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PETITION TO AMEND

MALBURG GENERATING STATION (01-AFC-25C)

A+ Turbine Upgrade

SUBMITTED TO: CALIFORNIA ENERGY COMMISSION

SUBMITTED BY: **BICENT (California) MALBURG LLC**

November 2017

DAYZEN LLC

CONTENTS

APPENDICES

Section 1 INTRODUCTION

1.1 INTRODUCTION TO PETITION

Pursuant to Section 1769 of the California Energy Commission (Commission) regulations[1], Bicent (California) Malburg LLC (Bicent), files this Petition For Amendment (Petition) with the California Energy Commission (Commission) to modify the existing Malburg Generating Station (MGS) Final Decision.[2] The Commission certified the License for the MGS on May 23, 2003. The MGS was constructed and began commercial operations in October of 2005.

This Petition requests approval of four specific items. The first is to install and operate the Siemens A+ turbine upgrade package to both combustion turbines to be completed during the Spring 2018 outage and includes minor modifications to existing Conditions of Certification. The second is to conform certain Air Quality Conditions of Certification to modifications made by the South Coast Air Quality Management District (SCAQMD) to its air permit in 2015. The third item is a request to make a minor modification to a condition that restricts the time for testing of the existing fire pump.

The remainder of this Section 1 describes the procedural background of the MGS and cites the authority for the Commission to process this Petition.

Section 2 of the Petition describes the specific modifications proposed for the MGS including an explanation of why the modification is being undertaken and its benefits.

Sections 3, 4, 5 and 6 contain analysis comparing the potential environmental impacts from the modifications to the potential environmental impacts of the MGS as approved in the Commission Final Decision. As discussed in these Sections, Bicent does not anticipate any significant environmental impacts from the proposed modifications. However, Bicent understands that the SCAQMD will modify its air quality permit which may modify some of the current Air Quality Conditions of Certification. Bicent has filed a request for modification of the air permit with SCAQMD on November 13, 2017. A copy is included at Appendix A to this Petition.

Section 7 contains an analysis demonstrating that the modifications do not increase any potential effects on nearby property owners or the public.

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[1] Title 20 CCR Section 1769.

[2] References to the Commission Final Decision include all amendments approved after issuance and prior to the date of this Petition For Amendment.

1.2 FINAL DECISION BACKGROUND

The MGS was first proposed by the City of Vernon. The City of Vernon filed an Application For Certification (AFC) for the MGS with the Commission on December 21, 2001. The Commission issued its Final Decision approving the MGS on May 23, 2003 ("Final Decision", 01-AFC-25).

1.3 PRIOR PETITIONS FOR AMENDMENT

On September 9, 2004 the City of Vernon filed a Petition For Amendment to add a temporary fabrication area to the MGS. The CEC filed a Notice of Insignificant Project Change on September 28, 2004[3] and filed a Notice of Exemption on October 22, 2004.[4] Without objection during the public comment period, the Petition was deemed approved by operation of law on October 13, 2004.

On December 21, 2007, The City of Vernon submitted a Petition For Amendment to include new cold startup emission rates.[5] While this Petition was pending, Bicent acquired the MGS and filed a Petition For Ownership Change on April 10, 2008[6] which was approved by the Commission on May 21, 2008.[7] On August 13, 2008, the Commission approved the Petition to include new cold startup emission rates.[8]

On December 14, 2010, Bicent filed a Petition For Amendment[9] that was withdrawn on September 11, 2012.[10]

Bicent's most recent Petition For Amendment was filed on May 21, 2013 and sought to modify the number of allowable startup and shutdown events and the duration of startup.[11] The Commission approved the Petition on February 18, 2014 and docketed its Notice of Decision on the same day.[12]

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[3] TN 32395.

[4] TN 32580.

[5] TN 43854.

[6] TN 45880.

[7] TN 46462; Commission Order No: 08-521-1b.

[8] TN 47579; Commission Order No: 08-813-4.

[9] TN 59237.

[10] TN 67067.

[11] TN 70904.

[12] TN 201826.

1.4 SUMMARY OF ENVIRONMENTAL IMPACTS

As described in Sections 3, 4, 5 and 6 of this Petition, the modifications as proposed herein will not result in significant environmental impacts and will comply with all applicable LORS.

1.5 CONSISTENCY OF PROJECT MODIFICATIONS WITH LICENSE

As demonstrated in Sections 3 through 6 the proposed modifications proposed in this Petition do not undermine any of the findings and conclusions contained in the Final Decision.

Section 2 DESCRIPTION OF PROJECT AMENDMENT

2.1 OVERVIEW OF PROPOSED MODIFICATIONS

Bicent (California) Malburg, LLC is proposing to modify and operate the existing MGS power generation facility located at 4963 South Soto Street, in the City of Vernon, California, as follows:

- MGS is proposing to upgrade the existing combustion turbines with the Siemens SGT-800 A-Plus Upgrade package (A+ Turbine Upgrade). The A+ Turbine Upgrade improves efficiency through increasing the turbine firing temperature and through the use of redesigned compressor blades. The existing row one compressor blades would be replaced. Installation of the compressor blades would occur during the scheduled Spring 2018 Outage.

The potential power production from the modified facility will be approximately equal to 143 MW nominal rating (net) which equates to an approximate eight (8) MW increase over the existing nominal rating.

In addition to the A+ Turbine Upgrade, Bicent requests conforming changes to certain Air Quality Conditions of Certification to conform them to modifications that were made by SCAQMD to the MGS Air Permit in 2015. The modifications are described in Section 4.1 of this Petition.

Bicent is also requesting a modification to the Condition of Certification AQ-C8. Currently the condition specifically prohibits testing the fire pump on a day in which either combustion turbine has had a startup of shut down. 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 the flexibility while minimizing air quality emissions, Bicent proposes to restrict testing of the fire pump during the same hour as a startup or shutdown event instead of the restriction applying to the entire day when such a startup or shutdown event has occurred. Proposed modifications to the actual condition language are included in Section 4.1.3 of this Petition.

2.2 NEED FOR THE MODIFICATIONS

2.2.1 A+ Turbine Upgrade

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.

2.2.2 Air Quality Conditions Conforming Modifications

The purpose of conforming the Air Quality Conditions of Certification to the recent amendments to the SCAQMD Air Permit is to comply with CEC regulations and the requirements of Condition of Certification AQ-C13. These modifications were not known at the time of original licensing and are described in Section 4.1.3 of this Petition.

2.2.3 Fire Pump Testing Restrictions

The purpose of requesting Condition of Certification AQ-C8 be modified is to modify the restriction on conducting fire pump testing on the same day as a startup or shutdown event. 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 proposes to modify the restriction to allow testing of the fire pump on the same day as a startup or shutdown event but prohibit the testing during the same hour as the startup and shutdown event.

2.3 CURRENT PROJECT DESCRIPTION

The MGS power plant is a natural gas fired, combined cycle electric power generating facility with two identical Siemens SGT800 combustion turbine generators (CT's), 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 (3) cell cooling tower and various support equipment. There is an emergency diesel-fired firewater pump at the site. The MGS currently operates under the existing SCAQMD Title V operating permit (November 2015, Facility ID 155474) included in Attachment 2 of the Appendix A.

The two CT's are equipped with dry low-NO_x (DLN) combustors and selective catalyst reduction (SCR) and oxidizing catalysts. Each CT is equipped with an inlet air cooler to control inlet air temperature and enhance turbine performance during hot weather. The cooled air is compressed prior to being fed to the combustor. The natural gas is mixed with the compressed air and the mixture is ignited in the combustor. The high pressure, high temperature gas produced in the combustion section is expanded through the turbine blades, which drive the turbine, the electric generator and the turbine compressor. The turbine exhaust gas passes through insulated ducts to a horizontal HRSG. Steam produced in the HRSG rotates the shared steam turbine generator. The net power output from the two (2) combustion turbines and the shared steam turbine generator is approximately 134 MW (net power output).

2.4 DETAILED DESCRIPTION OF PROPOSED MODIFICATIONS

2.4.1 A+ Turbine Upgrade

The existing MGS turbines were previously designated as Alstom Power Model GTX 100. When the Siemens Power Corporation purchased Alstom Power, the Alstom GTX 100 turbines had their model number re-designated to the SGT-800 to conform to Siemens' naming convention. The A+ Turbine Upgrade will change the nominal turbine rating from 454 to 480 MMBtu/hr and will raise the turbines output from 44 to 48.4 MW. The increase in efficiency will result in a two (2) percent decrease in fuel consumption per kWh. There are no proposed changes to the existing HRSGs or the cooling tower design.

The upgrade package will be installed during the period of the normal turbine maintenance and repair, which will occur during the Spring 2018 outage. The beginning of the Spring Outage is scheduled to begin on March 1, 2018. The upgrade package will install the following:

- Replace the Row 1 Compressor Blades with a functionally different design to increase the air flow.

Appendix B contains a Technical Memorandum describing the A+ Turbine Upgrade.

2.4.2 Air Quality Conditions Conforming Modifications

The SCAQMD modified its air permit for the MGS on November 3, 2015 to include additional standard requirements for all projects. Section 4.1.3 provides the proposed modifications in redline/strikethrough format to conform the CEC License to the air permit. An outline of the proposed modifications is provided below:

- Condition of Certification AQ-12 (District Condition C157.1) was modified to add a correction factor to calculate NH_3 concentrations.
- Condition of Certification AQ-19 (District Condition D12.4) was modified to add a requirement that the ammonia injection rate should be maintained between 5 lb/hr and 175 lb/hr.
- Condition of Certification AQ-20 (District Condition D12.5) was modified to include a requirement to keep the exhaust temperature (excluding startup and shutdowns) at the inlet to the SCR/CO catalyst between 350 degrees F and 750 degrees F.
- Condition of Certification AQ-21 (District Condition D12.6) was modified to include a requirement that the pressure drop across the catalyst shall be between 0.15 inches and 2.0 inches water column.

2.4.3 Fire Pump Testing Restrictions

Section 4.1.3 provides specific modifications in redline/strikethrough format to Condition of Certification AQ-C8 to prohibit 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.

2.4.4 Maintenance Activities Not Part of Petition

During the Spring 2018 Outage, Bicent will be engaging in maintenance activities that will be coordinated with, but not part of, the installation of upgraded compressor blades. These activities are not subject to this Petition as they are part of normal maintenance and may proceed prior to installation of the upgraded compressor blades. However, for clarity, we have described the following activities for the Commission's information. The following components will be replaced as part of the normal repair cycle and are of a functionally equivalent, like-kind design and include:

- Redesigned Row 1 Turbine Vane and Blades replacement which will contain a new coating and vent holes to accommodate the changes to heat and air flow from the updated Row 1 compressor blades. Without the upgrade, the turbine vanes and blades would function the same as the current setup.
- Redesigned Row 2 Turbine Vanes replacement which will also incorporate a new coating and vent holes to accommodate the heat and air flow changes. Without the upgrade, the turbine vane would function the same as the current setup.
- Optimized Cooling Air System

Section 3 ENGINEERING ASSESSMENT

This section contains an evaluation of the modification proposed in this Petition to determine if it would result in modification of the findings, conclusions or conditions of certification for each technical discipline included within the Engineering Assessment section of the Final Decision.

3.1 FACILITY DESIGN

The A+ Turbine Upgrade will not change the ultimate conclusions contained in the Final Decision related to Facility Design. The A+ turbine upgrade will change the nominal turbine rating from 454 to 480 MMBtu/hr and will raise the turbines' output from 44 to 48.4 MW. The increase in efficiency will result in a two (2) percent decrease in fuel consumption per kWh. There are no proposed changes to the existing HRSGs or the cooling tower design. Installation of the compressor blades will occur in the same manner as normal maintenance and replacement activities. The existing conditions of certification contained in the CEC Final Decision will ensure that storage and use of the spare turbine will comply with all applicable laws, ordinances, regulations and standards (LORS) and therefore no modifications to the analysis, findings, conclusions or conditions to the certification contained in the Facility Design section of the CEC Final Decision are necessary.

There are no Facility Design impacts associated with the conforming changes proposed to the Air Quality Conditions of Certification or the modifications proposed for the time allowable for testing of the fire pump.

3.1.1 Changes in LORS Conformance and Other Permits

There are no changes in Facility Design LORS or required Facility Design related permits necessary for the proposed modifications. The modification of the SCAQMD air permit is discussed in Section 4 of this Petition.

3.1.2 Conditions of Certification

No modifications to any of the existing Facility Design conditions of certification are necessary.

3.2 POWER PLANT EFFICIENCY AND RELIABILITY

The A+ turbine upgrade will increase the power plant efficiency by 2 percent and does not affect the overall power plant reliability of the MGS.

3.3 TRANSMISSION SYSTEM ENGINEERING

The increase in generation output due to additional efficiency will not have any effect on the transmission system as the nominal increase is within the study parameters of the Large Generator Interconnect Agreement. Therefore, the proposed modification will have no effect on the findings, conclusions or conditions of certification contained in the Transmission System Engineering section of the CEC Final Decision.

3.4 TRANSMISSION LINE SAFETY AND NUISANCE

Since there are no required changes to the switchyard or the transmission line to accommodate the modifications proposed in this Petition, there will be no effect on findings, conclusions or conditions of certification contained in the Transmission Line Safety and Nuisance section of the Final Decision.

Section 4 PUBLIC HEALTH AND SAFETY

This section contains an evaluation of the modifications proposed in this Petition to determine if it would result in modification to the findings, conclusions or conditions of certification for each technical discipline included within the Public Health and Safety section of the Final Decision.

4.1 AIR QUALITY, GREENHOUSE GASES AND PUBLIC HEALTH

4.1.1 Pre and Post Upgrade Emissions Comparison

4.1.1.1 Construction Emissions

No construction related emissions are anticipated to occur with respect to the proposed upgrade project. There will be no earthmoving activities, no trenching, no drilling, and no structure erection of any type. The turbines will be disassembled, upgraded, and re-assembled in the same manner as normal, routine maintenance activities

4.1.1.2 Operation Emissions Summary

Appendix A contains the complete application to the SCAQMD. The emissions increase and the results of the analyses contained in Appendix A are summarized below. Table 1 presents a Summary of the Maximum proposed Facility Emissions after the A+ Turbine Upgrade is completed.

Table 1
Summary of Maximum proposed Facility Emissions[1]

Pollutant	Lbs/Hour[1]	Lbs/Day[2]	Lbs/Month[3]	Tons/Year[3,4]
		Both Turbines/DBs		
NO_x	122.80	523.6	-	41.17
CO	204.8	652.0	6,385 (7,633)	30.14 (45.81)
VOC	1.74	42.78	1,259 (3236)	7.63 (19.42)
SO_x	0.32	7.43	227 (214)	1.40 (1.28)
$PM_{10/2.5}$	4.82	110.84	3,442 (4,876)	21.03 (29.25)
NH_3	7.68	153.60	-	33.16
CO_2e	-	-	-	568,732
		Existing Fire Pump[5]		
NO_x	1.49	1.49	-	0.15
CO	0.15	0.15	-	0.02
VOC	0.04	0.04	-	0.004

SO_x	0.0019	0.0019	-	0.0002
$PM_{10/2.5}$	0.03	0.03	-	0.003
CO_2e	-	-	-	20.8
		Upgraded Cooling Tower[6]		
$PM_{10/2.5}$	0.303	7.271	-	1.327

[1] Includes turbine startup and shutdown emissions

[2]Includes turbine startup and shutdown emissions

[3] Values in () represent currently permitted limits

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

[5] Emissions are exempt from modeling and offsets per Rule 1304

[6] Cooling tower is exempt from permit per Rule 219

Monthly emissions assume 720 hours with 5 cold starts, 5 non-cold starts, 10 shutdowns with the remaining 697.5 hours with full load+DB (assumes cold day emissions for the monthly emissions)

Same as Table 10 in Appendix A of this Petition

Based on the Upgrade Package evaluation and data provided by Siemens, there will be the potential for an increase in the short-term (hourly) emissions of oxides of nitrogen (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs) and sulfur dioxide (SO_2), primarily related to a small increase in the fuel use and firing temperatures. But based on the Siemens turbine performance data, there will be a slight decrease in the potential to emit of particulate matter (PM10/PM2.5). *However, with the proposed turbine upgrade, MGS will not seek to modify the existing monthly emission limits for any of the criteria pollutants, with the exception of annual NO_x and will retain the existing permitted monthly limits for all applicable criteria pollutants with an adequate margin of safety.* The ability to envelope the small increase in hourly emission rates while maintaining the existing limits is achievable primarily due to the current permitted limits which had incorporated the commissioning activities, where the emissions of certain criteria pollutants (NO_x, CO and VOCs) were not fully controlled for all hours of operation. In addition, the actual monthly emissions, based on past historical CEMs and source test data, have been less than the permitted potential to emit levels. As the commission activities associated with the upgrade will occur over an approximate two to three-week period, the proposed project will still safely allow for full compliance with the existing monthly emission limits in the current SCAQMD air permit.

Table 2 shows the comparison of the pre- and post-facility potential emissions. Detailed emissions data on the proposed facility is presented in Appendix A, Attachment 3. Thus, with the installation of the upgrade package, with the exception of NOx, the applicant will maintain the current permitted emission limits.

Table 2 Pre- and Post Modification Emissions Comparison					
Pollutant	**Pre-Modification, Lbs/Month**	**Pre-Modification, TPY1**	**Post-Modification, Lbs/Month**	**Post-Modification, TPY1**	**Proposed Emissions Limits**
NO_x	-	39.4	-	41.32	41.32 tpy
CO	7,633	45.81	6,385	30.16	7,633 lbs/mo
VOC	3,236	19.42	1,259	7.64	3,236 lbs/mo
SO_x	214	1.284	227	1.4	214 lbs/mo
PM10/2.5	4,876	29.25	3,442	21.03	4,876 lbs/mo
[1] Turbines/DBs and fire pump. Cooling tower adds 1.327 tpy of PM to the total. Same as Table 12 in Appendix A of this Petition					

To further demonstrate that compliance with the existing permit limits can be achieved with the upgrade package, the 2014 and 2017 triennial test results for PM, VOC and SO_2 are summarized in Table 3. This data demonstrates that the facility has been, on a ppm and mass basis, always less than the permitted potential to emit levels. The emissions of NO_x and CO, through review of the CEMs data, have also been below permitted levels.

Table 3 Summary of Source Test Results for 2014 and 2017 (Required Triennial Tests)							
Unit 1				**Unit 2**			
2014		**GT**	**GT w/DB**	**2014**		**GT**	**GT w/DB**
PM10	Lbs/hr	0.5	0.55	PM10	Lbs/hr	0.54	0.62
VOC	ppm[1]	<0.5	<0.5	VOC	ppm[1]	<0.6	<0.04
SO_2	ppm[2]	0.03	0.03	SO2	ppm[2]	0.03	0.03
2017		**GT**	**GT w/DB**	**2017**		**GT**	**GT w/DB**
PM10	Lbs/hr	0.5	0.88	PM10	Lbs/hr	0.62	0.57
VOC	ppm[1]	<0.6	<0.5	VOC	ppm[1]	<0.5	<0.5
SO_2	ppm[2]	0.04	0.04	SO2	ppm[2]	0.05	0.04
[1] ppm at 15% O_2 dry [2] ppm in the fuel GT= Gas Turbine DB=Duct Burner All tests at approximately 100% load with and without duct firing. Same as Table 13 in Appendix A of this Petition.							

As summarized in Table 2, for the monthly emissions of CO, VOC's, SO_x and PM10/2.5, the applicant is not proposing any changes to existing Condition of Certification AQ-5 (District Condition A63.3) with the exception of the emission factors for compliance monitoring of PM10, VOC and SO_x and the revision of the monthly fuel limit to reflect the increased fuel requirements for the turbine upgrade. Thus, there will be no additional requirements for offsets for the non-attainment pollutants. For NOx, the slight increase in the annual emissions will be regulated under RECLAIM.

4.1.1.3 Operation Air Quality Impact Analysis Summary

Appendix A contains the impact analysis provided to the SCAQMD. The results are summarized below.

The facility impacts, summarized in Table 4 for normal operating conditions, are less than the EPA SILs or the SCAQMD PM10/PM2.5 SILs for all pollutants and averaging times other than the 1-hour NO_2 CAAQS modeling assessment. For start-up and shutdown periods, NO_2 facility impacts are greater than the EPA SILs and CO facility impacts are less than the EPA SILs.

