the engine.

[Rule 1110.2, Rule 1304(a)-Modeling and Offset Exemption, Rule 2012]
[Devices subject to this condition: D48]

Verification: The project owner shall make the firewater pump available for inspection by the District, Commission or ARB.

AQ-18 The project owner shall install and maintain a(n) non-resettable totalizing fuel meter to accurately indicate the fuel usage of the turbines.

[Rule 1303(b)(2)-Offset, Rule 2005]]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: ~~The project owner shall make the firewater pump available for inspection by the District, Commission or ARB.~~ **The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.**

AQ-19 The project owner shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH_3).

The project owner shall also install and maintain a device to continuously record the parameter being measured.

The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The project owner shall maintain the ammonia injection rate between 5 lb/hr and 175 lb/hr.

[Rule 1303(a)(1)-BACT, Rule 2005]
[Devices subject to this condition: C33, C41]

Verification: The project owner shall submit to CPM for approval the design drawing that clearly show the flow meter and recording device for the ammonia injection grid no less than 90 days prior to installation of the ammonia injection grid. The project owner shall submit to the CPM for approval the annual calibration report for the flow meter and recording device as part of the annual compliance report.

AQ-20 The project owner shall install and maintain a(n) temperature gauge to accurately indicate the temperature in the exhaust at the inlet to the SCR reactor.

The project owner shall also install and maintain a device to continuously record the parameter being measured.

The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between 350 degrees Fahrenheit and 750 degrees Fahrenheit except during startups and shutdowns.

[Rule 1303(a)(1)-BACT, Rule 2005]
[Devices subject to this condition: C33, C41]

Verification: The project owner shall submit to CPM for approval the design drawing that clearly show the temperature gauge and recording device for the inlet to the SCR reactor no less than 90 days prior to installation of the SCR. The project owner shall submit to the CPM for approval the annual calibration report for the temperature gauge and recording device as part of the annual compliance report.

AQ-21 The project owner shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the SCR catalyst bed in inches of water column.

The project owner shall also install and maintain a device to continuously record the parameter being measured.

The measuring device or gauge shall be accurate to within plus or minus 5 percent. It shall be calibrated once every 12 months.

The pressure drop across the catalyst shall be between 0.15 abd 2.0 inches water column.

[Rule 1303(a)(1)-BACT, Rule 2005]
[Devices subject to this condition: C33, C41]

Verification: The project owner shall submit to CPM for approval the design drawing that clearly show the pressure gauge and recording device across the SCR reactor no less than 90 days prior to installation of the SCR. The project owner shall submit to the CPM for approval the annual calibration report for the pressure gauge and recording device as part of the annual compliance report.

AQ-22 **DELETED** ~~The project owner shall conduct source test (s) for the pollutant(s) identified below:~~

~~Pollutant(s) to be tested~~	~~Required Test Method(s)~~	~~Averaging Time~~	~~Test Location~~
~~CO Emissions~~	~~District Method 100.1~~	~~1 hour~~	~~Outlet of SCR~~
~~NOx Emissions~~	~~District Method 100.1~~	~~1 hour~~	~~Outlet of SCR~~
~~PM Emissions~~	~~Approved District Method~~	~~District approved averaging time~~	~~Outlet of SCR~~
~~VOC Emissions~~	~~Approved District Method~~	~~1 hour~~	~~Outlet of SCR~~
~~SOx Emissions~~	~~Approved District Method~~	~~District approved averaging time~~	~~Fuel Sample~~
~~NH_3 Emissions~~	~~District Method 207.1 and 5.3 or EPA Method 17~~	~~1 hour~~	~~Outlet of SCR~~

~~The test (s) shall be conducted after approval of the source test protocol, but no later than 180 days after initial start up.~~

~~The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the test shall measure the fuel flow rate (CFH), the flue gas flow rate, and the turbine and steam turbine generating output (MW).~~

~~The test shall be conducted in accordance with a District approved source test protocol. The protocol shall be submitted to the District engineer and the CPM no later than 45 days before the proposed test date and shall be approved by the District and the CPM before the test commences. The test protocol shall include the proposed operating conditions of the turbines during the test the identity of the testing lab certifying that it meets the criteria of Rule 304, and a description of all sampling and analytical procedures.~~