Table 4
Modeled Concentrations and SILs

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	SCAQMD-PM & USEPA-NAAQS Class II SILs ($\mu g/m^3$)
Normal Operating Conditions			
NO_2*	1-hour maximum (CAAQS)	126.6	7.5
	3-year average of daily 1-hour yearly maxima (NAAQS) [a]	3.95	7.5
	Annual maximum (CAAQS/NAAQS)	0.47	1.0
CO	1-hour maximum (NAAQS/CAAQS)	33.0	2,000
	8-hour maximum (NAAQS/CAAQS)	1.89	500
SO_2	1-hour maximum (CAAQS)	0.42	7.8
	3-year average of daily 1-hour yearly maxima (NAAQS) [a]	0.15	7.8
	3-hour maximum (NAAQS)	0.15	25
	24-hour maximum (CAAQS/NAAQS)	0.04	5
	Annual maximum (NAAQS)	0.016	1
PM10	24-hour maximum (CAAQS/NAAQS)	0.96	2.5 [a]
	Annual maximum (CAAQS)	0.34	1.0 [a]
PM2.5	3-year average of 24-hour yearly maxima (NAAQS) [a]	0.85	2.5 [a]
	Annual maximum (CAAQS)	0.34	1.0 [a]
	3-year average of annual concentrations (NAAQS) [a]	0.31	1.0 [a]

Cold Start-up Periods			
NO_2*	1-hour maximum (CAAQS)	43.10	7.5
	3-year average of daily 1-hour yearly maxima (NAAQS) [a]	39.52	7.5
CO	1-hour maximum	71.87	2,000
Hot Start-up Periods			
NO2*	1-hour maximum (CAAQS)	70.74	7.5
	3-year average of daily 1-hour maxima (NAAQS) a	65.15	7.5
CO	1-hour maximum	82.60	2,000
Start-up/Shutdown Periods			
CO	8-hour maximum	32.14	500

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

[a] SCAQMD PM10/PM2.5 SIL levels shown.

Same as Table 17 in Appendix A of this Petition.

Maximum MGS concentrations are compared in Table 5 below to the CAAQS and NAAQS. As can be seen, maximum combined impacts (modeled + background) are less than all the CAAQS and NAAQS except for the 24-hour and annual PM10 CAAQS and the annual PM2.5 NAAQS and CAAQS. The exceedances of the CAAQS for PM10 and the CAAQS and NAAQS for PM2.5 are due to high background concentrations, which already nearly equal or exceed the CAAQS and NAAQS (the area is designated as nonattainment for the State PM10 and PM2.5 CAAQS and the Federal PM2.5 NAAQS). As noted above, the facility is projected to have maximum impacts less than the SCAQMD SILs for both 24-hour and annual PM10 and PM2.5. Thus, MGS would not significantly contribute to current exceedances of the PM10 24-hour and annual CAAQS and the PM2.5 annual CAAQS and annual NAAQS.

Table 5 Air Quality Impact Results– Ambient Air Quality Standards						
Pollutant	**Averaging Period**	**Maximum Concentration (µg/m³)**	**Background (µg/m³)**	**Total (µg/m³)**	**Ambient Air Quality Standards (µg/m³)**	
					CAAQS	**NAAQS**
Normal Operating Conditions						
NO_2*	1-hour maximum (CAAQS)	126.60	138.5	265.1	339	-
	3-year average of 1-hour yearly 98th % (NAAQS)	3.39	110.6	114.0	-	188
	Annual maximum	0.47	31.8	32.3	57	100
CO	1-hour maximum	33.00	6,871	6,904	23,000	40,000
	8-hour maximum	1.89	4,466	4,468	10,000	10,000
SO_2	1-hour maximum (CAAQS)	0.42	35.1	35.5	655	-
	3-year average of 1-hour yearly 99th % (NAAQS)	0.14	11.5	11.6	-	196
	3-hour maximum	0.15	35.1	35.3	-	1,300
	24-hour maximum	0.04	3.7	3.74	105	365
	Annual maximum	0.016	0.8	0.82	-	80
PM10	24-hour maximum (CAAQS)	0.96	88	89.0	50	-
	24-hour 4th highest over 3 years (NAAQS)	0.85	63	63.9	-	150
	Annual maximum (CAAQS)	0.34	35.4	35.7	20	-
PM2.5	3-year average of 24-hour yearly 98th %	0.69	31.5	32.2	-	35
	Annual maximum (CAAQS)	0.34	12.6	12.9	12	-
	3-year average of annual concentrations (NAAQS)	0.31	11.9	12.2	-	12.0
Cold Start-up Periods						
NO_2*	1-hour maximum (CAAQS)	43.10	138.5	181.6	339	-
	3-year average of 1-hour yearly 98th % (NAAQS)	33.06	110.6	143.7	-	188
CO	1-hour maximum	71.87	6,871	6,943	23,000	40,000
Hot Start-up Periods						
NO_2*	1-hour maximum (CAAQS)	70.74	138.5	209.2	339	-
	3-year average of 1-hour yearly 98th % (NAAQS)	54.90	110.6	165.5	-	188
CO	1-hour maximum	82.60	6,871	6,954	23,000	40,000
Start-up/Shutdown Periods						
CO	8-hour maximum	32.14	4,466	4,498	10,000	10,000

*1-hour NO_2 impacts for comparison to the 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 to NO_2.

Same as Table 18 in Appendix A of this Petition

4.1.1.4 Operation Public Health Impact Analysis Summary

Appendix A contains a complete health risk assessment for the emissions related to the A+ Turbine Upgrade. A summary of the results are presented below in Table 6 and show the A+ Turbine Upgrade will not result in significant public health related impacts.

Table 6
MGS Health Risk Assessment Summary

Turbines, Cooling Tower, Fire Pump		
Risk Category	**Facility Values**	**Applicable Significance Threshold**
Cancer Risk (with Fire Pump)	3.96E-6	10×10^{-6} with T-BACT
Cancer Risk (without Fire Pump)	3.12E-6	
Chronic Hazard Index (with Fire Pump)	0.0048	1.0

Same as Table 25 in Appendix A of this Petition.

4.1.2 Changes in LORS Conformance and Other Permits

A complete LORS Conformance analysis is contained Sections 1.1.5 and 2.1.4 of Appendix A of this Petition. The only Air Quality related permit is the modification of the SCAQMD air permit. The application for the modification was filed with the SCAQMD on November 13, 2017.

4.1.3 Conditions of Certification

The following modifications to the Conditions of Certification are proposed for the reasons described in Section 2.2 of this Petition. Additions are shown in ***bold and italic***. Deletions are shown in ~~strikethrough~~.

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

AQ-12 The 5 ppm 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:

NH3 (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 NH3 Slip concentrations during annual compliance testing.

The operator 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.

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 operator shall maintain the ammonia injection rate between 5 lb/hr and 175 lb/hr.

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 deg F and 750 deg F, except during startups and shutdowns.

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 and 2.0 inches water column.

As shown in Table 1, there is an additional increase in PM10 emissions from the cooling tower due to the increase in water circulation to provide the additional heat rejection necessary to accommodate the increase in generation. Therefore, we propose the following modification to Condition of Certification AQ-C7.

AQ-C7 PM10 emissions from the cooling tower (in total) shall not exceed ~~6.2~~***7.3*** lb/day.

4.2 HAZARDOUS MATERIALS MANAGEMENT

The modification proposed in this Petition will not affect the findings and conclusions contained in the Hazardous Materials Management section of the Final Decision as the A+ turbine upgrade will not involve the use of any new hazardous materials not already identified in the Final Decision.

4.3 WORKER SAFETY/FIRE PROTECTION

The A+ Turbine Upgrade will not expose workers to any additional risks not evaluated in the Worker Safety/Fire Protection section of the CEC Final Decision and encountered during normal authorized maintenance activities. Bicent will require its workers to comply with the various CEC-approved safety plans during installation and operation of the A+ Turbine Upgrade. Therefore, the modification proposed in this Petition will not affect the findings and conclusions of the Final Decision relating to worker safety or fire protection. No modifications to the Worker Safety conditions of certification of the Final Decision are necessary.

Section 5 ENVIRONMENTAL ANALYSIS

This section contains an evaluation of the modification proposed in this Petition to determine if it would result in modification to any of the findings, conclusions or conditions of certification for each technical discipline included within the Environmental Assessment section of the Final Decision.

5.1 BIOLOGICAL RESOURCES

The A+ Turbine Upgrade will have no biological effects beyond those analyzed in the Final Decision because there will be no additional surface disturbance associated with the upgrade and no impacts to biological resources will result from the minor increase in short term emissions. No modifications to the any of the existing Biological Resource conditions of certification are necessary and the A+ Turbine Upgrade will not undermine any of the findings and conclusions of the Final Decision.

5.2 SOIL AND WATER RESOURCES

The A+ Turbine Upgrade proposed in this Petition will not change the water balance or modify any existing, or create any additional, liquid waste streams. There are no new Soil and Water Resource-related LORS or required permits for the modification proposed in this Petition. No modifications to any of the existing Soil and Water Resources conditions of certification are necessary and the modifications proposed in this Petition will not undermine any of the findings and conclusions of the Final Decision.

5.3 CULTURAL RESOURCES

The A+ Turbine Upgrade will not involve ground disturbance and therefore will have no cultural resources effects. There are no new Cultural Resource LORS or required permits for the modification proposed in this Petition. No modifications to any of the existing Cultural Resource conditions of certification are necessary and the modifications proposed in this Petition will not undermine any of the findings and conclusions of the Final Decision.

5.4 GEOLOGICAL AND PALEONTOLOGICAL RESOURCES

The A+ Turbine Upgrade will have no effect on Geological and Paleontological Resources because it will not involve new construction or grading. There are no new Geological or Paleontological Resources-related LORS or required permits for the modification proposed in this Petition. No modifications to any of the existing Geological and Paleontological conditions of certification are necessary and the A+ Turbine Upgrade will not undermine any of the findings and conclusions of the Final Decision.

5.5 WASTE MANAGEMENT

The A+ Turbine Upgrade proposed in this Petition will not modify any existing, or create any additional, waste streams. There are no new Waste Management-related LORS or required permits for the modification proposed in this Petition. No modifications to any of the existing Waste Management conditions of certification are necessary and the A+ Turbine Upgrade will not undermine any of the findings and conclusions of the Final Decision.

Section 6 LOCAL IMPACT ANALYSIS

This section contains an evaluation of the modification proposed in this Petition to determine if it would result in modification to any findings, conclusions or conditions of certification for each technical discipline included within the Local Impact Assessment section of the Final Decision.

6.1 LAND USE

The modification proposed in this Petition will not affect the findings and conclusions contained in the Land Use section of the Final Decision as it will not involve the use of new land areas.

6.2 NOISE AND VIBRATION

The A+ Turbine Upgrade will not affect the noise output of the plant because the compressor blade replacement is enclosed and will not modify the noise characteristics of the existing combustion turbines. Therefore, operation of the turbines after the upgrade will not modify the overall noise impacts of the MGS. Therefore, the modification proposed in this Petition will not affect the findings and conclusions, nor require any modifications to the existing conditions of certification, contained in the Noise and Vibration section of the Final Decision.

6.3 SOCIOECONOMICS

The modification proposed in this Petition will not affect the findings and conclusions, nor require any modifications to the existing conditions of certification, contained in the Socioeconomic Resources section of the Final Decision as none of the modifications will burden existing public services.

6.4 TRAFFIC AND TRANSPORTATION

The A+ Turbine Upgrade will not result in any significant impacts to traffic and transportation beyond those identified in the Final Decision because the delivery and worker activities are identical to those that take place during normal maintenance activities which are currently authorized by the Final Decision. Therefore, no modifications to any Traffic and Transportation Conditions of Certification are necessary. The A+ Turbine Upgrade will not undermine any findings and conclusions of the Final Decision.

6.5 VISUAL RESOURCES

The A+ Turbine Upgrade will not affect the findings and conclusions, nor require any modifications to the existing conditions of certification, contained in the Visual Resources section of the Final Decision because the modification, when completed, will not be visible.

Section 7 POTENTIAL EFFECTS ON PROPERTY OWNERS

The Commission's Power Plant Siting Regulations require a Petition For Amendment to include 1) a discussion of how the modification affects the public; 2) a list of property owners potentially affected by the modification; and 3) a discussion of the potential effect on nearby property owners, the public and the parties in the application proceedings.

As described in technical area evaluated in Sections 3, 4, 5 and 6 of this Petition, with implementation of the existing conditions of certification the impacts of the proposed modifications are less than significant and therefore would not affect the public differently than the identified in the Final Decision.

At this time Bicent is unaware of any changes in the surrounding property list used by the CEC for providing notice to its Petition For Amendment approved in 2014 other than a building was constructed adjacent to the project site. Its address is 5001 Soto Street and Bicent will provide the name of the current tenant under separate cover.

Appendix A

SCAQMD Application

Permit Amendment (Facility ID 155474)

Malburg Generating Station

Vernon, California

Submitted to

South Coast Air Quality Management District
California Energy Commission

Submitted by

Bicent (California) Malburg, LLC
4963 Soto Street
Vernon, CA 90058

Prepared by

Atmospheric Dynamics, Inc.

November 2017

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FIGURES

TABLES

Section 1 AIR QUALITY

1.1 INTRODUCTION

This document presents the methodology and results of an analysis performed to assess potential impacts of airborne emissions from the modification and subsequent routine operation of the Malburg Generating Station (MGS) turbine upgrade project. Section 1.0 presents the introduction, applicant information, and the basic South Coast Air Quality Management District (SCAQMD) rules applicable to the turbine project, the project description, both current and proposed, data on the emissions of criteria and air toxic pollutants from the proposed project, discusses the best available control technology evaluation for the project, applicable laws, ordinances, regulations, and standards (LORS), the air quality impact analysis for the proposed A+ Upgrade Project (Project), agency contacts, permit requirements and schedules, and contains references cited or consulted in preparing this section. Section 2.0 presents the methodology and results of a health risk assessment performed to assess potential impacts and public exposure associated with airborne emissions from the routine operation of the Project. Support materials are included in the following attachments:

- Attachment 1 – SCAQMD Permit Application Forms
- Attachment 2 – Current PTO
- Attachment 3 – Emissions Evaluations
- Attachment 4 – Upgraded Turbine Performance Data
- Attachment 5 – Siemens Upgrade Information
- Attachment 6 – Air Quality Impact Analysis Data
- Attachment 7 – Health Risk Assessment Data

The Malburg Generating Station [Bicent “California” Malburg, LLC] is proposing to modify and operate the existing power generation facility located at 4963 South Soto Street, in the City of Vernon, California, as follows:

- MGS is proposing to upgrade the existing turbines with the Siemens SGT-800 A-Plus Upgrade package. The upgrade package improves efficiency through increasing the turbine firing temperature and through the use of redesigned turbine vanes. The existing row one compressor blades would be replaced. The upgrade would occur during the l March 5th, 2018 outage during the turbine overhaul.

The potential power production from the modified facility will be approximately equal to 143 MW nominal rating (net) which equates to an approximate eight (8) MW increase

over the existing nominal rating. This proposed power project is subject to the jurisdiction of the California Energy Commission (CEC). The CEQA Lead Agency will be the CEC, and a copy of this Application has been filed with them along with Petition for Amendment.

1.1.1 Regulatory Items Affecting Modification

Although a regulatory compliance analysis (LORS) is presented in Section 1.1.6, there are several regulations which directly affect the AQMD permitting and review process for the proposed addition/modification as follows:

- New Source Review (NSR) Regulation XIII as well as RECLAIM New Source Review Regulation XX Rule 2005 will apply to the proposed upgrade project.
- The Applicant must provide all required emissions mitigations prior to the issuance of the authority to construct for the project.
- The Applicant must provide an impact analysis per the NSR regulations noted above.
- The Applicant must demonstrate, prior to the issuance of the Authority to Construct (ATC), that all major stationary sources owned or operated by the Applicant which are subject to emissions limitations, are either in compliance or on a schedule for compliance with all applicable emissions limitations under the Clean Air Act (CAA).

Table 1 presents the major polluting facility emissions thresholds applicable to the project site per Rule 1302(s).

Table 1
Major polluting facility Emissions Thresholds

Air Contaminant	Emission Rate (tons/year)
Particulate Matter (PM_{10})	70
Oxides of Nitrogen(NOx)	10
Volatile Organic Compounds (VOC)	10
Oxides of Sulfur (SOx)	70
Carbon Monoxide (CO)	50
HAPs	10/25[1]

[1] 10 tpy (tons per year) of any single HAP, or 25 tpy of any combination of HAPs.

Based on a reading of the regulations noted above, the proposed turbines would be classified as “existing sources proposing a modification”, and as such, the rule requirements noted above would be applicable.

1.1.1.1 SCAQMD Permitting Application Forms

The SCAQMD permitting application forms are presented in Attachment 1.

1.1.2 Project Description

1.1.2.1 Current Site

The project site is currently a merchant power generator that operates under an existing power purchase agreement with the City of Vernon.

Existing Site and Facility

The MGS power plant is a natural gas fired, combined cycle electric power generating facility with two identical Siemens SGT800 combustion turbine generators (CT's), 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 (3) cell cooling tower and various support equipment. There is an emergency diesel-fired firewater pump at the site. The MGS currently operates under the existing SCAQMD Title V operating permit (November 2015, Facility ID 155474). See Attachment 2.

The two CT's are equipped with dry low-NO_x (DLN) combustors and selective catalyst reduction (SCR) and oxidizing catalysts. Each CT is equipped with an inlet air cooler to control inlet air temperature and enhance turbine performance during hot weather. The cooled air is compressed prior to being fed to the combustor. The preheated natural gas is mixed with the compressed air and the mixture is ignited in the combustor. The high pressure, high temperature gas produced in the combustion section is expanded through the turbine blades, which drive the turbine, the electric generator and the turbine compressor. The turbine exhaust gas passes through insulated ducts to a horizontal HRSG. Steam produced in the HRSG rotates the shared steam turbine generator. The net power output from the two (2) combustion turbines and the shared steam turbine generator is approximately 134 MW (net power output at annual average temperature of 65^{o}F and 50% relative humidity).

The existing MGS turbines were previously designated as Alstom Power Model GTX 100. When the Siemens Power Corporation purchased Alstom Power, the Alstom GTX 100 turbines had their model number re-designated to the SGT-800 to conform to Siemens' naming convention. The upgrade will change the nominal turbine rating from 454 to 480 MMBtu/hr and will raise the turbines output from 44 to 48.4 MW. The increase in efficiency will result in a two (2) percent decrease in fuel consumption per kWh. There are no proposed changes to the existing HRSGs or the cooling tower design.

The upgrade package will be installed during the period of the normal turbine maintenance and repair, which will occur during the Spring 2018 outage. The upgrade package will install the following:

- Replace the Row 1 Compressor Blades with a functionally different design to increase the air flow

During the installation of the upgrade package, the following components will be replaced as part of the normal repair cycle and are of a functionally equivalent like-kind design. They include:

- Redesigned Row 1 Turbine Vanes and Blades replacement which will contain a new coating and vent holes to accommodate the changes to heat and air flow from the updated Row 1 compressor blades. Without the upgrade, the vanes and blades would function the same as the current setup.

- Redesigned Row 2 Vanes replacement which will also incorporate a new coating and vent holes to accommodate the heat and air flow changes. Without the upgrade, the vanes and blades would function the same as the current setup.

- Optimized Cooling Air System

Based on the Upgrade Package evaluation and data provided by Siemens, there will be the potential for an increase in the short-term (hourly) emissions of oxides of nitrogen (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs) and sulfur dioxide (SO_2), primarily related to a small increase in the fuel use and firing temperatures. But based on the Siemens turbine performance data, there will be a slight decrease in the potential to emit of particulate matter (PM10/PM2.5). *However, with the proposed turbine upgrade, MGS will not seek to modify the existing monthly emission limits for any of the criteria pollutants, with the exception of annual NO_x and will retain the existing permitted monthly limits for all applicable criteria pollutants with an adequate margin of safety.* The ability to envelope the small increase in hourly emission rates while maintaining the existing limits is achievable primarily due to the current permitted limits which had incorporated the commissioning activities, where the emissions of certain criteria pollutants (NO_x, CO and VOCs) were not fully controlled for all hours of operation. In addition, the actual monthly emissions, based on past historical CEMs and source test data, have been less than the permitted potential to emit levels. As the commission activities associated with the upgrade will occur over an approximate two to three-week period, the proposed project will still safely allow for full compliance with the existing monthly emission limits in the current PTO.

The project operates as a base loaded power plant and has emission levels less than Prevention of Significant Deterioration (PSD) thresholds of 100 tons per year. The MGS is not expected to have emission increases which would exceed the Rule 1304(d) Table

A-offset threshold values. Thus, no new offsets are proposed for the project. The MGS design will continue to incorporate the air pollution emission controls designed to meet current SCAQMD BACT/LAER determinations at the following levels (15% O_2):

- NO_x - 2 ppm
- CO - 2 ppm
- VOC - 2 ppm
- PM10/2.5 and SO_x - Exclusive use of pipeline quality natural gas

Proposed equipment specifications are summarized as follows:

Turbines: (subsequent to modification)

- Engine Manufacturer: Siemens (Alstom)
- Engine Model: SGT-800 (GTX 100) with A-Plus Upgrade
- Fuel: natural gas
- Nominal MW rating: <= 48 MW
- Number of turbines: 2
- Heat rating: 480 mmbtu/hr, without duct burners (nominal subsequent to upgrade)

Diesel Fire Pump (no modifications proposed)

- Engine Manufacturer: Deutz
- Model: BF6M2012
- HP Rating: 173 bhp
- Fuel: CARB diesel fuel (15 ppmw S)

Cooling Tower: (exempt from SCAQMD permit provisions)

- # of Cells: 3
- Fan ACFM per cell: 750,000
- Circulation rate, gallons per minute (gpm): 26,927.4

The only fuel to be combusted on site by the combustion turbines/duct burners is PUC-grade natural gas supplied by the SoCal Gas Company. The gas will have a sulfur content that is not expected to exceed the following short and long-term limits respectively, 0.75

grains S/100scf and 0.25 grains S/100scf. Table 2 presents a fuel use summary for the proposed facility. The existing emergency generator engine will continue to be fired on diesel fuel with a sulfur content of 15 ppmw (no modifications to this engine or its operating or emissions limits are proposed as part of this application). Fuel use values are based on the maximum heat rating of each system, fuel specifications, and maximum operational scenarios. The cooling tower circulating pumps will be run at a slightly higher capacity to handle the increased heat rejection from the modified turbines. The total dissolved solids (TDS) in the cooling tower will also be revised from 4,000 milligrams/liter (mg/l) to reflect a 4,500 mg/l concentration. It should be noted that the existing HRSGs and duct burners will not be physically modified. The existing steam turbine rated at ~55 MW will not be modified.

Table 2
Fuel Use Summary-maximum values

System	Case #*	S13	S13	S13	S9/S15
	Units	**Per Hour**	**Per Day**	**Per Month**	**Per Year**
Per Turbine	mmscf	0.48306	11.594	347.80	**4,084.09**
Per DB	mmscf	0.0798	1.9152	57.456	**688.91**
Total (Turbine+DB)	mmscf	0.56283	13.508	405.24	**4,772.84**
FP*	gals	9.2	9.2	152.56	**1830.8**

Natural gas at 1018 btu/scf HHV. Duct burners rated at 81.2 mmbtu/hr.
Diesel fuel at 1 hour per day, 199 hours per year.
Turbine max hour is Case S13.
Turbine max day is cold day, Case S13, at 24 hrs/day.
Turbine max month is S13 at 720 hours
Annual fuel use is based on Case S15 (turbine + DB) for 8,633 hours with 127 hours in startup/shutdown
*the case #'s do not apply to the FP

The MGS is located in Los Angeles County within the South Coast Air Basin. The MGS site is located at 4963 South Soto Street, in the City of Vernon, CA. The project is situated on 3.4 acres on the northwest corner of East 50th Street and South Soto Street and is surrounded by industrial land uses in the western portion of the City of Vernon, near the geographical center of Los Angeles County, about three miles southeast of downtown Los Angeles and 15 miles north of the major harbor and port facilities in San Pedro and Long Beach. Figure 1 shows the MGS site and immediate vicinity surrounding the project site.

1.1.2.2 Climate and Meteorology

The climate of the South Coast Air Basin (basin) is strongly influenced by the local terrain and geography. The basin is a coastal plain with connecting broad valleys and low hills,

bounded by the Pacific Ocean on the west, and relatively high mountains forming the north, south, and east perimeters. The climate is mild, tempered by cool sea breezes and is dominated by the semi-permanent high pressure of the eastern Pacific.

Across the 6,600-square-mile basin, there is little variation in the annual average temperature of 62 degrees Fahrenheit (°F). However, the eastern portion of the basin (generally described as the Inland Empire area), experiences greater variability in annual minimum and maximum temperatures as this area is farther from the coast and the moderating affect on climate from the ocean is weaker. All portions of the basin have recorded temperatures well above 100°F. January is usually the coldest month, while the period from July through August represents the hottest months.

The majority of the rainfall in the basin falls during the period from November through April. Annual rainfall values range from approximately 9 inches per year in Riverside, to 14 inches per year in downtown Los Angeles. Monthly and annual rainfall totals can vary considerably from year to year. Cloud cover, in the form of fog or low stratus, is often caused by persistent low inversions and the cool coastal ocean water. Downtown Los Angeles experiences sunshine approximately 73 percent of the time during daylight hours, while the inland areas experience a slightly higher amount of sunshine, and the coastal areas a slightly lower value.

Although the basin is characterized by a semi-arid climate, the air near the surface can often have high relative humidity due to the presence of a shallow marine layer on most days. Except for infrequent periods of off-shore winds, the marine layer strongly influences the local climate. Periods of heavy fog are common, with “high fog” (low stratus clouds) a frequent and characteristic occurrence. The annual average relative humidity ranges from approximately 70 percent in the coastal areas to 57 percent in the inland parts of the basin.

The basin is characterized by light average wind speeds and poor ventilation. Wind speeds in the downtown Los Angeles area average 5.7 mph, with little seasonal variation. Coastal wind speeds typically average about 2 mph faster than the downtown wind speeds, with the inland areas showing wind speeds slightly slower than the downtown Los Angeles values. Summer wind speeds are typically higher than winter wind speeds. The re-circulating sea-breeze is the dominant wind pattern in the basin, characterized by a daytime on-shore flow and a nighttime land breeze. This pattern is broken by the occasional winter storm, or the strong northeasterly flows from the mountains and deserts north of the basin known as “Santa Ana winds”.

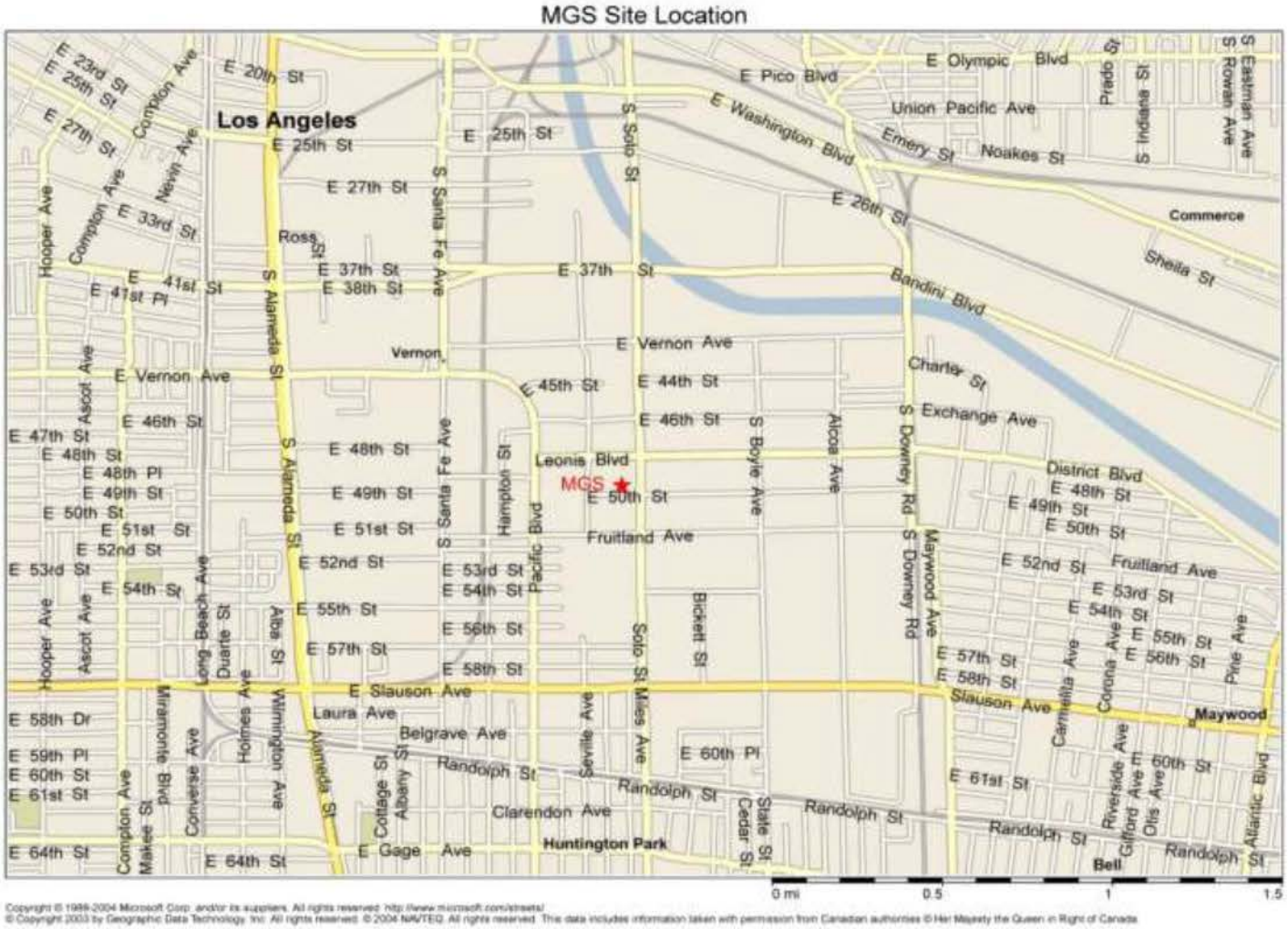
Along the southern California coast, surface air temperatures are relatively cool. Coupled with warm, dry subsiding air from aloft, the potential for early morning inversions is high, i.e., approximately 87 percent of all days. The basin-wide average occurrence of inversions at ground level (surface) is 11 days per month, and varies from 2 days per

month in June to 22 days per month in December. Upper air inversions, with bases at less than 2,500 ft above mean sea level (amsl) occur approximately 22 days each month, while higher based inversions, up to 3,500 ft amsl occur approximately 191 days per year.

Air quality is determined primarily by the type and amount of pollutants emitted into the atmosphere, the nature of the emitting source, the topography of the air basin, and the local meteorological conditions. In the project area, inversions and light winds can result in conditions for pollutants to accumulate in the air basin.

Winds in the project region are generally easterly to northeasterly during the night, and westerly to north-westerly in the daytime. The frequency, magnitude and direction of wind patterns in the project area are presented graphically in Figure 2. The data displayed in Figure 2 are the cumulative annual wind roses for several of the closest SCAQMD and ASOS meteorological monitoring stations as follows: Vernon (1981), USC/Downtown Los Angeles (2012-2016, the only ASOS station), Lynwood (2006-2007 and 2009), Compton (2009-2010 and 2012), and Central Los Angeles (2006-2007 and 2009-2011). The wind rose shows that winds are predominantly from the west through the northwest on an annual basis. Calm conditions occur approximately 12.12 percent of the time. Approximately 50+ percent of the winds come from west through northwest. For a significant part of the year, these winds are associated with a gradient flow of cool marine air off the Pacific Ocean inland to the warm interior during the day. However, there is also a significant incidence of north-northeast through easterly wind flow. These northeasterly to easterly winds occur under conditions of relatively cold temperatures inland during the cool periods of the year and the cooler parts of the day, when temperatures over the Pacific Ocean are warmer than those inland which causes an offshore gradient flow. Attachment 6 contains the quarterly wind rose plots for Compton.

Figure 1
MGS Site Location



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1.1.2.3 Background Air Quality and Applicable Standards

In 1970, the United States Congress instructed the US EPA to establish standards for air pollutants, which were of nationwide concern. This directive resulted from the concern of the effects of air pollutants on the health and welfare of the public. The resulting Clean Air Act (CAA) set forth air quality standards to protect the health and welfare of the public. Two levels of standards were promulgated—primary standards and secondary standards. Primary national ambient air quality standards (NAAQS) are "those which, in the judgment of the administrator [of the USEPA], based on air quality criteria and allowing an adequate margin of safety, are requisite to protect the public health (state of general health of community or population)." The secondary NAAQS are "those which in the judgment of the administrator [of the USEPA], based on air quality criteria, are requisite to protect the public welfare and ecosystems associated with the presence of air pollutants in the ambient air." To date, NAAQS have been established for seven criteria pollutants as follows: sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sub 10-micron particulate matter (PM_{10}), sub 2.5-micron particulate matter ($PM_{2.5}$), and lead (Pb).

The criteria pollutants are those that have been demonstrated historically to be widespread and have a potential to cause adverse health impacts. USEPA developed comprehensive documents detailing the basis of, or criteria for, the standards that limit the ambient concentrations of these pollutants. The State of California has also established ambient air quality standards (AAQS) that further limit the allowable concentrations of certain criteria pollutants. Review of the established air quality standards is undertaken by both USEPA and the State of California on a periodic basis. As a result of the periodic reviews, the standards have been updated, i.e., amended, and additions, and deletions, over the ensuing years to the present.

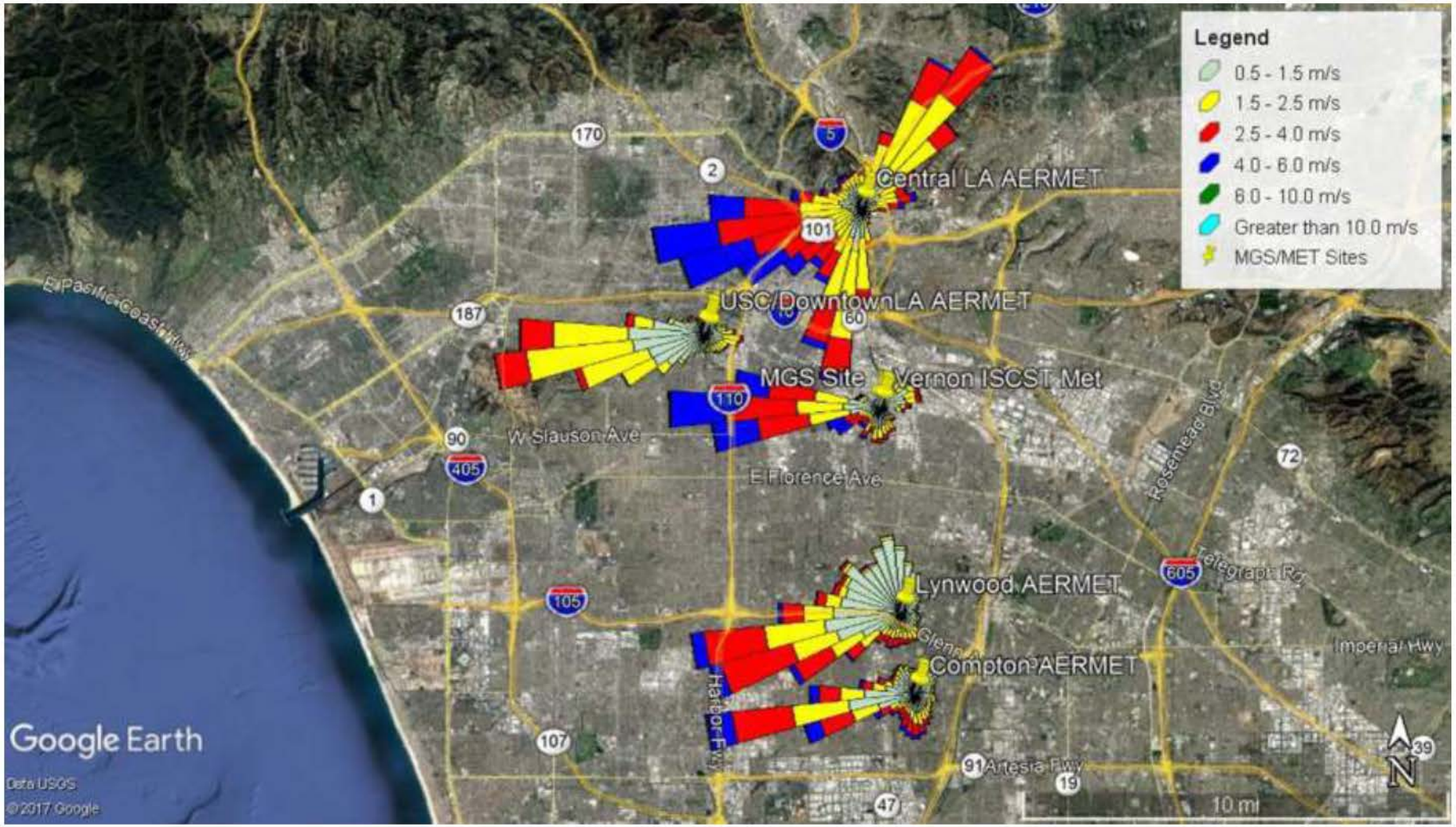
Table 3 shows the current attainment status for the South Coast AQMD (and the project area).

Table 3
SCAQMD Attainment Status

Pollutant	Averaging Time	Federal Status	State Status
Ozone	1-hour	Nonattainment (Extreme)	Nonattainment
Ozone	8-hour	Nonattainment (Extreme)	Nonattainment
CO	All	Attainment (Maintenance)	Attainment
NO_2	All	Unclassified/Attainment	Attainment
SO_2	All	Unclassified/Attainment	Attainment
PM10	All	Attainment (Maintenance)	Nonattainment
PM2.5	All	Nonattainment (Moderate)	Nonattainment

Sulfates	24-hour	No NAAQS	Attainment
Lead	All	Unclassified/Attainment	Attainment
H_2S	1-hour	No NAAQS	Unclassified
Visibility Reducing Particles	8-hour	No NAAQS	Unclassified/Attainment
Source: 2016 AQMP-SCAQMD and 40 CFR 81.305 (2015 version).			

Figure 2
Annual Wind Rose Plots



Each federal or state ambient air quality standard is comprised of two basic elements: (1) a numerical limit expressed as an allowable concentration, and (2) an averaging time which specifies the period over which the concentration value is to be measured. Table 4 presents the current federal and state ambient quality standards.

Table 4
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1-hour	0.09 ppm (180 µg/m^3)	-
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3) (3-year average of annual 4th-highest daily maximum)
Carbon monoxide	8-hour	9.0 ppm (10,000 µg/m^3)	9 ppm (10,000 µg/m^3)
	1-hour	20 ppm (23,000 µg/m^3)	35 ppm (40,000 µg/m^3)
Nitrogen dioxide	Annual average	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
	1-hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3) (3-year average of annual 98th percentile daily maxima)
Sulfur dioxide	Annual average	-	0.030 ppm (80 µg/m^3)[a]
	24-hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)[a]
	3-hour	-	0.5 ppm (1,300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3) (3-year average of annual 99th percentile daily maxima)
Respirable particulate matter (10 micron)	24-hour	50 µg/m^3	150 µg/m^3
	Annual arithmetic mean	20 µg/m^3	-
Fine particulate matter (2.5 micron)	Annual arithmetic mean	12 µg/m^3	12.0 µg/m^3 (3-year average)
	24-hour	-	35 µg/m^3 (3-year average of annual 98th percentiles)
Sulfates	24-hour	25 µg/m^3	-
Lead	30-day	1.5 µg/m^3	-
	3-month rolling average	-	0.15 µg/m^3

Source: CARB and EPA websites 09/2016

Notes:

[a] The 24-hour and annual 1971 SO_2 NAAQS remain in effect until 1 year after the attainment status is designated by EPA for the 2010 NAAQS (MGS project area is still undesignated for the 2010 NAAQS, but presumed to be in attainment).

µg/m3 = micrograms per cubic meter

Brief descriptions of health effects for the main criteria pollutants are as follows.

Ozone—Ozone is a reactive pollutant that is not emitted directly into the atmosphere, but rather is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving VOC and NOx. VOC and NOx are therefore known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of VOC and NO_x under the influence of wind and sunlight. Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. In addition to causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide—Carbon monoxide is a non-reactive pollutant that is a product of incomplete combustion. Ambient carbon monoxide concentrations generally follow the spatial and temporal distributions of vehicular traffic and are also influenced by meteorological factors such as wind speed and atmospheric mixing. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area out to some distance from vehicular sources. When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease or anemia, as well as fetuses.

Particulate Matter (PM_{10} and $PM_{2.5}$) —PM_{10} consists of respirable particulate matter that is 10 microns or less in diameter (a micron is 1 millionth of a meter), and fine particulate matter, $PM_{2.5}$, which consists of particulate matter 2.5 microns or less in diameter. Both PM_{10} and $PM_{2.5}$ represent fractions of particulate matter, which can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, combustion, and atmospheric photochemical reactions. Some of these operations, such as demolition and construction activities, contribute to increases in local PM_{10} concentrations, while others, such as vehicular traffic, affect regional PM_{10} concentrations.

National ambient air quality standards for particulate matter were first established in 1971. The standards covered total suspended particulate matter (TSP), or particles that are 30 microns or smaller in diameter. In 1987, USEPA changed the standards from TSP to PM_{10} as the new indicator. The new standards were based on a comprehensive study of information on the health effects from inhaling particulate matter. In December 1994, the USEPA began a long review process to determine if the PM_{10} standards set in 1987

provide a reasonable margin of safety, and if a new standard should be established for finer particles.