~~The test shall be conducted with and without duct burner firing when this equipment is operating at loads of 100, 75, and 50 percent of maximum load for the NOx, CO, VOC and ammonia tests. For all other pollutants, the test shall be conducted with and without the duct burner firing at 100% load only.~~

~~The District and the CPM shall be notified of the date and time of the test at least 10 days prior to the test.~~

Verification: ~~The project owner shall submit for approval to the District and the CPM the required initial source testing protocol no less than 45 days prior to the date of the source test. The project owner shall notify the District and CPM of the date and time of the source test no less than 10 days prior to the test. Project owner shall submit to the District and CPM for approval the results of the initial source test no later than 60 days following the date of the source test.~~

AQ-23 The project owner shall conduct source test(s) for the pollutant(s) identified below:

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
VOC Emissions	~~Approved District Method~~ **District Method 25.3 Modified**	1 hour	Outlet of SCR
SOx Emissions	~~Approved District Method~~ **AQMD Laboratory Method 307-91**	District approved averaging time	Fuel Sample
PM**10** Emissions	~~Approved District Method~~ **EPA Method 201A/ District Method 5.1**	District approved averaging time	Outlet of SCR

Source testing shall be conducted within 180 days after initial startup of the Siemens A-Plus Turbine Upgrade project, unless otherwise approved in writing by the Executive Officer. The test shall be conducted at least once every three years **thereafter**.

The test shall be conducted and the results submitted to the District and the CPM within 60 days after the test date The District and the CPM shall be notified of the date and time of the test at least 10 days prior to the test.

The test shall be conducted to demonstrate compliance with the Rule 1303 concentration and/or monthly emissions limits.

The test shall be conducted 1) when the gas turbine and the duct burners are operating simultaneously at 100 percent of maximum heat input and 2) when the gas turbine is operating alone at 100 percent of maximum heat input.

The sampling time for the PM10 test(s) shall be 4 hours or longer as necessary to obtain a measurable amount of sample.

For natural gas fired turbines only, for the purpose of demonstrating compliance with VOC BACT limits as determined by SCAQMD, the project owner shall use Method 25.3 modified as follows:

a) Triplicate stack gas samples extracted directly into Summa canisters, maintaining a final canister pressure between 400-500 millimeter of mercury (mm Hg) absolute,

b) Pressurization of the Summa canisters with zero gas analyzed /certified to containing less than 0.05 ppmv total hydrocarbons as carbon, and

c) Analysis of Summa canisters per the analysis portion of AQMD Method 25.3 with a minimum detection limit of 0.3 ppmv or less and reported to two significant figures. The temperature of the Summa canisters when extracting the samples for analysis shall not be below 70 degrees Fahrenheit.

The use of this modified method for VOC compliance determination does not mean that it is more accurate than unmodified AQMD Method 25.3, nor does it mean that it may be used in lieu of AQMD Method 25.3 without prior approval, except for the determination of compliance with the BACT level of 2.0 ppmv VOC calculated as carbon for natural gas fired turbines.

For purposes of this condition, an alternative test method may be allowed for any of the above pollutants upon concurrence by the U.S. EPA, ARB, and SCAQMD.

[Rule 1303(a)(1)-BACT, Rule 1303(b)(2)-Offsets]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: The project owner shall submit for approval to the District and the CPM the required source testing protocol no less than 45 days prior to the date of the source test. The project owner shall notify the District and CPM of the date and time of the source test no less than 10 days prior to the test. Project owner shall submit to the District and CPM for approval the results of the source test no later than 60 days following the date of the source test.

AQ-24 The project owner shall conduct source test(s) for the pollutant(s) identified below:

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH_3 Emissions	District Method 207.1 ~~and 5.3 or EPA Method 17~~	1 hour	Outlet of SCR

Source testing shall be conducted within 180 days after initial startup of the Siemens A-Plus Turbine Upgrade project, unless otherwise approved in writing by the SCAQMD Executive Officer. The test shall be conducted at least annually thereafter.

The test shall be conducted and the results submitted to the District and the CPM within 60 days after the test date. The District and the CPM shall be notified of the date and time of the test at least 10 days prior to the test.

The test shall be conducted to demonstrate compliance with the Rule 1303 concentration limit.