Based on numerous epidemiological studies and other health and engineering related information, US EPA established new standards for $PM_{2.5}$ in 1997. Before establishing the new $PM_{2.5}$ standards, discussions were conducted with the Clean Air Scientific Advisory Committee (CASAC). CASAC is a group of nationally recognized experts in the fields related to air pollution, environmental health, and engineering. CASAC reviewed and commented on the information generated by US EPA regarding proposed particulate matter standards.

Subsequent to these discussions and reviews, USEPA established $PM_{2.5}$ standards of 35 micrograms per cubic meter, 24-hr average concentration, and 15 micrograms per cubic meter, annual average concentration. USEPA also confirmed the national PM_{10} standards of 150 micrograms per cubic meter, 24-hr average, and 50 micrograms per cubic meter, annual average, as providing an adequate margin of safety for limiting exposure to larger particles. The recommendations for new $PM_{2.5}$ standards and for maintaining the PM_{10} standards were released in a staff report that presents the conclusions of the Agency and of the CASAC review committee.

Several studies that US EPA relied on for their staff report have shown an association between exposure to particulate matter, both PM_{10} and $PM_{2.5}$, and respiratory ailments or cardiovascular disease. Other studies have related particulate matter to increases in asthma attacks. In general, these studies have shown that short-term and long-term exposure to particulate matter can cause acute and chronic health effects. $PM_{2.5}$, which can penetrate deep into the lungs, causes more serious respiratory ailments. These studies, along with information provided by USEPA in the 1996 staff report, were used as the basis for evaluating the impacts of the proposed facility emissions of PM_{10} and $PM_{2.5}$, on public health.

Nitrogen Dioxide and Sulfur Dioxide—Nitrogen dioxide (NO_2) and sulfur dioxide (SO_2) are two gaseous compounds within a larger group of compounds, NO_x and sulfur oxides (SO_x), respectively, which are products of the combustion of fuel. NO_x and SO_x emission sources can elevate local NO_2 and SO_2 concentrations, and both are regional precursor compounds to particulate matter. As described above, NO_x is also an ozone precursor compound and can affect regional visibility. (Nitrogen dioxide is the “whiskey brown-colored” gas readily visible during periods of heavy air pollution.) Elevated concentrations of these compounds are associated with increased risk of acute and chronic respiratory disease.

Sulfur dioxide and nitrogen oxides emissions can be oxidized in the atmosphere to eventually form sulfates and nitrates, which contribute to acid rain. Large power plants with high emissions of these substances because of the use of coal or oil are subject to

emissions reductions under the Phase I Acid Rain Program of Title IV of the 1990 Clean Air Act Amendments. Power plants, with individual equipment capacity of 25 MW or greater that use natural gas or other fuels with low sulfur content, are subject to the Phase II Program of Title IV. The Phase II program requires plants to install Continuous Emissions Monitoring Systems (CEMS) in accordance with the Code of Federal Regulations (40 CFR Part 75) and report annual emissions of sulfur oxides and nitrogen oxides.

Lead—Gasoline-powered automobile engines used to be the major source of airborne lead in urban areas. Excessive exposure to lead concentrations can result in gastrointestinal disturbances, anemia, and kidney disease and in severe cases of neuromuscular and neurological dysfunction. The use of lead additives in motor vehicle fuel has been eliminated in California (and nationwide), and lead concentrations have declined substantially as a result.

The nearest criteria pollutant air quality monitoring sites to the proposed project site would be the stations located in Compton, Pico Rivera, and LA-North Main for the period 2014 through 2016. Ambient monitoring data for these sites for the most recent three-year period is summarized in Table 5. All data was derived from the AQMD monitoring summaries, and supplemented by data from the EPA AIRS database.

Table 5
Measured Ambient Air Quality Concentrations by Year

Pollutant	Units	AvgTime	Basis	Site	2014	2015	2016
Ozone	ppm	1-Hr	CAAQS-1st Highs	Compton	0.094	0.091	0.098
				LA-N. Main St.	0.113	0.104	0.103
				Pico Rivera #2	0.121	0.107	0.111
Ozone	ppm	8-Hr	CAAQS-1st Highs	Compton	0.081	0.072	0.071
				LA-N. Main St.	0.094	0.074	0.078
				Pico Rivera #2	0.092	0.081	0.081
Ozone	ppm	8-Hr	NAAQS-4th Highs	Compton	0.073	0.065	0.064
				LA-N. Main St.	0.072	0.072	0.071
				Pico Rivera #2	0.079	0.075	0.074
NO_2	ppb	1-Hr	CAAQS-1st Highs	Compton	68.2	73.6	63.7
				LA-N. Main St.	82.1	79.1	64.7

				Pico Rivera #2	86.7	70.4	63.2
NO_2	ppb	1-Hr	NAAQS-98th percentiles	Compton	59.2	58.7	58.4
				LA-N. Main St.	67.4	62.4	61.0
				Pico Rivera #2	61.9	61.6	60.1
NO_2	ppb	Annual	CAAQS/NAAQS-AAM	Compton	15.6	16.9	15.6
				LA-N. Main St.	22.2	22.2	20.8
				Pico Rivera #2	19.5	20.5	20.0
CO	ppm	1-Hr	CAAQS/NAAQS-1st Highs	Compton	6	4.4	4.4
				LA-N. Main St.	3	3.2	1.9
				Pico Rivera #2	4	2.8	2.8
CO	ppm	8-Hr	CAAQS/NAAQS-1st Highs	Compton	3.8	3.3	3.9
				LA-N. Main St.	2.0	1.8	1.4
				Pico Rivera #2	2.5	1.7	1.7
SO_2	ppm	1-Hr	CAAQS-1st Highs	LA-N. Main St.	5.4	12.6	13.4
		1-Hr	NAAQS-99th percentiles	LA-N. Main St.	4.4	6.3	2.5
		24-Hr	CAAQS/NAAQS-1st Highs	LA-N. Main St.	1.4	1.1	1.3
		Annual	CAAQS/NAAQS-AAM	LA-N. Main St.	0.29	0.17	0.30
PM10	ug/m^3	24-Hr	CAAQS-1st Highs	LA-N. Main St.	87	88	67
		24-Hr	NAAQS-2nd Highs	LA-N. Main St.	61	63	57
		Annual	CAAQS-AAM	LA-N. Main St.	35.4	33.0	32.4
PM2.5	ug/m^3	24-Hr	NAAQS-98th percentiles	Compton	30.9	37.2	26.35
				LA-N. Main St.	34.5	38.0	27.30
				Pico Rivera #2	30.1	27.6	25.13
		Annual	CAAQS/NAAQS-AAM	Compton	12.64	11.78	11.13

	LA-N. Main St.	12.36	12.38	11.83
	Pico Rivera #2	12.08	11.14	11.75

Notes: Data sources: SCAQMD website 8/8/17 and USEPA AIRS website 6/13/17

Table 6 shows the background air quality values based upon the data presented in Table 5. The background values represent the highest values reported for the site during any single year of the most recent three-year period.

Table 6
Background Air Quality Data

Pollutant and Averaging Time	Background Value (ug/m^3)
Ozone – 1-hour Maximum CAAQS	192
Ozone – 8-hour Maximum CAAQS/ 3-year average 4th High NAAQS	159/143
PM10 – 24-hour Maximum CAAQS/ 24-hour High, 2nd High NAAQS	88/63
PM10 – Annual Maximum CAAQS	35.4
PM2.5 – 3-Year Average of Annual 24-hour 98th Percentiles NAAQS	31.5
PM2.5 – Annual Maximum CAAQS/ 3-Year Average of Annual Values NAAQS	12.6/11.9
CO – 1-hour Maximum CAAQS/NAAQS	6,871
CO – 8-hour Maximum CAAQS/NAAQS	4,466
NO_2 – 1-hour Maximum CAAQS/ 3-Year Average of Annual 98th Percentile 1-hour Daily Maxima NAAQS	138.5/110.6
NO_2 – Annual Maximum CAAQS/NAAQS	31.8
SO_2 – 1-hour Maximum CAAQS/ 3-Year Average of Annual 99th Percentile 1-hour Daily Maxima NAAQS	35.1/11.5
SO_2 – 3-hour Maximum NAAQS (Not Available - Used 1-hour Maxima)	35.1
SO_2 – 24-hour Maximum CAAQS/NAAQS	3.7
SO_2 – Annual Maximum NAAQS	0.8

As noted in text, Compton measurements used for representative background concentrations when available (Los Angeles North Main Street measurements required for SO_2 and PM10)
Conversion of ppm/ppb measurements to µg/m^3 concentrations based on:
µg/m^3 = ppm x 40.9 x MW, where MW = 48, 28, 46, and 64 for ozone, CO, NO_2, and SO_2, respectively.

1.1.2.4 Current Facility Emissions and Permit Limitations

The current facility is subject to a valid facility-wide Title V operating permit #155474, issued by the SCAQMD on 11/3/2015. A copy of this permit is presented in Attachment 2. Based on a review of this permit, the current (pre-modification) facility potential to emit (PTE) is estimated as follows:

- NO_x 39.4 tpy (based on RECLAIM NO_x allocation and holdings)
- CO 7,633 lbs/month (45.79 tpy)
- VOC 3,236 lbs/month (19.42 tpy)
- SO_x 214 lbs/month (1.28 tpy)
- PM10/2.5 4,876 lbs/month (29.25 tpy)

1.1.2.5 Proposed Facility Emissions

Modification and operation of the proposed combustion turbine upgrades will result primarily in a change in the short-term emissions signature for the site. Criteria pollutant emissions from the modified turbines are delineated in the following sections, while emissions of HAPs are delineated in Section 2.0. The existing fire pump is not being modified, and no changes to the current fire pump permit limitations are being requested. The current fire pump emissions are presented in this section for information and completeness. The existing cooling tower will be run at a slightly higher circulation flow rate to handle the increase in heat rejection from the system along with increasing the TDS up to 4,500 mg/l. Revised cooling tower emissions are included for both criteria pollutants and HAPs. Attachment 4 contains the Siemens performance data for the upgraded turbines. Attachment 5 contains a copy of the Siemens SGT-800 upgrade information.

Based on the data provided by Siemens, emissions of criteria pollutants, with the exception of PM10/2.5, are expected to slightly increase on an hourly basis. The updated Siemens emissions data on the SGT-800 turbine Upgrade is included in Attachment 3 and does not reflect the use of any additional emissions control strategies over the existing (current) BACT limits. Because the existing project emissions of CO, VOC's and PM10/2.5 have been fully offset (CO is attainment so offsets are no longer needed), the applicant proposes to maintain the existing monthly permitted limits for these pollutants (The project will cover any increases in NO_x emissions through the participation in RECLAIM). Based on the data summarized in the tables below and in Attachment 3, the small increase in hourly emissions from the proposed project will safely comply with the existing monthly permit limits CO, VOC's, PM10/2.5 and SO_x.

1.1.2.6 Normal Operations

Operation of the proposed process and equipment systems will result in emissions to the atmosphere of both criteria pollutants and toxic air pollutants. Criteria pollutant emissions will consist primarily of nitrogen oxides, carbon monoxide, volatile organic compounds, sulfur oxides, and particulate matter ($PM_{10/2.5}$). Air toxic pollutants will consist of a combination of toxic gases and toxic particulate matter species. Table 7 delineates the anticipated pollutants to be emitted from the proposed facility.

Table 7
Criteria and Toxic Pollutants Emitted from the MGS Facility

NOx	Propylene Oxide
CO	Toluene
VOC	Xylene
SOx	Diesel PM
$PM_{10}/PM_{2.5}$	Arsenic
Ammonia	Beryllium
PAHs	Cadmium
Acetaldehyde	Total Chromium
Acrolein	Copper
Benzene	Lead
1-3 Butadiene	Manganese
Ethylbenzene	Mercury
Formaldehyde	Nickel
Naphthalene	

1.1.2.7 Criteria Pollutant Emissions

Table 8 presents data on the criteria pollutant emissions expected from the modified MGS turbines under normal and maximum operating scenarios. See Attachment 3 for the detailed emissions evaluations. The emissions were based on the updated Siemens performance data for the turbines while the duct burner emissions were based on the use of SCAQMD emission factors as noted in the tables below and in the detailed emission evaluations in Attachment 3.

Table 8
Maximum Hourly, Daily, and Annual Criteria Pollutant Emissions per turbine/db

Pollutant	Exhaust Gas Concentration[1]	Max Hour Emissions, lbs Steady State (Case S13)	Max Hour Emissions, lbs w/SU-SD	Max Daily Emissions, lbs w/SU-SD	Max Monthly Emissions, lbs w/SU-SD[2]	Max Annual Emissions, tons W/SU-SD for Both Units
NO_x	2.0 ppmvd	4.16 (4.08)	61.40	263.88	-	41.17
CO	2.0 ppmvd	2.53 (2.48)	102.40	327.26	3,193 (3,816.5)	30.14

VOC	2.0 ppmvd	0.87 (0.85)	0.87	21.82	630 (1,618)	7.63
SO_x	-	0.16 (0.16)	0.16	3.84	113 (107)	1.40
$PM_{10}/PM_{2.5}$	-	2.41 (3.89)	2.41	57.82	1721 (2,438)	21.03
NH_3	5 ppmvd	3.84	3.84	92.18	-	33.16

[1] NOx, CO, VOC, and SOx at 15% O2 dry. $PM_{2.5}$ = PM_{10}.

[2] Values in () represent existing permitted limits and for CO and VOCs, reflect the use of commissioning emissions for the monthly's

See Attachment 3, Table 1

Worst case day assumes 1 cold start, 1 shutdown, 1 hot start and 20.5 hours full load with DB for NO_x, CO and VOC for Case S13. For PM10/2.5, SO_x and NH_3, worst case day assumes 24 hours of full load with DB operation for Case S13.

Monthly emissions assume 720 hours with 5 cold starts, 5 non-cold starts, 10 shutdowns with the remaining 697.5 hours with full load+DB (assumes cold day emissions for the monthly emissions)

Annual assumes 8,633 hours with duct burners operational

Table 9 shows the emissions from the cooling tower and the diesel fire pump engine.

Table 9
Fire Pump and Cooling tower emissions summary

Pollutant	Lbs/Hour	Lbs/Day	Tons/Year[3]
Existing Fire Pump[1]			
NO_x	1.49	1.49	0.15
CO	0.15	0.15	0.02
VOC	0.04	0.04	0.004
SO_x	0.0019	0.0019	0.0002
$PM_{10/2.5}$	0.03	0.03	0.003
CO_2e	-	-	20.8
Revised Cooling Tower[2]			
$PM_{10/2.5}$	0.303	7.271	1.327

[1] Emissions are exempt from modeling and offsets per Rule 1304.

[2] Cooling tower is exempt from permitting per Rule 219.

[3] Annual assumes 8760 hours for the cooling tower and 52 hours for the fire pump.

Table 10 shows the proposed facility emissions subsequent to the proposed turbine and cooling tower upgrades. These values include turbine startup and shutdown emissions as show in Table 11 and as evaluated in Attachment 3.

Table 10 Summary of Maximum proposed Facility Emissions[1]				
Pollutant	**Lbs/Hour[1]**	**Lbs/Day[2]**	**Lbs/Month[3]**	**Tons/Year[3,4]**
		Both Turbines/DBs		
NO_x	122.80	523.6	-	41.17
CO	204.8	652.0	6,385 (7,633)	30.14 (45.81)
VOC	1.74	42.78	1,259 (3236)	7.63 (19.42)
SO_x	0.32	7.43	227 (214)	1.40 (1.28)
$PM_{10/2.5}$	4.82	110.84	3,442 (4,876)	21.03 (29.25)
NH_3	7.68	153.60	-	33.16
CO_2e	-	-	-	568,732
		Existing Fire Pump[5]		
NO_x	1.49	1.49	-	0.15
CO	0.15	0.15	-	0.02
VOC	0.04	0.04	-	0.004
SO_x	0.0019	0.0019	-	0.0002
$PM_{10/2.5}$	0.03	0.03	-	0.003
CO_2e	-	-	-	20.8
		Upgraded Cooling Tower[6]		
$PM_{10/2.5}$	0.303	7.271	-	1.327

[1] Includes turbine startup and shutdown emissions

[2]Includes turbine startup and shutdown emissions

[3] Values in () represent currently permitted limits

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

[5] Emissions are exempt from modeling and offsets per Rule 1304

[6] Cooling tower is exempt from permit per Rule 219

Monthly emissions assume 720 hours with 5 cold starts, 5 non-cold starts, 10 shutdowns with the remaining 697.5 hours with full load+DB (assumes cold day emissions for the monthly emissions)

Table 11 presents data on the startup and shutdown emissions for the combustion turbines. This application does not propose any changes to the startup or shutdown time limits or emissions in lbs/event in the current PTO. As discussed in the modeling analysis, the pound per hour emissions during startup/shutdown have been revised for use in the modeling analyses to assess the changes in the ambient concentrations.

Table 11 Facility Startup Emission Rates for the Turbine(s)					
Scenario	**NO_x**	**CO**	**VOC**	**SO_x**	**PM10/2.5**
Cold Startup, Lbs/event	122.8	204.8	1.75	0.28	3.62
Warm Startup, Lbs/event	51.3	59.9	1.55	0.21	2.72
Hot Startup, Lbs/event	51.3	59.9	1.55	0.14	1.81
Shutdown, Lbs/event	4.5	10.8	0.71	0.07	0.91
Emissions data are based on previously permitted limits. See Attachment 3 Tables 1 and 2 for detailed SU/SD emissions evaluation.					

Table 12 shows the comparison of the pre- and post-facility potential emissions. Detailed emissions data on the proposed facility is presented in Attachment 3. Thus, with the installation of the upgrade package, with the exception of NOx, the applicant will maintain the current permitted emission limits.

Table 12 Pre- and Post Modification Emissions Comparison					
Pollutant	**Pre-Modification, Lbs/Month**	**Pre-Modification, TPY1**	**Post-Modification, Lbs/Month**	**Post-Modification, TPY1**	**Proposed Emissions Limits**
NO_x	-	39.4	-	41.32	41.32 tpy
CO	7,633	45.81	6,385	30.16	7,633 lbs/mo
VOC	3,236	19.42	1,259	7.64	3,236 lbs/mo
SO_x	214	1.284	227	1.4	214 lbs/mo
PM10/2.5	4,876	29.25	3,442	21.03	4,876 lbs/mo
[1] Turbines/DBs and fire pump. Cooling tower adds 1.327 tpy of PM to the total.					

To further demonstrate that compliance with the existing permit limits can be achieved with the upgrade package, the 2014 and 2017 triennial test results for PM, VOC and SO_2 are summarized in Table 13. This data demonstrates that the facility has been, on a ppm and mass basis, always less than the permitted potential to emit levels. The emissions of NO_x and CO, through review of the CEMs data, have also been below permitted levels.

Table 13 Summary of Source Test Results for 2014 and 2017 (Required Triennial Tests)							
Unit 1				**Unit 2**			
2014		**GT**	**GT w/DB**	**2014**		**GT**	**GT w/DB**
PM10	Lbs/hr	0.5	0.55	PM10	Lbs/hr	0.54	0.62
VOC	ppm[1]	<0.5	<0.5	VOC	ppm[1]	<0.6	<0.04
SO_2	ppm[2]	0.03	0.03	SO2	ppm[2]	0.03	0.03
2017		**GT**	**GT w/DB**	**2017**		**GT**	**GT w/DB**
PM10	Lbs/hr	0.5	0.88	PM10	Lbs/hr	0.62	0.57
VOC	ppm[1]	<0.6	<0.5	VOC	ppm[1]	<0.5	<0.5
SO_2	ppm[2]	0.04	0.04	SO2	ppm[2]	0.05	0.04

[1] ppm at 15% O_2 dry

[2] ppm in the fuel

GT= Gas Turbine

DB=Duct Burner

All tests at approximately 100% load with and without duct firing.

As summarized in Table 12, for the monthly emissions of CO, VOC's, SO_x and PM10/2.5, the applicant is not proposing any changes to existing condition A63.3 with the exception of the emission factors for compliance monitoring of PM10, VOC and SO_x and the revision of the monthly fuel limit to reflect the increased fuel requirements for the turbine upgrade. Thus, there will be no additional requirements for offsets for the non-attainment pollutants. For NOx, the slight increase in the annual emissions will be regulated under RECLAIM.

1.1.2.8 Hazardous Air Pollutants

See Section 2.0 for a detailed discussion and quantification of hazardous air pollutant emissions from the proposed facility.

1.1.2.9 Construction

No construction related emissions are anticipated to occur with respect to the proposed upgrade project. There will be no earthmoving activities, no trenching, no drilling, and no structure erection of any type. The turbines will be removed, upgraded, and re-installed. Pumps on the cooling tower will be removed and replaced with new higher capacity units.

1.1.3 BACT Evaluation

1.1.3.1 Current Site Control Technologies

The permitted sources at the facility already meet current BACT, and as such, an update to the BACT analysis is not required.

1.1.3.2 Existing and Proposed Facility BACT

Best available control technology for the proposed modified turbines is delineated in Table 14.

Table 14
EXISTING and Proposed BACT Summary for MGS Turbines

Pollutant	Existing/Proposed BACT Emissions Level	Existing BACT System(s)	Meets Current BACT Requirements
NO_x	2/2 ppmvd	DLN with SCR	Yes
CO	2/2 ppmvd	CO Catalyst and Good Combustion Practices	Yes
VOC	2/2 ppmvd	Natural Gas, CO Catalyst, Good Combustion Practices	Yes
SO_x	Pipeline quality natural gas	Natural Gas with total S <= 0.25 grs/100scf long term <=0.75 grs/100scf short term	Yes
PM_{10}/ $PM_{2.5}$	Pipeline quality natural gas	Natural Gas with total S <= 0.25 grs/100scf long term <=0.75 grs/100scf short term	Yes
Ammonia Slip	5 ppmvd	SCR catalyst with ammonia reactant	Yes

See Table 8 for BACT related mass emissions values.

1.1.4 Air Quality Impact Analysis

This section describes the results, in both magnitude and spatial extent of ground level concentrations, resulting from emissions from the MGS project. The maximum modeled concentrations were added to the maximum background concentrations to calculate a total impact. The cooling tower is exempt from the permit requirements per SCAQMD Rule 219 but was included for the assessment under CEQA.

Potential air quality impacts were evaluated based on air quality dispersion modeling, as described in Attachment 6 (Dispersion Modeling Protocol). All input and output modeling files are contained on a CD-ROM disk provided to SCAQMD Staff under separate cover. All modeling analyses were performed using the techniques and methods as discussed in the District rules.

Support data for the air quality impact analysis is presented in Attachment 6.

1.1.4.1 Dispersion Modeling

The primary United States Environmental Protection Agency (USEPA) dispersion model proposed for use is the AERMOD modeling system (AERMOD) with the associated receptor processing program AERMAP. AERMOD will be used to quantify pollutant impacts on the surrounding environment based on the emission sources operating parameters and their locations, and will be used for modeling MGS facility impacts in both simple and complex terrain. In addition, the Building Profile Input Program for PRIME (BPIP-PRIME) will be used for determining building dimensions for downwash calculations in AERMOD and the USEPA-model AERSCREEN is proposed for use to determine inversion-breakup fumigation impacts. The California Health Risk Assessment models/protocols, which include the HARP Version 2 (HARP 2) program, will be used for determining toxic impacts and is discussed separately below. These models and their versions are listed in Table 15.

Table 15
USEPA Models and Versions

USEPA Model	Version
AERMOD	16216r
AERMET	16216
AERMAP	11103
AERSCREEN	16216
BPIP-PRIME	04274

AERMOD is a steady-state plume dispersion model that simulates transport and dispersion from multiple point, area, or volume sources based on updated characterizations of the atmospheric boundary layer. AERMOD uses Gaussian distributions in the vertical and horizontal for stable conditions, and in the horizontal for convective conditions; the vertical distribution for convective conditions is based on a bi-Gaussian probability density function of the vertical velocity. For elevated terrain AERMOD incorporates the concept of the critical dividing streamline height, in which flow below this height remains horizontal, and flow above this height tends to rise up and over terrain. AERMOD also uses the advanced PRIME algorithm to account for building wake effects.

Regulatory agencies have traditionally applied “significant impact levels” (“SILs”) as a *de minimis* value, which represents the offsite concentration predicted to result from a source’s emissions that does not warrant additional analysis or mitigation. If a source’s modeled impact at any offsite location exceeds the relevant SIL, the source owner may need to assess multi-source or cumulative air quality analysis to determine whether or not the source’s emissions will cause or contribute to a violation of the relevant NAAQS or CAAQS. The project utilized the published SCAQMD SILs and included the levels established for PM10 and PM2.5 of 2.5 and 1.0 micrograms/cubic meter, respectively.

The MGS impacts were analyzed pursuant to SCAQMD and CEC modeling requirements. The updated SCAQMD modeling requirements were followed, which include:

- Default (DFAULT) model option with the u-star adjustment (ADJ_U*) and URBAN options using Los Angeles County population of 9,862,049 for all sources;
- Use of AERMOD meteorological data for the nearest representative site on the SCAQMD website; 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 (NED) files.
- Urban dispersion option was utilized based on the Los Angeles County population but utilized the previous population data as directed by Melisa Sheffer of the SCAQMD.

These and other modeling requirements are discussed in more detail in Attachment 6.

1.1.4.2 Model Selection

AERMOD is a steady-state plume dispersion model that simulates transport and dispersion from multiple point, area, or volume sources based on updated characterizations of the atmospheric boundary layer. AERMOD uses Gaussian distributions in the vertical and horizontal for stable conditions, and in the horizontal for convective conditions; the vertical distribution for convective conditions is based on a bi-Gaussian probability density function of the vertical velocity. For elevated terrain AERMOD incorporates the concept of the critical dividing streamline height, in which flow below this height remains horizontal, and flow above this height tends to rise up and over terrain. AERMOD also uses the advanced PRIME algorithm to account for building wake effects.

1.1.4.3 GEP Stack Height Analysis

Good Engineering Practice (GEP) stack height was calculated at 46.42 meters (152.3 feet) based on the turbine/HRSG structures and off-site buildings. The as built design stack height of 33.53 meters (110 feet) is less than GEP stack height, so downwash effects were included in the modeling analysis.

BPIP-PRIME was used to generate the wind direction specific building dimensions for input into AERMOD. Attachment 6 presents the figure 6 which shows the structures used in the BPIP downwash analysis.

1.1.4.4 Receptor Grid Selection and Coverage

Receptor and source base elevations were determined from United States Geological Survey (USGS) National Elevation Dataset (NED) The NED data was processed with the USEPA-model AERMAP for the receptor locations selected. All coordinates (both sources and receptors) were referenced to UTM North American Datum 1983 (NAD83, Zone 11) in accordance with SCAQMD guidance.

Receptor grids with 100-meter spacing or less between adjacent receptors used 1/3-arcsecond (~10 meter) NED data. Receptor grids with spacing between adjacent receptors of greater than 100-meters used 1-arcsecond (~30 meter) NED data. The NED files were extended beyond the receptor grid boundaries being evaluated as appropriate for the hill slope factors.

Cartesian coordinate receptor grids were used to provide adequate spatial coverage surrounding the project area for assessing ground-level pollution concentrations, to identify the extent of significant impacts, and to identify maximum impact locations. For the full impact analyses, a nested grid was developed to fully represent the initial location and extent of significance area(s) and maximum impact area(s). The nested grid was comprised of the following and are presented in Attachment 6 as Figures 3 and 4:

- Receptors were placed along the MGS project fenceline with a spacing of about 10 meters or less between adjacent receptors.
- The downwash receptor grid with a receptor spacing of 20 meters extended from the project fence line out to 500 meters from the project.
- An intermediate receptor grid with 100-meter receptor spacing extended from the downwash receptor grid out to 1000 meters from the project.
- The first coarse receptor grid with 200 meter receptor spacing was extended from the intermediate receptor grid outwards to five (5) kilometers (km) from the project in all directions.
- The second coarse grid with 500 meter receptor spacing was developed out ten (10) km from the project in all directions.
- Where maximum impacts occur in areas outside the 20 meter spaced receptor grid, additional refined receptor grids would have been developed with 20 meter resolution and placed around the maximum impacts to determine maximum impacts. For this analysis, all maximum impacts occurred well inside the 20 meter downwash grid, so no refined receptor grids were required.

Ambient concentrations within the facility fence line were not calculated.

1.1.4.5 Meteorological Data Selection

The original 2002 permit analyses used ISCST with 1981 meteorological data from a nearby meteorological monitoring site in Vernon. The Vernon data are not available in the format needed for AERMOD, so a comparison of the 1981 wind roses for the ISCST Vernon data[1] and the nearest AERMET SCAQMD processed meteorological data[2] from Lynwood (2006-2007 and 2009), Compton (2009-2010 and 2012), and Central Los Angeles (2006-2007 and 2009-2011) was made and is included as Figure 2 in Attachment 6. The terrain surrounding the Central Los Angeles site severely affects the meteorological data as shown in Attachment 6, Figure 2, so the Central Los Angeles site would not be considered to be representative for MGS modeling purposes. Of the two remaining sites, the Compton AERMET meteorological data appears to most closely represent the MGS site as shown by the 1981 Vernon ISCST meteorological data.

AERSURFACE was used to determine the surface characteristics at the MGS site and Lynwood and Compton SCAQMD AERMOD meteorological monitoring stations used to generate the AERMOD meteorological data. Annual AERSURFACE values were calculated for the following options: surface roughness calculated for an area circumscribed by a one (1) kilometer radius; airport = NO; continuous snow cover = NO; average moisture conditions; arid region = YES; one single 360° sector; and default monthly seasonal assignments to calculate annual average values. SCAQMD meteorological station coordinates (in latitude and longitude) were taken from the SCAQMD Table 3 website.[3] The AERSURFACE results are presented in Attachment 6.

For the reasons discussed in detail in the modeling protocol (Attachment 6), the Compton meteorological monitoring site was proposed as the most representative meteorological data set due to its proximity and similar wind rose to the original 1981 ISCST Vernon meteorological data, and because of the lack of significant terrain and similar urban characteristics of the land use at the Compton meteorological and MGS project sites. The SCAQMD has recently reprocessed these meteorological data with the latest version of AERMET using the latest default USEPA ADJ_U* option and has provided three years of recent data (2012, 2015, and 2016) which was used for this project.

1.1.4.6 Impacts on Class II Areas

Operational characteristics of the turbine, such as emission rate, exit velocity, and exit temperature vary by operating load and ambient temperature. A screening modeling analysis, using AERMOD was performed for the 60, 80 and 100 percent (base) load conditions with and without evaporative cooling in order to determine the turbine operating condition that will result in the highest modeled concentrations for all averaging periods.

1(www.aqmd.gov/home/library/air-quality-data-studies/meteorological-data/iscst3-table-1).
2(www.aqmd.gov/home/library/air-quality-data-studies/meteorological-data/aermod-table-1).
3(www.aqmd.gov/home/library/air-quality-data-studies/meteorological-data/aermod-table-3).

The screening cases also analyzed the cases with the duct burner on for 100 percent load. The ambient conditions considered were four ambient temperature conditions: 38˚F (a cold day), 59˚F (ISO conditions), 65˚F (annual average day), and 94˚F (hot day). The evaporative cooling was assumed to be on for all cases but the 38ºF day.

The results of the screening analysis are listed in Attachment 6. The screening analysis shows that the worst-case operating and ambient conditions are the 59˚F ambient condition with duct burner on (Case 14) for all short-term impacts. The annual impacts were based on the 65ºF case with duct burner on (Case 15). Startup modeling was based on 38ºF (Case 1). Screening analyses were performed for the regular receptor grid described above and all three years of Compton meteorological data.

1.1.4.7 Refined Analysis

Facility sources were modeled in the analysis for comparisons with Significant Impact Levels (SILs) and California Ambient Air Quality Standards and National Ambient Air Quality Standards (CAAQS/NAAQS), as necessary.

For the turbine, start-up and shutdown emissions were included in the analysis for all long-term (annual) averages in the air quality modeling. Separate start-up and shut-down analyses were performed for the turbine for short-term averaging times as described above. Detailed emission calculations for all averaging periods are included in Attachment 3.

The worst-case modeling input information for each pollutant and averaging period based on the screening analysis results are shown in Table 16 for normal operating conditions and turbine start-up/shutdown conditions. As discussed above, the combustion turbine stack parameters used in modeling the impacts for each pollutant and averaging period reflected the worst case operating condition for that pollutant and averaging period identified in the screening analysis. Since the project consists of the turbines, HRSG's, the emergency fire pump and the cooling tower (which is exempt from the modeling requirements), the screening analysis results were also used as the refined analysis results.

Table 16
Worst-Case Stack Parameters and Emission Rates

	Stack Height (m)	Stack Temp. (Kelvin)	Exit Velocity (m/s)	Stack Diameter (m)	Emission Rates (g/s)			
					NO_x	SO_2	CO	PM10/ PM2.5
Averaging Period: 1-hour for Normal Operating Conditions (Case 14)								
Each turbine	33.53	377.59	13.844	3.6576	0.5185	0.0198	0.3154	-
Firepump	3.51	738.15	69.458	0.1143	0.1877[a]	2.394E-4[a]	0.0189	-
Averaging Period: 3-hours for Normal Operating Conditions (Case14)								

Each turbine	33.53	377.59	13.844	3.6576	-	0.0198	-	-
Firepump	3.51	738.15	69.458	0.1143	-	7.980E-5	-	-
Averaging Period: 8-hours for Normal Operating Conditions (Case14)								
Each turbine	33.53	377.59	13.844	3.6576	-	-	0.3154	-
Firepump	3.51	738.15	69.458	0.1143	-	-	2.363E-3	-
Averaging Period: 24-hours for Normal Operating Conditions (Case 14)								
Each turbine	33.53	377.59	13.844	3.6576	-	0.0198	-	0.4207[b]
Cooling Tower (Each Cell)	13.73	316.00	10.028	6.7056	-	-	-	0.0127
Firepump	3.51	738.15	69.458	0.1143	-	9.975E-6	-	1.575E-4
Averaging Period: Annual (Case 15)								
Each turbine	33.53	378.15	13.743	3.6576	0.5921	0.0201	-	0.4207[b]
Cooling Tower (Each Cell)	13.73	316.00	10.028	6.7056	-	-	-	0.0127
Firepump	3.51	738.15	69.458	0.1143	1.114E-3[a]	1.421E-6[a]	-	2.244E-5
Averaging Period: 1-hour for Cold Start-up Periods (Case 1)								
One turbine	33.53	375.37	9.556	3.6576	7.7364	-	12.9024	-
Averaging Period: 1-hour for Hot Start-up Period (Case 1)								
Two turbines(each)	33.53	375.37	9.556	3.6576	6.4638	-	7.5474	-
Averaging Period: 8-hours for Start-up/Shutdown Periods (Case 1)								
Two turbines(each)	33.53	375.37	9.556	3.6576	-	-	4.6683	-
Firepump	3.51	738.15	69.458	0.1143	-	-	2.363E-3	-

[a] 1-hour NO_2 and SO_2 NAAQS assessment based on annual average emissions per USEPA guidance for intermittent sources.
[b] PM10/PM25 emissions based on permit limit of 29.25 tons/year total for both turbines.

Notes:
g/s = gram(s) per second
m/s = meter(s) per second
m = meter(s)

1.1.4.1 Normal Operations Impact Analysis

Based on the results of the refined analyses, modeled impacts were compared with the Significant Impact Levels (SILs) in Table 17 and the CAAQS/NAAQS in Table 18. To determine the magnitude and location of the maximum impacts for each pollutant and averaging period, the AERMOD model was used with all three years of meteorology. NO_2 concentrations were computed using either the 100 percent conversion of NO_x into NO_2 or utilized the Ozone Limiting Method (OLM). Following EPA and SCAQMD guidance, the in-stack ratio of NO_2/NO_x was set to 0.5 for the turbines/HRSG's and 0.2 for the fire pump (fire pump ratio based on ISR database). All maximum facility impacts occurred well inside the 20-meter downwash grid or on the 10-meter fenceline grid. Therefore, additional 20-meter refined receptor grids were not required. Figure 3 shows the location of the maximum MGS impacts for both the SILs and AAQS assessments.

The facility impacts, summarized in Table 17 for normal operating conditions, are less than the EPA SILs or the SCAQMD PM10/PM2.5 SILs for all pollutants and averaging times other than the 1-hour NO_2 CAAQS modeling assessment. For start-up and shutdown periods, NO_2 facility impacts are greater than the EPA SILs and CO facility impacts are less than the EPA SILs.

Table 17
Modeled Concentrations and SILs

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	SCAQMD-PM & USEPA-NAAQS Class II SILs ($\mu g/m^3$)
Normal Operating Conditions			
NO_2*	1-hour maximum (CAAQS)	126.6	7.5
	3-year average of daily 1-hour yearly maxima (NAAQS) [a]	3.95	7.5
	Annual maximum (CAAQS/NAAQS)	0.47	1.0
CO	1-hour maximum (NAAQS/CAAQS)	33.0	2,000
	8-hour maximum (NAAQS/CAAQS)	1.89	500
SO_2	1-hour maximum (CAAQS)	0.42	7.8
	3-year average of daily 1-hour yearly maxima (NAAQS) [a]	0.15	7.8
	3-hour maximum (NAAQS)	0.15	25
	24-hour maximum (CAAQS/NAAQS)	0.04	5
	Annual maximum (NAAQS)	0.016	1
PM10	24-hour maximum (CAAQS/NAAQS)	0.96	2.5 [a]
	Annual maximum (CAAQS)	0.34	1.0 [a]
PM2.5	3-year average of 24-hour yearly maxima (NAAQS) [a]	0.85	2.5 [a]
	Annual maximum (CAAQS)	0.34	1.0 [a]
	3-year average of annual concentrations (NAAQS) [a]	0.31	1.0 [a]
Cold Start-up Periods			
NO_2*	1-hour maximum (CAAQS)	43.10	7.5
	3-year average of daily 1-hour yearly maxima (NAAQS) [a]	39.52	7.5
CO	1-hour maximum	71.87	2,000
Hot Start-up Periods			
NO2*	1-hour maximum (CAAQS)	70.74	7.5
	3-year average of daily 1-hour maxima (NAAQS) a	65.15	7.5
CO	1-hour maximum	82.60	2,000
Start-up/Shutdown Periods			
CO	8-hour maximum	32.14	500

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

[a] SCAQMD PM10/PM2.5 SIL levels shown.

Maximum MGS concentrations are compared in Table 18 to the CAAQS and NAAQS. As can be seen, maximum combined impacts (modeled + background) are less than all the CAAQS and NAAQS except for the 24-hour and annual PM10 CAAQS and the annual PM2.5 NAAQS and CAAQS. The exceedances of the CAAQS for PM10 and the CAAQS and NAAQS for PM2.5 are due to high background concentrations, which already nearly equal or exceed the CAAQS and NAAQS (the area is designated as nonattainment for the State PM10 and PM2.5 CAAQS and the Federal PM2.5 NAAQS). As noted above, the facility is projected to have maximum impacts less than the SCQMD SILs for both 24-hour and annual PM10 and PM2.5. Thus, MGS would not significantly contribute to current exceedances of the PM10 24-hour and annual CAAQS and the PM2.5 annual CAAQS and annual NAAQS.

Table 18 Air Quality Impact Results– Ambient Air Quality Standards						
Pollutant	**Averaging Period**	**Maximum Concentration (µg/m³)**	**Background (µg/m³)**	**Total (µg/m³)**	**Ambient Air Quality Standards (µg/m³)**	
					CAAQS	**NAAQS**
Normal Operating Conditions						
NO_2*	1-hour maximum (CAAQS)	126.60	138.5	265.1	339	-
	3-year average of 1-hour yearly 98th % (NAAQS)	3.39	110.6	114.0	-	188
	Annual maximum	0.47	31.8	32.3	57	100
CO	1-hour maximum	33.00	6,871	6,904	23,000	40,000
	8-hour maximum	1.89	4,466	4,468	10,000	10,000
SO_2	1-hour maximum (CAAQS)	0.42	35.1	35.5	655	-
	3-year average of 1-hour yearly 99th % (NAAQS)	0.14	11.5	11.6	-	196
	3-hour maximum	0.15	35.1	35.3	-	1,300
	24-hour maximum	0.04	3.7	3.74	105	365
	Annual maximum	0.016	0.8	0.82	-	80
PM10	24-hour maximum (CAAQS)	0.96	88	89.0	50	-
	24-hour 4th highest over 3 years (NAAQS)	0.85	63	63.9	-	150
	Annual maximum (CAAQS)	0.34	35.4	35.7	20	-
PM2.5	3-year average of 24-hour yearly 98th %	0.69	31.5	32.2	-	35
	Annual maximum (CAAQS)	0.34	12.6	12.9	12	-
	3-year average of annual concentrations (NAAQS)	0.31	11.9	12.2	-	12.0
Cold Start-up Periods						
NO_2*	1-hour maximum (CAAQS)	43.10	138.5	181.6	339	-
	3-year average of 1-hour yearly 98th % (NAAQS)	33.06	110.6	143.7	-	188
CO	1-hour maximum	71.87	6,871	6,943	23,000	40,000
Hot Start-up Periods						
NO_2*	1-hour maximum (CAAQS)	70.74	138.5	209.2	339	-
	3-year average of 1-hour yearly 98th % (NAAQS)	54.90	110.6	165.5	-	188
CO	1-hour maximum	82.60	6,871	6,954	23,000	40,000
Start-up/Shutdown Periods						
CO	8-hour maximum	32.14	4,466	4,498	10,000	10,000
*1-hour NO_2 impacts for comparison to the 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 to NO_2.						