~~The test shall be conducted at least quarterly during the first twelve months of operation and at least annually thereafter.~~ The NOx concentration, as determined by the certified CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable or not yet certified, a test shall be conducted to determine the NOx emissions using District Method 100.1 measured over a 60-minute averaging period.

[Rule 1303(a)(1)-BACT, Rule 2005]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: The project owner shall submit for approval to the District and the CPM the required source testing protocol no less than 45 days prior to the date of the source test. The project owner shall notify the District and CPM of the date and time of the source test no less than 10 days prior to the test. Project owner shall submit to the District and CPM for approval the results of the source test no later than 60 days following the date of the source test.

AQ-25 The project owner shall install and maintain a CEMS ~~in each exhaust stack of the combustion turbine-HRSG trains~~ to measure the following parameters:

CO concentration in ppmv**.**

Concentrations shall be corrected to 15 percent oxygen on a dry basis**.**

The CEMS will convert the actual CO concentrations to mass emission rates (lb/hr) and record the hourly emission rates on a continuous basis.

~~The CEMS shall be installed and operated in accordance with an approved District Rule 218 CEMS plan application. The project owner shall not install the CEMS prior to receiving initial approval from District.~~

The CEMS will convert the actual CO concentrations to mass emission rates (lbs/hr) and record the hourly emission rates on a continuous basis.

The CEMS shall be installed and operated to measure CO concentration over a 15 minute averaging time period.

~~The CEMS shall be installed and operating no later than 90 days after initial start-up of the turbine.~~

[Rule 1303(a)(1)-BACT, Rule 218]

[Devices subject to this condition: D27, D31, D36, D39]

Verification: ~~The project owner shall make the Malburg Generating Station available for inspection by the District, Commission or ARB.~~ **The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.**

AQ-26 The **project owner** ~~operator~~ shall install and maintain a CEMS to measure the following parameters:

NOx concentration in ppmv**.**

Concentration shall be corrected to 15 percent oxygen on a dry basis.

~~The CEMS shall be installed and operating no later than 12 months after the initial start-up of the turbine and shall comply with the requirements of Rule 2012. During the interim period between the initial start-up and the provisional certification date of the CEMS, the project owner shall comply with the monitoring requirements of Rule 2012 (h)(2) and Rule 2012 (h)(3). Within two weeks of the turbine start-up date, the project owner shall provide written notification to the District of the exact date of start-up.~~

[Rule 2012]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: ~~The project owner shall make the Malburg Generating Station available for inspection by the District, Commission or ARB.~~ **The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.**

AQ-27 The project owner shall limit the fuel usage ~~of each turbine-duct burner pair~~ to no more than ~~330~~ **405** million cubic feet ~~per~~ **in any one calendar** month. ~~Project owner shall keep records, in a manner approved by the District, for the operational status of the duct burners and their fuel use~~.

For the purpose(s) of this condition, the limit shall be based on the total combined fuel usage for each turbine and associated duct burner.

The purpose(s) of this condition is to ensure compliance with the condition AQ-5 monthly emission limits.

[Rule 1303(b)(2)-Offsets]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: The project owner shall submit to the CPM for approval all emissions and emission calculations on a quarterly basis as part of the quarterly emissions report.

AQ-28 The project owner shall vent **this equipment** ~~combustion turbines and HRSGs~~ to the CO oxidation/SCR control system whenever the turbines are in operation.

[Rule 1303(a)(1)-BACT, Rule 2005]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: ~~The project owner shall make the Malburg Generating Station available for inspection by the District, Commission or ARB.~~ **The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.**

AQ-29 The project owner shall vent ammonia storage tank, during filling, only to the vessel from which it is being filled.

[Rule 1303(a)(1)-BACT]
[Devices subject to this condition: D44]

Verification: ~~The project owner shall make the Malburg Generating Station available for inspection by the District, Commission or ARB.~~ **The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.**

AQ-30 For the purpose of the following condition number(s), "continuously record" shall be defined as recording at least once every hour and shall be calculated upon the average of the continuous monitoring for that hour.

Condition of Certification **AQ-~~17~~ 18**
Condition of Certification **AQ-~~18~~ 19**

[Rule 1303(a)(1)-BACT, Rule 2005]
[Devices subject to this condition: C33, C41]

Verification: ~~The project owner shall make the Malburg Generating Station available for inspection by the District, Commission or ARB.~~ **The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.**

AQ-31 For the purpose of the following condition number(s), "continuously record" shall be defined as recording at least once every hour and shall be calculated based upon the average of the continuous monitoring for that month.