1.1.4.8 Commissioning Impacts Analysis – Turbine

The commissioning activities associated with the upgrade package will occur over a period of two weeks rather than over the originally assessed two-month period. Although there will be no proposed change in the commissioning emissions from the previously

assessed project, commissioning impact assessments were analyzed for 1-hour and 8-hour NO_2 and CO impacts. Commissioning activities are assumed to occur for only one turbine at a time and the firepump will not be tested during commissioning activities. CO and NO_x emissions during commissioning activities of 33.0 and 36.35 lbs/hour, respectively, give maximum impacts of 23.16 µg/m^3 (1-hour CO maximum), 14.46 µg/m^3 (8-hour CO maximum), 25.51 µg/m^3 (1-hour NO_2 for CAAQS), 23.40 µg/m^3 (1-hour NO_2 for NAAQS/maximum), and 19.57 µg/m^3 (1-hour NO_2 for NAAQS/98th percentile average).

1.1.4.9 Start-up and Shutdown Impacts Analysis

Start-up and shutdown activities typically affect emissions of NO_x and CO. (During start-up, PM_{10}/$PM_{2.5}$ and SO_2 emissions are expected to be no greater than for full-load operations.) A separate modeling assessment for start-up emissions was made and is presented in Table 18. CO and NO_x emissions for 1-hour averaging times were modeled for one cold start-up period, assumed to occur over two hours. CO emissions for 8-hour averaging times were modeled assuming one cold start-up and shutdown, one hot start and the remaining time with full load emissions including the duct burner. These emissions are shown above in Table 16 (emissions were assumed to occur for any of the operating scenarios screened). During a cold start, only one (1) turbine would be undergoing the start cycle. For warm and hot starts (non-cold starts), both turbines were assumed to be in start mode.

1.1.4.10 Fumigation Analysis

Fumigation analyses with the EPA Model AERSCREEN were conducted for inversion breakup conditions based on EPA guidance given in EPA-454/R-92-019 (EPA, 1992). The worst case short-term operating conditions from the screening results for the turbines (Case 14) was modeled for fumigation. Since AERSCREEN is a single point source model, only one of the two turbine stacks were modeled. Other AERSCREEN inputs were the BPIP-PRIME values used for the facility analyses for the north turbine stack (nearest the property fenceline), the AERSURFACE values for the MGS site for annual conditions shown in the Modeling Protocol, the range of ambient temperatures analyses in the facility screening analyses (38 to 94°F), a minimum fenceline distance of 16 meters, no flagpole receptors, a minimum wind speed of 0.5 m/s with a 10-meter anemometer height, and flat terrain (fumigation requires the specification of RURAL dispersion). Impacts were initially evaluated for unitized emission rates (1.0 g/s). The results of AERSCREEN indicate that there will be no fumigation impacts due to the project. Thus, fumigation impacts were not assessed any further.

1.1.5 Laws, Ordinances, Regulations, and Statutes (LORS)

Table 19 presents a summary of local, state, and federal LORS deemed applicable to the proposed modification.

Figure 3
Malburg Refined Analysis Maximum Impact Locations

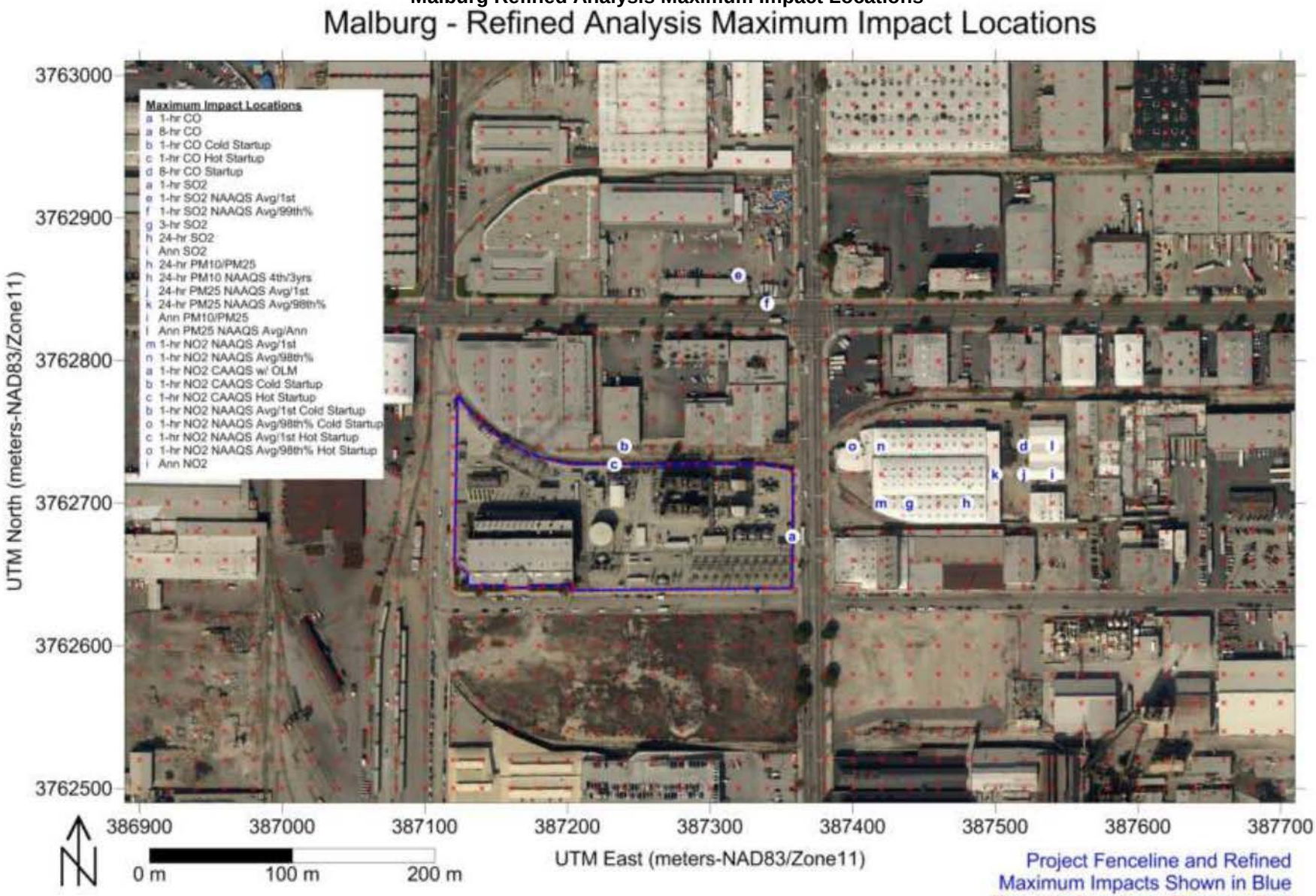


Table 19 Summary of Applicable LORS for Air Quality	
Regulation Citation	**Compliance Strategy/Determination**
	Federal Regulations
CAAA of 1990, 40 CFR 50	MGS operations will not cause violations of state or federal AAQS.
40 CFR 52.21 (PSD)	Impact analysis shows compliance with NAAQS, proposed expansion project is not subject to PSD.
40 CFR 72-75 (Acid Rain)	MGS will submit updated applications for inclusion to the Acid Rain program and allowance system. Current CEMS meets all 40 CFR 72-75 requirements.
40 CFR 60 (NSPS)	MGS will determine subpart applicability and comply with all emissions, monitoring, and reporting requirements. 40 CFR 60, Subpart KKKK will now supercede Subpart GG on the turbines. 40 CFR 60 subpart TTTT will also apply to the modified turbines. See the detailed discussion of these subparts which follows this table.
40 CFR 70 (Title V)	An updated Title V application will be submitted as part of the AQMD PTC package.
40 CFR 63 (RMP)	MGS will evaluate and update its existing RMP as required.
40 CFR 64 (CAM Rule)	Facility will be exempt from CAM Rule provisions.
40 CFR 68 (HAPs, MACT)	MGS will determine subpart applicability and comply with all emissions, monitoring, and reporting requirements.
	State Regulations (CARB)
CHSC 44300 et seq.	MGS will determine applicability, and prepare inventory plans and reports as required.
CHSC 41700	SCAQMD Permit to Construct (PTC) will ensure that no public nuisance results from operation of facility.
Gov. Code 65920 et seq.	Pursuant to the Permit Streamlining Act, the applicant believes the proposed project is a “development project” as defined, and is seeking approvals as applicable under the Act.
	Local Regulations (South Coast AQMD)
Rule 53A	Limits SOx and PM emissions from stationary sources. BACT will insure compliance with these provisions.
Rule 201	Permitting procedures defined. MGS will comply with all required permitting application requirements.
Rule 401	Limits visible emissions. MGS will comply with all limits per BACT and clean fuel use.
Rule 402	Prohibits public nuisances. MGS is not expected to cause or create any type of public nuisance.
Rule 403	Fugitive dust limits and mitigation measures. MGS will comply with all rule provisions during operation. No construction emissions are anticipated from the project as currently defined.
Rule 407	Limits CO and SOx emissions from stationary sources. Also covered in Rule 431.1. BACT and clean fuel use will insure compliance.
Rule 409	Limits PM emissions from fuel combustion. BACT and clean fuel use will insure compliance.

Rule 474	Limits NOx emissions from fuel combustion. BACT and clean fuel use will insure compliance.
Rule 475	Limits PM emissions from fuel combustion. BACT and clean fuel use will insure compliance.
Rule 476	Limits NOx and combustion contaminant emissions from fuel combustion. BACT and clean fuel use will insure compliance.
Rule 431.1 and 431.2	Limits fuel sulfur content of gaseous and liquid fuels. Use of PUC grade natural gas and California certified low sulfur diesel fuel insures compliance.
Rule 1134	Limits NOx emissions from stationary gas turbines. Pre-empted by Rule XX.
Rule 1110.2	FP is exempt from Rule 1110.2
Rule XIII (1301-1313)	NSR provisions. MGS will meet all NSR rule requirements (BACT, offsets, AQ impact analysis, etc.)
Rule XIV (1401 and 1470)	NSR for Toxics (MGS will comply with all provisions of Rule 1401-New Sources) See Attachment 7 and Section 2.0 Public Health for analysis and compliance data.
Rule XVII (PSD)	MGS project does not trigger the PSD program requirements.
Rule XX (RECLAIM)	MGS will continue to be subject to RECLAIM for NOx.
Rule XXX (Title V)	MGS will submit the required Title V application as an integral part of the SCAQMD PTC application.
Rule XXXI (Acid Rain)	MGS will comply with all provisions of the acid rain program as adopted by the SCAQMD (monitoring, reporting, recordkeeping, testing, allowance use and tracking, notifications, etc.)
Notes:	

40 CFR Part 60, Subpart KKKK, "Standards of Performance for Stationary Combustion Turbines"

This subpart applies to all turbines with heat input in excess of 10 MMBTU/Hr that commence construction after February 18, 2005. The proposed MGS upgrade project on the existing gas turbines would be subject to this subpart because the heat input for one turbine is approximately 480 MMBTU/Hr (nominal without duct burners). Each turbine is a combined cycle turbine with heat recovery. The turbines share a common steam turbine, and will be fired on only PUC regulated natural gas.

Section 60.4320 requires turbines to meet the applicable NOx standard in Table 1 of the subpart. The proposed natural gas fired turbines heat input are each 480 MMBTU/Hr, therefore the NOx limit as listed in Table 1 is 25 ppmvd at 15% O2 or 1.2 lb/MW-Hr when operating at or above 75% peak load and 96 ppmvd at 15% O2 or 4.7 lb/MW-hr when operating below 75% of peak load.

The above Subpart KKKK NOx limits are less stringent than SCAQMD Rule 1135 and Regulation XIII NSR BACT limit of 2.0 ppmvd NOx for the turbines. Therefore, the new turbines compliance with the SCAQMD NSR BACT requirements will insure compliance with Subpart KKKK.

Section 60.4330 requires the turbines to meet the SO2 emission limits. The turbines will be fired on PUC regulated natural gas therefore the SO2 emissions limits are either 0.90 lbs- SO2/MWh discharge based on gross output (Section 60.4330 (a)(1)) or 0.060 lbs-SO2/MMBTU potential in the fuel (Section 60.4330 (a)(2)). The natural gas sulfur content of the fuel will be limited to 0.75 grain per 100 scf and 0.25 grain per 100 scf, long and short-term limits respectively. This sulfur content is lower than the fuel sulfur standard. Therefore, the new turbines will comply with this section.

Section 60.4333 is a general requirement that requires the operation and maintenance of the turbine in a manner of good air pollution control practices at all times. The facility has in the past, and will continue to operate the turbines in this manner.

Section 60.4335 provides guidance on requirements when water or steam injection is being used to control NOx emissions. The section requires installation, certification, and maintaining of a continuous emission monitoring system (CEMS). The facility currently has a certified CEMS system for NO_x, CO, and O_2.

Section 60.4345 contains requirements for the CEMS system. The CEMS may either be certified using either Performance Specification 2 (PS 2) of Appendix B of 40 CFR Part 60 (except 7-day drift test is based on unit operating days instead of calendar days), or according to the procedures of Appendix A of 40 CFR Part 75. The relative accuracy test audit (RATA) of the CEMS shall be performed on a lb/MMBTU basis. For each full unit operating hour, the NOx and diluent monitors must sample, analyze and record at least once each 15 minute quadrant for the hour to be valid. For partial unit operating hours, at least one valid point must be obtained for each quadrant of the hour the turbine operates. Only two valid points are needed for hours in which quality assurance or maintenance activities are conducted to validate the hour. All monitors including fuel flowmeters, watt meters, temperature sensors, etc. must be installed, calibrated, maintained and operated according to manufacturer's instructions. The facility must maintain a quality assurance (QA) plan for all continuous monitoring equipment. The current certified CEMS systems meet these requirements.

Section 60.4350 contains requirements for using CEMS data to identify excess emissions. This includes that all CEMS data be reduced to hourly averages and recorded in units of ppm (uncorrected) or lb/MMBTU for each valid unit operating hour of data. For missing data, the owner or operator is not required to report data substituted using the missing data procedures of 40 CFR Part 75, and instead may report these periods as monitor downtime. All other monitored parameters must be reduced to hourly averages as well. For simple-cycle units, excess emissions are calculated on a 4-hour rolling average basis as required by Section 60.4350(g).

Sections 60.4360 and 60.4365 have requirements for monitoring sulfur content of fuel. Since only natural gas is combusted, sulfur content monitoring is not required per

60.4365(a) which specifies that, if a purchase contract, tariff sheet, or transportation contract lists sulfur content below 20 grains of sulfur per 100 standard cubic feet (scf) of gas, no monitoring is required. As discussed above, the natural gas sulfur content of the fuel will be limited to a long and short-term standard of 0.75 and 0.25 grains of sulfur per 100 scf respectively. MGS will be required to keep records of fuel gas sulfur content.

Section 60.3475 requires the submission of reports of excess emissions and monitor downtime (including startups, shutdowns and malfunctions).

Section 60.4380 specifies that periods of excess emissions to be reported are any time where the 4-hour NOx emission rate exceeds the applicable standard of 25 ppmvd at 15% O_2 (or 96 ppmvd at 15% O_2 when operating below 75% peak load as described above). The 4-hour average includes the unit operating hour and three-unit operating hours immediately preceding the subject unit operating hour. An emission rate is calculated if a valid NOx rate is obtained for at least three out of four hours. Periods of monitor downtime to be reported include any hours the turbine was operating but valid readings were not obtained. For periods where multiple emission limits would apply (i.e. the 4-hour averaging period includes periods of operating both above and below 75% load), the applicable standard is the average of the applicable standards during each hour. For each hour where multiple emission standards apply, the higher emission standard during that hour applies.

Section 60.4395 requires that reports be submitted by the 30th day following the end of each semi-annual reporting period. MGS expects that several of the present permit conditions will be modified to address these Subpart KKKK requirements.

Sections 60.4400 and 60.4405 contain instructions for initial and periodic source testing. If testing is to be performed, EPA Method 7E or Method 20 may be used to measure NOx concentration along with EPA Methods 1 and 2 to determine stack gas flow rate or NO_x and O_2 may be measured using Method 20 or Methods 7E and 3A, and then converted to lb/MMBTU using EPA Method 19. Alternatively, if equipped with a CEMS, the initial performance test may be conducted as a RATA test. An additional requirement is that the test be conducted while the turbine is operating within +/- 25% of 100% peak load. MGS expects that several of the present permit conditions will be modified to address these Subpart KKKK requirements.

Compliance with the requirements of 40 CFR Part 60 Subpart KKKK is expected.

NSPS Part 60 (Subpart TTTT) GHG Standards of Performance for GHG Emissions for New Stationary Sources: Electric Utility Generating Units.

In January, 2014, EPA re-proposed the standards of performance regulating CO_2 emissions from new affected fossil-fuel-fired generating units, pursuant to Section 111(b) of the CAA. These standards were adopted in final form by EPA on August 3, 2015. The

new standards would be 1,100 lbs CO_2/MWh (gross energy output on a 12 operating month rolling average basis for base loaded units), while non-base load units would have to meet a clean fuels input-based standard. The determination of base versus non-base load would be on a sliding scale that considers design efficiency and power sales.

Within Subpart TTTT, base load rating is defined as maximum amount of heat input that an Electrical Generating Unit (EGU) can combust on a steady state basis at ISO conditions. For stationary combustion turbines, base load rating includes the heat input from duct burners. Each EGU is subject to the standard if it burns more than 90 percent natural gas on a 12-month rolling basis, and if the EGU supplies more than the design efficiency times the potential electric output as net-electric sales on a 3 year rolling average basis. Affected EGUs supplying equal to or less than the design efficiency times the potential electric output as net electric sales on a 3 year rolling average basis are considered non-base load units and are subject to a heat input limit of 120 lbs CO_2/MMBtu. Each affected 'base load' EGU is subject to the gross energy output standard of 1,000 lbs of CO_2/MWh unless the Administrator approves the EGU being subject to a net energy output standard of 1,030 lbs CO_2/MWh.

<u>MGS believes that the turbines are exempt from Subpart TTTT based on the following:</u>

The NSPS general provisions (40 CFR part 60.15, subpart A) provide that an existing source is considered to be a new source if it undertakes a "reconstruction," which is the replacement of components of an existing facility to an extent that (1) the fixed capital cost of the new components exceeds 50 percent of

the fixed capital cost that would be required to construct a comparable entirely new facility, and (2) it is technologically and economically feasible to meet the applicable standards.

Per MGS, the upgrade cost per turbine is significantly less than the 50% cost threshold noted above, and as such the upgrade is not considered "reconstruction".

40 CFR 60.5509 (b) states that "You are not subject to the requirements of this subpart if your affected EGU meets any of the conditions specified in paragraphs (b)(1) through (b)(8) of this section."

(b)(7) states "Your EGU is a steam generating unit or IGCC that undergoes a modification resulting in an hourly increase in CO_2 emissions (mass per hour) of 10 percent or less (2 significant figures). Modified units that are not subject to the requirements of this subpart pursuant to this subsection continue to be existing units under section 111 with respect to CO_2 emissions standards."

MGS believes, based upon a review of current and proposed turbine operations, that the upgraded turbines will not result in an emission increase of CO_2 of greater than 10% (mass emissions per hour).

1.1.6 Agency Jurisdiction and Contacts

Table 20 presents data on the following: (1) air quality agencies which may or will exercise jurisdiction over air quality issues resulting from the proposed power plant, (2) the most appropriate agency contact for the proposed project, (3) contact address and phone information, and (4) the agency involvement in required permits or approvals.

Table 20
Agencies, Contacts, Jurisdictional Involvement, Required Permits

Agency	Contact	Jurisdictional Area	Permit Status
South Coast AQMD	Andrew Lee Engineering/Permitting 21865 E. Copley Dr. Diamond Bar, Ca. 91765 909-396-2643	Issues AQMD Permit to Construct and Operate, Primary air regulatory and enforcement agency.	This document serves as the formal PTC application for the project.
California Air Resources Board	Mike Tollstrup Chief, Project Assessment Branch 1001 I St., 6th Floor Sacramento, Ca. 95814 916-322-6026	Oversight of AQMD stationary source permitting and enforcement program	CARB staff may provide comments on applicable PTC as appropriate per the AQMD NSR rule provisions.
Environmental Protection Agency, Region IX	Gerardo Rios Chief, Permits Section EPA-Region 9 75 Hawthorne St. San Francisco, Ca. 94105 415-947-3974	Oversight of all AQMD programs, including permitting and enforcement programs	EPA staff may provide comments on applicable PTC as appropriate per the AQMD NSR rule provisions.