Condition of Certification **AQ-~~19~~20**

[Rule 1303(a)(1)-BACT, Rule 2005]
[Devices subject to this condition: C33, C41]

Verification: ~~The project owner shall make the Malburg Generating Station available for inspection by the District, Commission or ARB~~. **The project owner shall make the**

site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-32 ~~The MGS electric generating equipment shall not be operated unless the project owner demonstrates to the Executive Officer that the facility holds sufficient RTCs to offset the prorated annual emissions increase for the first compliance year of operation. In addition, this equipment shall not be operated unless the project owner demonstrates to the Executive Officer that, at the commencement of each compliance year after the first compliance year of operation, the facility hold sufficient RTCs in an amount equal to the annual emission increase. The project owner shall submit all such information to the CPM for approval.~~

This equipment shall not be operated unless the facility holds 34,349 pounds of NOx RECLAIM Trade Credits (RTCs) in its allocation account to offset the annual emissions increase for the first year of operation. The RTCs held to satisfy the first year of operation portion of this condition may be transferred only after one year from the initial start of operation. In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the start of operation, the facility holds 34,349 pounds of NOx RTCs valid during that compliance year. RTCs held to satisfy the compliance year portion of this condition may be transferred only after the compliance year for which the RTCs are held. If the initial or annual hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[Rule 2005]
[Devices subject to this condition: D27, D36]

This equipment shall not be operated unless the facility holds 6,143 pounds of NOx RTCs in its allocation account to offset the annual emissions increase for the first year of operation. The RTCs held to satisfy the first year of operation portion of this condition may be transferred only after one year from the initial start of operation. In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the start of operation, the facility holds 6,143 pounds of NOx RTCs valid during that compliance year. RTCs held to satisfy the compliance year portion of this condition may be transferred only after the compliance year for which the RTCs are held. If the initial or annual hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any

other amount of RTCs required to be held under other condition(s) stated in this permit.

[Rule 2005]
[Devices subject to this condition: D31, D39]

This equipment shall not be operated unless the facility holds 689 pounds of NOx RTCs in its allocation account to offset the annual emissions increase for the first year of operation. The RTCs held to satisfy the first year of operation portion of this condition may be transferred only after one year from the initial start of operation. In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the start of operation, the facility holds 689 pounds of NOx RTCs valid during that compliance year. RTCs held to satisfy the compliance year portion of this condition may be transferred only after the compliance year for which the RTCs are held. If the initial or annual hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[Rule 2005]
[Devices subject to this condition: D48]

Verification: ~~The project owner shall submit all identified evidence demonstrating compliance to the CPM on an annual basis as part of the annual compliance report.~~ **The project owner shall retain records at the project site and made available for review upon request. The project owner shall submit to the CPM records of all RTCs held for the facility annually in the fourth Quarterly Operation Report.**

AQ-33 The project owner shall provide to the District a source test report in accordance with the following specifications:

Source test results shall be submitted to the District no later than 60 days after the source test was conducted.

Emissions data shall be expressed in terms of concentration (ppmv), corrected to 15 percent oxygen~~, (~~dry basis~~.~~**), mass rate (lbs/hr), and lbs/mm cubic feet. In addition, solid PM emission, if required to be tested, shall also be reported in terms of grains per DSCF.**

All exhaust flow rates shall be expressed in terms of dry standard cubic feet per minute (DCFM) and dry actual cubic feet per minute (DACFM).

All moisture concentration shall be expressed in terms of % corrected to 15% oxygen.

~~Emissions data shall be expressed in terms of mass rate (lb/hr), and lbs/mm cubic feet. In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.~~

Source test results shall also include turbine fuel flow rate under which the test was conducted.

Source test report shall also include the oxygen level in the exhaust, fuel flow rate (CFH), the flue gas temperature, and the turbine and generator output (MW) under which the test was conducted.

[Rule 1303(a)(1)-BACT, Rule 1303(b)(2)-Offsets, Rule 2005]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: The project owner shall submit to the CPM the required source test of Conditions of Certification **AQ-21**, **AQ-22,** and **AQ-23** in compliance with this condition.