1.1.7 Permit Requirements and Schedules

A Permit to Construct application is required in accordance with the SCAQMD rules. This document, and the AQMD permit application forms in Attachment 1, fulfills the PTC application requirements.

1.1.8 References

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Section 2 PUBLIC HEALTH

2.1 INTRODUCTION

This section presents the methodology and results of a human health risk assessment performed to assess potential impacts and public exposure associated with airborne emissions from the routine operation of the modified MGS project. Section 2.0 describes the affected environment, discusses the environmental consequences from the operation of the power plant and associated facilities, cumulative impacts, mitigation measures, presents applicable laws, ordinances, regulations, and standards (LORS), presents permit requirements and schedules, presents agency contacts, and contains references cited or consulted in preparing this section.

Air will be the dominant pathway for public exposure to chemical substances released by the project. Emissions to the air will consist primarily of combustion by-products produced by the natural gas-fired turbines. Potential health risks from combustion emissions will occur almost entirely by direct inhalation. To be conservative, additional pathways were included in the health risk modeling; however, direct inhalation is considered the most likely exposure pathway. The risk assessment was conducted in accordance with guidance established by the California Office of Environmental Health Hazard Assessment (OEHHA) and the California Air Resources Board.

Combustion byproducts with established CAAQS or NAAQS, including oxides of nitrogen (NOx), carbon monoxide and fine particulate matter are addressed in the Ambient Air Quality section (see Section 1.0). However, some discussion of the potential health risks associated with these substances is presented in this section.

2.1.1 Affected Environment

The MGS is located in Los Angeles County within the South Coast Air Basin. The MGS site is located at 4963 South Soto Street, in the City of Vernon, CA. The project is situated on 3.4 acres on the northwest corner of East 50th Street and South Soto Street and is surrounded by industrial land uses in the western portion of the City of Vernon, near the geographical center of Los Angeles County, about three miles southeast of downtown Los Angeles and 15 miles north of the major harbor and port facilities in San Pedro and Long Beach.

The site is situated in LA County Census Tract 5324. Attachment 7 contains a figure which shows the site and surrounding census tracts. The Census Findings table (Attachment 7) presents a summary of data for each of the surrounding census tracts in the immediate project area.

According to the Auer land use classification scheme, a 3 km radius boundary around the proposed site yields a predominately “urban” classification. This is consistent with the current land use and zoning designation for the site and surrounding area as “light and heavy industrial”.

Sensitive receptors are defined as groups of individuals that may be more susceptible to health risks due to chemical exposure. Schools (public and private), day care facilities, convalescent homes, and hospitals are of particular concern. The nearest residential and worker sensitive receptors are listed in Table 21. Attachment 7 contains support materials for the revised facility health risk assessment, such as; a listing of sensitive receptors within the facility regional area, a listing of affected census tracts and their populations, etc. HAPs emissions evaluations are presented in Attachment 3.

Table 21
Sensitive Receptors Nearfield of the MGS Site

Receptor Name	Receptor Type	UTM Coordinates (E/N), m
Residence SSW	Residential	386978, 3762296
Residence S	Residential	387287, 3761876
Residence ESE	Residential	388876, 3762307
Residence NE	Residential	389666, 3764656
Residence NNE	Residential	388529, 3764919
Residence N	Residential	387488, 3765632
Residence NW	Residential	385172, 3763579
Residence W	Residential	385140, 3762802
Residence SW	Residential	385135, 3761385
Nearest School	School	386964, 3761833
Nearest Hospital	Hospital	387329, 3763619
Nearest Daycare/Preschool	Daycare/Preschool	385513, 3762211
Offsite Worker Location N	Worker	387238, 3762928
Offsite Worker Location E	Worker	387398, 3761721
Offsite Worker Location S	Worker	387241, 3762542
Offsite Worker Location W	Worker	387057, 3762724
Offsite Worker Location	Worker	387416, 3762878
Offsite Worker Location	Worker	387071, 3762864
Offsite Worker Location	Worker	386943, 3762469
Offsite Worker Location	Worker	387556, 3762556

All coordinates from Google Earth (center location of each receptor site). These coordinates were converted to NAD27 for use in the modeling input files.

Air quality and health risk data presented by CARB in the 2009 Almanac of Emissions and Air Quality for the state shows that over the period from the mid-1990s through 2009, the average concentrations for the most prominent TACs have been substantially reduced, and the associated health risks for the state are showing a steady downward trend as well. This same trend is expected to have occurred in the South Coast AQMD.

Air toxics emissions data derived from the SCAQMD 2012 AQMP (which is the basis for the MATES IV Study-May 2015) were used to define the estimated air basin emissions of the most prominent air toxic pollutants in relationship to those TACs identified as emitted from the proposed facility. Other than the MATES IV study, MGS is not aware of any recent (within the last 5 years) public health studies related to respiratory illnesses, cancers or related diseases concerning the local area within a 6-mile radius of the site. The HRA for the Four Commerce Railyards, two of which lie to the northeast of the MGS facility, i.e., Commerce UP and the BNSF Hobart yards, was conducted in November 2007. District-wide TACs emissions levels are presented in Table 22.

Table 22
TAC Emissions-2012 AQMP (MATES IV)

TAC	~SCAQMD Emissions (lbs/day)	MGS Estimated Emissions (lbs/avg day)
Acetaldehyde	6,636.9	4.84
Benzene	12,031.7	0.09
1,3 Butadiene	2,573.6	0.012
Acrolein	ND	0.10
Ethyl Benzene	ND	0.89
Hexane	ND	0
Formaldehyde	18,885.8	9.9
Naphthalene	695.9	0.036
PAHs	ND	0.025
Toluene	54,510.4	3.58
Propylene	ND	0
Propylene oxide	0.7	0.8
Xylenes	ND	1.76
DPM	20472.0	0.03
Arsenic	24.3	0.000016
Cadmium	8.6	0.000004
Copper	ND	0.00005
Chrome 6	107.0	0.0000081
Lead	117.5	0.0000081
Manganese	ND	0.00019
Nickel	94.4	0.000024
Selenium	27.5	0.00004

Source: SCAQMD MATES IV Final Draft Report, May 2015 (Table 3-4).
ND = no data in MATES Report, Table 3-4.

2.1.1.1 Significance Criteria

2.1.1.1.1 Cancer Risk

Cancer risk is the probability or chance of contracting cancer over a human life span (assumed to be 70 years). Carcinogens are not assumed to have a threshold below which there would be no human health impact. In other words, any exposure to a carcinogen is assumed to have some probability of causing cancer; the lower the exposure, the lower the cancer risk (i.e., a linear, no-threshold model). Under various state and local regulations, an incremental cancer risk greater than 10-in-one million due to a project is considered to be a significant impact on public health. For example, the 10-in-one-million risk level is used by the Air Toxics Hot Spots (AB 2588) program and California's Proposition 65 as the public notification level for air toxic emissions from existing sources.

2.1.1.1.2 Non-Cancer Risk

Non-cancer health effects can be either chronic or acute. In determining potential non-cancer health risks (chronic and acute) from air toxics, it is assumed there is a dose of the chemical of concern below which there would be no impact on human health. The air concentration corresponding to this dose is called the Reference Exposure Level (REL). Non-cancer health risks are measured in terms of a hazard quotient, which is the calculated exposure of each contaminant divided by its REL. Hazard quotients for pollutants affecting the same target organ are typically summed with the resulting totals expressed as hazard indices for each organ system. A hazard index of less than 1.0 is considered to be an insignificant health risk. For this health risk assessment, all hazard quotients were summed regardless of target organ. This method leads to a conservative (upper bound) assessment. RELs used in the hazard index calculations were those published in the CARB/OEHHA listings dated September 2017.

Chronic toxicity is defined as adverse health effects from prolonged chemical exposure, caused by chemicals accumulating in the body. Because chemical accumulation to toxic levels typically occurs slowly, symptoms of chronic effects usually do not appear until long after exposure commences. The lowest no-effect chronic exposure level for a non-carcinogenic air toxic is the chronic REL. Below this threshold, the body is capable of eliminating or detoxifying the chemical rapidly enough to prevent its accumulation. The chronic hazard index was calculated using the hazard quotients calculated with annual concentrations.

Acute toxicity is defined as adverse health effects caused by a brief chemical exposure of no more than 24 hours. For most chemicals, the air concentration required to produce acute effects is higher than the level required to produce chronic effects because the duration of exposure is shorter. Because acute toxicity is predominantly manifested in the

upper respiratory system at threshold exposures, all hazard quotients are typically summed to calculate the acute hazard index. One-hour average concentrations are divided by acute RELs to obtain a hazard index for health effects caused by relatively high, short-term exposure to air toxics.

2.1.1.2 Construction Phase Impacts

As stated in the air quality section, no construction activities are anticipated to occur as part of the turbine modification project, therefore a construction screening risk assessment for pollutants such as diesel particulate matter is not warranted.

2.1.1.3 Operational Phase Impacts

Environmental consequences potentially associated with the project are potential human exposure to chemical substances emitted into the air. The human health risks potentially associated with these chemical substances were evaluated in a health risk assessment. The chemical substances potentially emitted to the air from the proposed facility include ammonia, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) from the combustion turbine. These chemical substances are listed in Table 23.

Table 23
Chemical Substances Potentially Emitted to the Air from MGS

Criteria Pollutants	Non-Criteria Pollutants (cont'd)
Carbon monoxide	Xylene
Oxides of nitrogen	Ammonia
Particulate matter	Acetaldehyde
Oxides of sulfur	Acrolein
Volatile organic compounds	1,3-Butadiene
Non-Criteria Pollutants	Benzene
Polycyclic aromatic hydrocarbons (PAHs)	Ethylbenzene
Naphthalene	Formaldehyde
Propylene Oxide	Diesel PM
Toluene	Arsenic Beryllium Cadmium Total Chromium Copper Lead Manganese Mercury Nickel

Emissions of criteria pollutants will adhere to NAAQS or CAAQS as discussed in the Ambient Air Quality section (see Section 1.0). The proposed facility also will include emission control technologies necessary to meet the required emission standards specified for criteria pollutants under SCAQMD rules. Finally, air dispersion modeling

results (presented in the Ambient Air Quality section, Section 1.0) show that emissions will not result in concentrations of criteria pollutants in air that exceed ambient air quality standards (either NAAQS or CAAQS). These standards are intended to protect the general public with a wide margin of safety. Therefore, the project is not anticipated to have a significant impact on public health from emissions of criteria pollutants.

Potential impacts associated with emissions of toxic pollutants to the air from the proposed modified facility were addressed in a health risk assessment, with support data presented in Attachment 7. The risk assessment was prepared using guidelines developed by OEHHA and CARB, as implemented in the latest version of the HARP model (ADMRT 17052).

2.1.1.4 Public Health Impact Study Methods

Emissions of toxic pollutants potentially associated with the facility were estimated using emission factors approved by CARB, and the U.S. Environmental Protection Agency (USEPA). Concentrations of these pollutants in air potentially associated with the emissions were estimated using the HARP dispersion modeling module. Modeling allows the estimation of both short-term and long-term average concentrations in air for use in a risk assessment, accounting for site-specific terrain and meteorological conditions. Health risks potentially associated with the estimated concentrations of pollutants in air were characterized in terms of excess lifetime cancer risks (for carcinogenic substances), or comparison with reference exposure levels for non-cancer health effects (for non-carcinogenic substances).

Health risks were evaluated for a hypothetical maximum exposed individual (MEI) located at the MIR (maximum impact receptor). The hypothetical MEI is an individual assumed to be located at the MIR point (assumed residential receptor) where the highest concentrations of air pollutants associated with facility emissions are predicted to occur, based on air dispersion modeling. Human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. If there is no significant impact associated with concentrations in air at the MIR location, it is unlikely that there would be significant impacts in any location in the vicinity of the facility. The 1st highest concentration location represents the MIR.

Health risks potentially associated with concentrations of carcinogenic pollutants in air were calculated as estimated excess lifetime cancer risks. The excess lifetime cancer risk for a pollutant is estimated as the product of the concentration in air and a unit risk value. The unit risk value is defined as the estimated probability of a person contracting cancer as a result of constant exposure to an ambient concentration of 1 $\mu g/m^3$ over a 70-year lifetime. In other words, it represents the increased cancer risk associated with continuous exposure to a concentration in air over a 70-year lifetime. Evaluation of potential non-cancer health effects from exposure to short-term and long-term concentrations in air was

performed by comparing modeled concentrations in air with the RELs. An REL is a concentration in air at or below which no adverse health effects are anticipated. RELs are based on the most sensitive adverse effects reported in the medical and toxicological literature. Potential non-cancer effects were evaluated by calculating a ratio of the modeled concentration in air and the REL. This ratio is referred to as a hazard quotient. The unit risk values and RELs used to characterize health risks associated with modeled concentrations in air were obtained from the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* (CARB, 9/2017), and are presented in Table 24.

Table 24
Toxicity Values Used to Characterize Health Risks

Compound	Unit Risk Factor (μg/m3)-1	Chronic Reference Exposure Level (μg/m3)	Acute Reference Exposure Level (μg/m3)
Acetaldehyde	2.7E-06	9.00E+00	--
Acrolein	--	6.00E-02	1.90E-01
Ammonia	--	2.00E+02	3.2E+03
Benzene	2.9E-05	6.00E+01	1.3E+03
1,3-Butadiene	1.7E-04	--	--
Ethylbenzene	--	2.00E+03	--
Formaldehyde	6.0E-06	3.00E+00	9.4E+01
Naphthalene	3.4E-05	9.00E+00	--
PAHs (as BaP for HRA)	1.3E-03	--	--
Propylene Oxide			
Toluene	--	3.00E+02	3.7E+04
Xylene	--	7.00E+02	2.2E+04
Arsenic	3.3E-3	1.5E-2	2.0E-1
Beryllium	2.4E-3	7.0E-3	-
Cadmium	1.5E+1	2.0E-2	-
Total Chromium	1.5E-1	2.0E-1	-
Copper	-	-	1.0E+2
Lead	1.2E-5	-	-
Manganese	-	9.0E-2	-
Mercury	-	3.0E-2	6.0E-1
Nickel	2.6E-4	1.4E-2	2.0E-1
Selenium	-	2.0E+1	-
Silica	-	3.0E+0	-
Vanadium	-	-	3.0E+1

Source: CARB/OEHHA, 9/2017.

Tables 25 delineates the maximum hourly and annual emissions of all identified air toxic pollutants from the modified turbines, fire pump, and cooling tower.

Table 25 Maximum MGS Hourly, Daily, and Annual Air Toxic Emissions				
Gas Turbines (2 turbines)				
Toxic	**Emission Factor**	**Max Hour Emissions, lbs**	**Max Daily Emissions, lbs**	**Max Annual Emissions tons**
Total PAHs w/o Naphthalene	0.000916 Lb/mmscf	.001	.0247	.0044
Naphthalene	0.001323 Lb/mmscf	.0015	.0357	.0063
Ethylbenzene	0.032576 Lb/mmscf	.0367	.8801	.1555
1-3 Butadiene	0.000438 Lb/mmscf	.0005	.0118	.0021
Acetaldehyde	0.179168 Lb/mmscf	.2017	4.8404	.8555
Acrolein	0.003685 Lb/mmscf	.0041	.0996	.0176
Benzene	0.003319 Lb/mmscf	.0037	.0897	.0158
Formaldehyde	0.366480 Lb/mmscf	.4125	9.9008	1.7499
Toluene	0.132340 Lb/mmscf	.1490	3.5753	.6319
Xylenes	0.065152 Lb/mmscf	.0733	1.7601	.3111
Propylene Oxide	0.029522 Lb/mmscf	.0332	.7976	.1410
Ammonia	5 ppmvd	7.68	184.32	33.64
Fire Pump				
DPM	0.09 gm/bhp-hr	0.03	0.03	6.82
Cooling Tower (3 Cells)				
Arsenic	ppm	.000000763	.0000162	.00000295
Beryllium	ppm	.000000168	.00000404	.000000735
Cadmium	ppm	.000000168	.00000404	.000000735
Chromium	ppm	.000000337	.00000808	.000001475
Copper	ppm	.00000209	.0000501	.00000915
Lead	ppm	.000000337	.00000808	.000001475
Manganese	ppm	.00000781	.000187	.0000342
Mercury	ppm	.0000000337	.000000808	.0000001475
Nickel	ppm	.00000101	.0000242	.00000443
Selenium	ppm	.00000168	.0000404	.00000735
Silica	ppm	.00714	.171	.03125
Vanadium	ppm	.000000808	.0000194	.00000354

* Turbine EFs derived from AP-42, Section 3.1 and Background Document Section 3.4, April 2000
Factors adjusted based on nat gas heat content of 1018 btu/scf HHV.
Cooling tower emissions based on water analysis supplied by Applicant 10/20/2017.
Fire pump DPM emissions assumed to equal PM10/PM2.5 emissions.

The proposed FP (diesel engine) is exempt from risk assessment requirements of Rule 1401. The cooling tower is exempt from SCAQMD permitting provisions per Rule 219.

2.1.1.5 Characterization of Risks from Toxic Air Pollutants

The excess lifetime cancer risk associated with concentrations in air estimated for the MGS MIR location is estimated to be 3.96E-6 with the fire pump and 3.12E-6 without the fire pump. Excess lifetime cancer risks less than 10 x 10^{-6}, for sources with T-BACT, are unlikely to represent significant public health impacts that require additional controls of facility emissions. Risks higher than 1 x 10^{-6} may or may not be of concern, depending upon several factors. These include the conservatism of assumptions used in risk estimation, size of the potentially exposed population and toxicity of the risk-driving chemicals. Health effects risk thresholds are listed on Table 26. Risks associated with pollutants potentially emitted from the facility are presented in Table 27. The chronic and acute hazard indices for all scenarios are well below 1.0. Further description of the methodology used to calculate health risks associated with emissions to the air can be found in the HARP User's Manual dated 12/2003 and the ADMRT Manual dated 3/2015. As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. If there is no significant impact associated with concentrations in air at the MIR location, it is unlikely that there would be significant impacts in any other location in the vicinity of the facility.

Table 26
Health Effects Significant Threshold Levels

	Significance Thresholds	
	SCAQMD	**State of California**
Cancer Risk per million	<= 1.0 without T-BACT <= 10.0 with T-BACT	<= 1.0 without T-BACT <= 10.0 with T-BACT
Acute HI	1.0	1.0
Chronic HI	1.0	1.0
Cancer Burden	0.5	1.0

Table 27
MGS Health Risk Assessment Summary

Turbines, Cooling Tower, Fire Pump		
Risk Category	**Facility Values**	**Applicable Significance Threshold**
Cancer Risk (with Fire Pump)	3.96E-6	10 x 10^{-6} with T-BACT
Cancer Risk (without Fire Pump)	3.12E-6	
Chronic Hazard Index (with Fire Pump)	0.0048	1.0
Chronic Hazard Index (without Fire Pump)	0.00398	
Acute Hazard Index	0.0059	1.0
Cancer Burden*		0.5/1.0

Fire Pump Only		
Cancer Risk	1.86E-6	Same values as above.
Chronic Hazard Index	0.00215	

*Cancer risk rate at $1x10^{-6}$ isopleth applied to population inside the MIR radius distance (see discussion below).
Cancer MIR location: Receptor #2612, 387500mE, 3762720mN
Chronic MIR location: Receptor #2671, 387520mE, 3762740mN
Acute MIR location: Receptor #2381, 387420mE, 3762740mN
Fire Pump MIR for cancer and chronic: Receptor #2320, 387400mE, 3762680mN

Cancer risks potentially associated with facility emissions also were assessed in terms of cancer burden. Cancer burden is a hypothetical upper-bound estimate of the additional number of cancer cases that could be associated with emissions from the facility. Cancer burden is calculated as the worst case product of excess lifetime cancer risk, at the 1 x 10^{-6} isopleth and the number of individuals at that risk level. A worst-case estimate of cancer burden was calculated based upon the following assumptions.

Per OEHHA, cancer burden is commonly calculated for the zone defined as the area within the isopleth surrounding the facility where receptors have a multipathway cancer risk greater than 1 x 10-6. The HRA results for the MGS facility indicate that the 1 x 10-6 isopleth occurs at approximately 1220 ft from the center point between the two turbines. This distance was increased to 1300 ft. for the calculation of a conservative estimate of cancer burden. This impact radius lies completely within census tract 5324. Since census tract 5324, in its entirety, only has a population of 116 individuals (2016 data), this value was used to represent the impact radius area population, which is very conservative. Therefore, the calculated cancer burden for MGS is less than 0.00046.