AQ-34 The project owner shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

For architectural applications where no thinners, reducers, or other VOC containing materials are added, maintain semi-annual records for all coatings consisting of (a) coating type, (b) VOC content as supplied in grams per liter (g/l) of materials for low-solids coatings, (c) VOC content as supplied in g/l of coating, less, water and exempt solvent, for other coatings.

For architectural applications where thinners, reducers, or other VOC containing materials are added, maintain daily records for each coating consisting of (a) coating type, (b) VOC content as applied in grams per liter (g/l) of materials for low-solids coatings, (c) VOC content as applied in g/l of coating, less, water and exempt solvent, for other coatings.

[Rule 3004(a)(4)-Periodic Monitoring]
[Devices subject to this condition: E47]

Verification: ~~The project owner shall make these records available to the CPM upon request.~~ **The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.**

AQ-35 The project owner shall maintain records, in a manner approved by the District, to demonstrate compliance with the following condition number(s):

Condition of Certification AQ-15

Condition of Certification AQ-17

The project owner shall keep records, in a manner approved by the District, for the following parameter**(**s**)** or item**(**s**)**:

Date of operation, the elapsed time, in hour and the reason for operation ~~of the emergency diesel powered generators and/or the firewater pump.~~
Maintenance and testing hours of operation

Hours of operation for emission testing to show rule compliance

Other operating hours

[Rule 1110.2, Rule 1304(a)-Modeling and Offset Exemption]
[Devices subject to this condition: E48]

Verification: The project owner shall submit these records to the CPM on an annual basis in the annual compliance report. **The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.**

AQ-36 The project owner shall keep records, in a manner approved by the District, for the following parameters or items:

~~Natural gas fuel use during the commissioning period in the combustion turbines and HRSGs.~~

Operational status of the duct burner and its fuel usage

[Rule 1303(b)(2)-Offset, Rule 2005, Rule 2012]
[Devices subject to this condition: D31, D39]

Verification: See verification of Condition of Certification **AQ-6**.

AQ-37 **The project owner shall operate and maintain this equipment according to the following requirements:**

The project owner shall change oil and filter every 500 hours of operation or annually, whichever comes first, per Sect. 63.6603(a). The operator has the option of utilizing an oil analysis as described in Sect. 63.6625(i) in order to extend the specified oil change requirement.

The project owner shall inspect the air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary, per Sect. 63.6603(a).

The project owner shall inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary, per Sect. 63.6603(a).

The project owner shall operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's

emission-related written instructions or develop a maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions, per Sect. 63.66259e)(3) and Sect. 63.6640(a).

The project owner shall maintain records required by Sect. 63.6655(a), Sect. 63.6655(e), and Sect. 63.6660, as applicable, for five years. The records shall be made available to District personnel upon request.

[40CFR 63 subpart ZZZZ]
[Devices subject to this condition: D48]

Verification: The project owner shall make these records available to the CPM upon request.

AQ-38 The operator shall operate and maintain this equipment according to the following requirements:

For the Siemens A-Plus Upgrade Project, total commissioning hours shall not exceed 56.25 hours of fired operation for each turbine from the date of initial turbine upgrade start-up. Of the 56.25 hours, commissioning hours without control shall not exceed 32.5 hours.

One turbine may be commissioned at a time. The commissioning for both turbines shall be completed before normal operation for either turbine may commence.

The emergency internal combustion engine for fire pump shall not be tested during the commissioning of a turbine.

The certified NOx and CO CEMS shall be fully calibrated and operational. The operator shall vent this equipment to the CO oxidation catalyst and SCR control system whenever the turbine is in operation after commissioning is completed.

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD. The records shall include, but not be limited to, the total number of commissioning hours, number of commissioning hours without control, and natural gas fuel usage.

[Rule 1303(a)(1)-BACT, Rule 2005]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: The project owner shall make these records available to the CPM upon request.

AQ-39 **This equipment is subject to the applicable requirements of the following Rules or Regulations:**

Contaminant	Rule	Subpart
NOx	40 CFR 60, Subpart	KKKK
SO_2	40 CFR 60, Subpart	KKKK

[40 CFR 66 subpart KKKK]
[Devices subject to this condition: D27, D31, D36, D39]

Verification: **The project owner shall make these records available to the CPM upon request.**

AQ-40 **This equipment is subject to the applicable requirements of the following Rules or Regulations:**

Contaminant	Rule
NOx	40 CFR 75
SO_2	40 CFR 75

[40 CFR 75-Acid Rail CEM]
[Devices subject to this condition: D27, D31, D36, D39]]

Verification: **The project owner shall make these records available to the CPM upon request.**

REFERENCES

ARB 2019a - California Air Resources Board. Air Designation Maps available on ARB website. http://www.arb.ca.gov/desig/adm/adm.htm Accessed April 2019

ARB 2019b - California Air Resources Board. California Ambient Air Quality Data Standards available on ARB website. http://www.arb.ca.gov/research/aaqs/aaqs.htm Accessed April 2019

ARB 2019c - California Air Resources Board. Air Monitoring Site List Generator available on ARB website. http://www.arb.ca.gov/qaweb/sitelist_create.php Accessed April 2019

ARB 2019d - California Air Resources Board. California Ambient Air Quality Data Statistics available on ARB website. http://www.arb.ca.gov/adam/index.html Accessed April 2019

BICENT 2017 – Malburg Generating Station – Petition to Amend A+ Turbine Upgrade (TN 221848), Docket Date: November 21, 2017

BICENT 2018 – Malburg Generating Station – Bicent California Malburg LLC's Phasing Approval Letter to CEC (TN 222641), Docket Date: February 21, 2018

BICENT 2018a – Malburg Generating Station – Letter From Siemens RE Emissions and Phasing Plan (TN 222682), Docket Date: February 22, 2018

BICENT 2018b – Malburg Generating Station – MGS Response Letter to SCAQMD Data Request Letter (TN 225053), Docket Date: October 22, 2018

BICENT 2019 – Malburg Generating Station – Response Letter to SCAQMD 01-09-19 Email (TN 226358), Docket Date: January 23, 2019

BICENT 2019a – Malburg Generating Station – Petition to Amend For Site Delineation (TN 226450), Docket Date: February 4, 2019

BICENT 2019b – Malburg Generating Station – Atmoshperic Dynamic March 8 2019 Response to SCAMD Email Requests (TN 227331), Docket Date: March 14, 2019

CEC 2003 – California Energy Commission – Commission Decision for Malburg –POS (TN 28746), Docket Date: May 23, 2003

CEC 2003a – California Energy Commission – Errata to Presiding Members Proposed Decision –POS (TN 28700), Docket Date: May 16, 2003

CEC 2003b – California Energy Commission – Presiding Members Proposed Decision –POS (TN 28506), Docket Date: April 11, 2003

CEC 2003c – California Energy Commission – Final Addendum to the Staff Assessment (TN 27941), Docket Date: February 4, 2003

CEC 2002 – California Energy Commission – Addendum to the Staff Assessment (TN 27710), Docket Date: December 24, 2002

CEC 2002a – California Energy Commission – Malburg Staff Assessment (TN 31774), Docket Date: September 26, 2002

CEC 2008 – California Energy Commission – Malburg Staff Analysis of Proposed Modifications of Conditions Relating to Startup Emission Limits for Combustion Turbines (TN 45797), Docket Date: March 27, 2008

CEC 2008a – California Energy Commission – Order Approving a Petition to Modify Condition AQ-C10 Regarding Air Emission Limits Related to Cold Startups (TN 47579), Docket Date: August 15, 2008

CEC 2013 – California Energy Commission –Petition to Amend Air Quality Conditions of Certification for the Malburg Generating Station Staff Analysis (TN 201457), Docket Date: December 20, 2013

CEC 2018 – California Energy Commission – Approval of Phase 1 of Turbine Upgrade to install enhanced turbine and compressor blades during the Spring 2018 outage (TN 222876), Docket Date: March 5, 2018

SCAQMD 2019 – South Coast Air Quality Management District – Turbine Upgrade Engineering Evaluation and Proposed Facility Permit (TN 227500), Docket Date: April 4, 2019

SCAQMD 2018 – South Coast Air Quality Management District – Response Letter to Bicent (California) Malburg Permit Application (TN 223301), Docket Date: May 1, 2018

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 April 2019

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 April 2019.

U.S. EPA 2019c – United States Environmental Protection Agency. AirData Monitor Values Report website. https://www.epa.gov/outdoor-air-quality-data/monitor-values-report. Accessed April 2019