As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. Therefore, the risks for all of these individuals would be lower (and in most cases, substantially lower) than 3.96E-6. The estimated cancer burden was less than 0.00046, indicating that emissions from the facility would not be associated with any increase in cancer cases in the previously defined population. In addition, the cancer burden is less than the Rule 1401 threshold value of 0.5. As stated previously, the methods used in this calculation considerably overstate the potential cancer burden, further suggesting that facility emissions are unlikely to represent a significant public health impact in terms of cancer risk.

The acute and chronic non-cancer hazard quotients associated with concentrations in air are shown in Table 25. The acute and chronic non-cancer hazard quotients for all target organs fall below 1.0. As described previously, a hazard quotient less than 1.0 is unlikely to represent significant impact to public health. As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the MIR. If there is no significant impact associated

with concentrations in air at the MIR location, it is unlikely that there would be significant impacts in any other location in the vicinity of the facility.

Detailed risk and hazard values are provided in the HARP output included on the provided modeling CD.

The estimates of excess lifetime cancer risks and non-cancer risks associated with chronic or acute exposures fall below thresholds used for regulating emissions of toxic pollutants to the air. Historically, exposure to any level of a carcinogen has been considered to have a finite risk of inducing cancer. In other words, there is no threshold for carcinogenicity. Since risks at low levels of exposure cannot be quantified directly by either animal or epidemiological studies, mathematical models have estimated such risks by extrapolation from high to low doses. This modeling procedure is designed to provide a highly conservative estimate of cancer risks based on the most sensitive species of laboratory animal for extrapolation to humans (i.e., the assumption being that humans are as sensitive as the most sensitive animal species). Therefore, the true risk is not likely to be higher than risks estimated using unit risk factors and is most likely lower, and could even be zero (USEPA, 1986; USEPA, 1996).

An excess lifetime cancer risk of 1 x 10-6 is typically used as a screening threshold of significance for potential exposure to carcinogenic substances in air. The excess cancer risk level of 1 x 10-6, which has historically been judged to be an acceptable risk, originates from efforts by the Food and Drug Administration (FDA) to use quantitative risk assessment for regulating carcinogens in food additives in light of the zero tolerance provision of the Delany Amendment (Hutt, 1985). The associated dose, known as a “virtually safe dose” (VSD) has become a standard used by many policy makers and the lay public for evaluating cancer risks. However, a study of regulatory actions pertaining to carcinogens found that an acceptable risk level can often be determined on a case-by-case basis. This analysis of 132 regulatory decisions, found that regulatory action was not taken to control estimated risks below 1 x 10-6 (one-in-one million), which are called de minimis risks. De minimis risks are historically considered risks of no regulatory concern. Chemical exposures with risks above 4 x 10-3 (four-in-ten thousand), called de manifestis risks, were consistently regulated. De manifestis risks are typically risks of regulatory concern. The risks falling between these two extremes were regulated in some cases, but not in others (Travis et al, 1987).

The estimated lifetime cancer risks to the maximally exposed individual located at the MGS MIR are well below the 10 x 10-6 significance level (for TBACT), and the aggregated cancer burden associated this risk level is less than 1.0 excess cancer case (State threshold value). In addition, the cancer burden is less than the Rule 1401 threshold value of 0.5. The acute and chronic hazard index values are also well below the significance threshold of 1.0. These risk estimates were calculated using assumptions that are highly health conservative. Evaluation of the risks associated with the facility emissions should

consider that the conservatism in the assumptions and methods used in risk estimation considerably over-state the risks from facility emissions. Based on the results of this risk assessment, there are no significant public health impacts anticipated from emissions of toxic pollutant to the air from the proposed facility.

2.1.1.6 Hazardous Materials

Hazardous materials are used and stored at the facility. Current use of chemicals at the proposed facility is in accordance with standard practices for storage and management of hazardous materials. Normal use of hazardous materials, therefore, does not pose significant impacts to public health. While mitigation measures are in place to prevent releases, accidental releases that migrate offsite could result in potential impacts to the public.

The California Accidental Release Program regulations (CalARP) and Code of Federal Regulations (CFR) Title 40 Part 68 under the Clean Air Act establish emergency response planning requirements for acutely hazardous materials. These regulations require preparation of a Risk Management Plan (RMP), which is a comprehensive program to identify hazards and predict the areas that may be affected by a release of a program listed hazardous material. RMP listed materials proposed to be used at the facility include aqueous ammonia.

The current RMP will be reviewed to ascertain if any changes or updates are required as a result of the proposed turbine modifications. Both the current RMP and the Hazardous Materials Plan are on file with the CUPA (City of Vernon).

2.1.1.7 Operation Odors

Small amounts of ammonia used to control oxides of nitrogen (NO_x) emissions currently escape up the exhaust stack but they do not produce objectionable odors. The expected exhaust gas ammonia concentration, known as ammonia “slip,” will be less than 5 parts per million (ppm). After mixing with the atmosphere, the concentration at ground level will be far below the detectable odor threshold of 5 ppm that the Compressed Gas Association has determined to be acceptable, as well as being below the ACGIH TLV and STEL values of 25 and 35 ppm respectively (adopted 2003). Therefore, current and potential ammonia emissions are not expected to create objectionable odors. Other combustion contaminants are not present at concentrations that could produce objectionable odors.

2.1.1.8 Electromagnetic Field Exposure

Because the primary electric transmission line from the site does not travel through residential areas, and based on recent findings of the National Institute of Environmental Health Sciences (NIEHS 1999), electromagnetic field exposures are not expected to result in a significant impact on public health. The NIEH report to the U.S. Congress found that "the probability that EMF exposure is truly a health hazard is currently small. The weak epidemiological associations and lack of any laboratory support for these associations provide only marginal scientific support that exposure to this agent is causing any degree of harm (NIEH 1999)."

2.1.1.9 Summary of Impacts

Results from an air toxics risk assessment based on emissions modeling indicate that there will be no significant incremental public health risks from the modification and operation of the proposed project. Results from criteria pollutant modeling for routine operations indicate that potential ambient concentrations of NO_2, CO, SO_2, and PM_{10} will not significantly impact air quality (Section 1.0). Potential concentrations are below the federal and California standards established to protect public health, including the more sensitive members of the population.

2.1.2 Cumulative Impacts

The health risk assessment for the proposed project indicates that the maximum cancer risk will be approximately 2.16E-6 (versus a significance threshold of 10×10^{-6} with T-BACT) at the point of maximum exposure to air toxics from power plant emissions. This risk level is considered to be insignificant. Non-cancer chronic and acute effects for all scenarios are well below the hazard index significance values.

2.1.3 Mitigation Measures

2.1.3.1 Criteria Pollutants

Emissions of criteria pollutants will be minimized by applying Best Available Control Technology (BACT) to the facility. The current BACT systems installed and operated on the turbines and cooling tower already meet the BACT requirements of the SCAQMD. In addition, the use of natural gas as the sole fuel in the turbines/duct burners is also considered BACT.

2.1.3.2 Toxic Pollutants

Emissions of toxic pollutants to the air will be minimized through the use of natural gas and California low sulfur diesel as the only fuels at the proposed facility. Emissions from

tanks storing liquid organic chemicals (if applicable) will be minimized through the use of one or a combination of the following:

- Use of small capacity fixed roof tanks
- Use of low vapor pressure organic substances
- Use of exempt compounds
- Use of vapor balance and/or vapor recovery systems on a case-by-case basis as deemed appropriate

2.1.3.3 Hazardous Materials

Mitigation measures for hazardous materials are already present and implemented at the facility. Potential public health impacts from the use of hazardous materials are only expected to occur as a result of an accidental release. The plant has many safety features designed to prevent and minimize impacts from the use and accidental release of hazardous materials. The MGS plant site currently uses the following design features:

- Curbs, berms, and/or secondary containment structures will be provided where accidental release of chemicals may occur.
- A fire protection system will be included to detect, alarm, and suppress a fire, in accordance with the applicable LORS.
- The existing aqueous ammonia storage tank and distribution system will be used. The system and tank currently meet all current design and operational specifications.

A Risk Management Plan (RMP) for the MGS facility has been prepared for the facility. The RMP has estimated the impacts presented by handling aqueous ammonia at the facility. The RMP includes a hazard analysis, off-site consequence analysis, seismic assessment, emergency response plan, and training procedures. The RMP process has accurately identified and implemented adequate mitigation measures to reduce the risk to the lowest possible level.

A safety program has already been implemented and includes safety training programs for contractors and operations personnel, including instructions on: 1) the proper use of personal protective equipment, 2) safety operating procedures, 3) fire safety, and 4) emergency response actions. The safety program also includes programs on safely operating and maintaining systems that use hazardous materials. Emergency procedures for MGS personnel include power plant evacuation, hazardous material spill cleanup, fire prevention, and emergency response.

Areas subject to potential leaks of hazardous materials have been paved and bermed. Incompatible materials are stored in separate containment areas. Also, piping and tanks exposed to potential traffic hazards have been additionally protected by traffic barriers.

2.1.4 Laws, Ordinances, Regulations, and Standards

An overview of the regulatory process for public health issues is presented in this section. The relevant LORS that affect public health and are applicable to this project are identified in Table 27. The conformity of the project to each of the LORS applicable to public health is also presented in this table, as well as references to the selection locations within this report where each of these issues is addressed. Table 28 summarizes the primary agencies responsible for public health, as well as the general category of the public health concern regulated by each of these agencies.

Table 28
Laws, Ordinances, Regulations, and Standards

LORS	Public Health Concern	Primary Regulatory Agency	Project Conformance
Federal Clean Air Act Title III	Public exposure to air pollutants	USEPA Region IX CARB SCAQMD	Based on results of risk assessment as per CARB/OEHHA guidelines, toxic contaminants do not exceed acceptable levels. Emissions of criteria pollutants will be minimized by applying BACT and T-BACT to the facility.
Health and Safety Code 25249.5 et seq. (Safe Drinking Water and Toxic Enforcement Act of 1986—Proposition 65)	Public exposure to chemicals known to cause cancer or reproductive toxicity	OEHHA	Based on results of risk assessment as per CARB/OEHHA guidelines, toxic contaminants do not exceed thresholds that require exposure warnings.
40 CFR Part 68 (Risk Management Plan) and CalARP Program Title 19	Public exposure to acutely hazardous materials	USEPA Region IX CUPA-City of Vernon	The facility RMP will be updated prior to commencement of facility operations. The RMP will contain a vulnerability analysis to assess potential risks from a spill or rupture of the aqueous ammonia storage tank.
Health and Safety Code Sections 25531 to 25541	Public exposure to acutely hazardous materials	CUPA-City of Vernon CARB SCAQMD	A vulnerability analysis will be performed to assess potential risks from a spill or rupture of the aqueous ammonia storage tank.

CHSC 25500-25542	Hazmat Inventory	State OES and CUPA-City of Vernon	Prepare all required HazMat plans and inventories, distribute to affected agencies
CHSC 44300 et seq.	AB2588 Air Toxics Program	SCAQMD	Participate in the AB2588 inventory and reporting program at the District level.
CCAPCD Rule 3.18	Toxics NSR	SCAQMD	Application of BACT and T-BACT, preparation of HRA
CHSC 25249.5	Proposition 65	OEHHA	Comply with all signage and notification requirements.
Health and Safety Code Sections 44360 to 44366 (Air Toxics "Hot Spots" Information and Assessment Act—AB 2588)	Public exposure to toxic air contaminants	CARB SCAQMD	Based on results of risk assessment as per CARB/OEHHA guidelines, toxic contaminants do not exceed acceptable levels.

2.1.5 Permits Required and Schedule

Agency-required permits related to public health include a Risk Management Plan and SCAQMD Permit to Construct/Permit to Operate. These requirements are discussed in detail in 1.0 (Air Quality), respectively.

2.1.6 Agencies Involved and Agency Contacts

Table 29 provides contact information for agencies involved with Public Health.

Table 29
Summary of Agency Contacts for Public Health

Public Health Concern	Primary Regulatory Agency	Regulatory Contact
Public exposure to air pollutants	USEPA Region IX	Gerardo Rios (415) 947-3974
	CARB	Mike Tollstrup (916) 322-6026
	SCAQMD	Andrew Lee 909-396-2643
Public exposure to chemicals known to cause cancer or reproductive toxicity	Office of Environmental Health and Hazard Assessment (OEHHA)	Cynthia Oshita or Susan Long, (916) 445-6900
Public exposure to acutely hazardous materials	USEPA Region IX	Gerardo Rios (415) 947-3974
	CUPA-City of Vernon, CA. RMP and HazMat	Fire Department 323-583-8811

2.1.7 References

California Air Resources Board. (CARB). 2017. Consolidated table of OEHHA/ARB approved risk assessment health values. http://arbis.arb.ca.gov/toxics/healthval/contable.pdf. September.

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Hotspots Analysis and Reporting Program. (HARP). 2003. *User Guide, Version 1*. Cal-EPA Air Resources Board, December.

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Hutt. P.B. 1985. "Use of Quantitative Risk Assessment in Regulatory Decision Making Under Federal Health and Safety Statutes." *Risk Quantitation and Regulatory Policy*. Eds. D.G. Hoel, R.A. Merrill and F.P. Perera. Banbury Report 19, Cold Springs Harbor Laboratory.

National Institute of Environmental Health Sciences (NIEHS). 1999. Environmental Health Institute report concludes evidence is 'weak' that EMFs cause cancer. Press release. National Institute of Environmental Health Sciences, National Institutes of Health.

Office of Environmental Health Hazard Assessment/California Air Resources Board. (OEHHA/CARB). 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines, Cal-EPA. February.

South Coast Air Quality Management District. (SCAQMD). 2015. *Multiple Air Toxics Exposure Study in the South Coast Air Basin-MATES IV*. May.

South Coast Air Quality Management District. (SCAQMD). 2005. *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics Hot Spots Information and Assessment Act (AB2588)*. July.

Travis, C.C., E.A.C. Crouch, R. Wilson and E.D. Klema. 1987. "Cancer Risk Management: A Review of 132 Federal Regulatory Cases." *Environ. Sci. Technol.* 21: 415-420.

Risk Science Associates, Inc., 2008. Liberty Energy XXIII-Renewable Energy Power Plant Project, Draft EIR, Public Health Section D.11, Aspen Environmental Group, June.

Bay Area Air Quality Management District. (BAAQMD). 2010. Air Toxics NSR Program HRSA Guidelines, Section 2.3. January.

Malburg Upgrade Project Team. 2017. Fieldwork, observations, and research.

Attachment 1

SCAQMD Permit Application Forms

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
Bicent (California) Malburg, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
155474

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

4963 Soto Street
Street Address

Vernon , CA 90058
City Zip

Kyle McCormack Environmental Manager
Contact Name Title

(303) 442-5590 Ext. Fax #
Phone #

E-Mail: kmccormack@heorotpower.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

4963 Soto Street
Address

Vernon , CA 90058
City State Zip

Kyle McCormack Environmental Manager
Contact Name Title

(303) 442-5590 Ext. Fax #
Phone #

E-Mail: kmccormack@heorotpower.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:
155474

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 03/05/2018

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Gas Turbine No. 1 modification (performance enhancement)

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 2

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) ( ) No (●) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? ( ) No (●) Yes
If Yes, provide NOV/NC#: P62077

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? (●) No ( ) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: T. Halliday

18. Title of Responsible Official:
Chief Operating Officer

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Douglas Halliday

21. Date: 11/09/2017

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

© South Coast Air Quality Management District, Form 400-A (2014.07)

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
Bicent (California) Malburg, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
155474

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

4963 Soto Street
Street Address

Vernon , CA 90058
City Zip

Kyle McCormack Environmental Manager
Contact Name Title

(303) 442-5590 Ext. Fax #
Phone #

E-Mail: kmccormack@heorotpower.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

4963 Soto Street
Address

Vernon , CA 90058
City State Zip

Kyle McCormack Environmental Manager
Contact Name Title

(303) 442-5590 Ext. Fax #
Phone #

E-Mail: kmccormack@heorotpower.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (●) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:
155474

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 03/05/2018

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Gas Turbine No. 2 modification (performance enhancement)

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 2

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? ( ) No (●) Yes
If Yes, provide NOV/NC#: P62077

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? (●) No ( ) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: D. Halliday.

18. Title of Responsible Official:
Chief Operating Officer

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Douglas Halliday

21. Date: 11/09/2017

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

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South Coast Air Quality Management District

Form 400-CEQA
California Environmental Quality Act (CEQA) Applicability

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project[1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines §15060(a)].[2] Refer to the attached instructions for guidance in completing this form.[3] For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one 400-CEQA form is necessary for the entire project. If you need assistance completing this form, contact Permit Services at (909) 396-3385 or (909) 396-2668.

Section A - Facility Information

1. Facility Name (Business Name of Operator To Appear On The Permit): Bicent (California) Malburg, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 155474

3. Project Description:
Modify both gas turbines to include the Siemens SGT-800 A+ Performance Enhancement

Section B - Review For Exemption From Further CEQA Action

Check "Yes" or "No" as applicable

	Yes	No	Is this application for:
1.	◉	○	**A CEQA and/or NEPA document previously or currently prepared that specifically evaluates this project?** If yes, attach a copy of the signed Notice of Determination to this form.
2.	○	○	**A request for a change of permittee only (without equipment modifications)?**
3.	○	○	**A functionally identical permit unit replacement with no increase in rating or emissions?**
4.	○	○	**A change of daily VOC permit limit to a monthly VOC permit limit?**
5.	○	○	**Equipment damaged as a result of a disaster during state of emergency?**
6.	○	○	**A Title V** (i.e., Regulation XXX) **permit renewal (without equipment modifications)?**
7.	○	○	**A Title V administrative permit revision?**
8.	○	○	**The conversion of an existing permit into an initial Title V permit?**

If "**Yes**" is checked for any question in Section B, your application does not require additional evaluation for CEQA applicability. Skip to Section D - Signatures on page 2 and sign and date this form.

Section C - Review of Impacts Which May Trigger CEQA

Complete Parts I-VI by checking "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	Part I - General
1.	○	○	**Has this project generated any known public controversy regarding potential adverse impacts that may be generated by the project?** Controversy may be construed as concerns raised by local groups at public meetings; adverse media attention such as negative articles in newspapers or other periodical publications, local news programs, environmental justice issues, etc.
2.	○	○	**Is this project part of a larger project?** If yes, attach a separate sheet to briefly describe the larger project.
			Part II - Air Quality
3.	○	○	**Will there be any demolition, excavating, and/or grading construction activities that encompass an area exceeding 20,000 square feet?**
4.	○	○	**Does this project include the open outdoor storage of dry bulk solid materials that could generate dust?** If Yes, include a plot plan with the application package.

[1] A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry-cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.

[2] To download the CEQA guidelines, visit http://ceres.ca.gov/env_law/state.html.

[3] To download this form and the instructions, visit http://www.aqmd.gov/ceqa or http://www.aqmd.gov/permit

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Section C - Review of Impacts Which May Trigger CEQA (cont.)			
	Yes	No	**Part II - Air Quality (cont.)**
5.	○	○	**Would this project result in noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements?** For example, compost materials or other types of greenwaste (i.e., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to Rule 402 – Nuisance.
6.	○	○	**Does this project cause an increase of emissions from marine vessels, trains and/or airplanes?**
7.	○	○	**Will the proposed project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound on the attached Table 1?[4]**
			Part III – Water Resources
8.	○	○	**Will the project increase demand for water at the facility by more than 5,000,000 gallons per day?** The following examples identify some, but not all, types of projects that may result in a "yes" answer to this question: 1) projects that generate steam; 2) projects that use water as part of the air pollution control equipment; 3) projects that require water as part of the production process; 4) projects that require new or expansion of existing sewage treatment facilities; 5) projects where water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; and 6) projects that require new or expansion of existing water supply facilities.
9.	○	○	**Will the project require construction of new water conveyance infrastructure?** Examples of such projects are when water demands exceed the capacity of the local water purveyor to supply sufficient water for the project, or require new or modified sewage treatment facilities such that the project requires new water lines, sewage lines, sewage hook-ups, etc.
			Part IV – Transportation/Circulation
10.			**Will the project result in** (Check all that apply)**:**
	○	○	**a. the need for more than 350 new employees?**
	○	○	**b. an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?**
	○	○	**c. increase customer traffic by more than 700 visits per day?**
			Part V – Noise
11.	○	○	**Will the project include equipment that will generate noise GREATER THAN 90 decibels (dB) at the property line?**
			Part VI – Public Services
12.			**Will the project create a permanent need for new or additional public services in any of the following areas** (Check all that apply)**:**
	○	○	**a. Solid waste disposal?** Check "No" if the projected potential amount of wastes generated by the project is less than five tons per day.
	○	○	**b. Hazardous waste disposal?** Check "No" if the projected potential amount of hazardous wastes generated by the project is less than 42 cubic yards per day (or equivalent in pounds).

****REMINDER**: *For each "Yes" response in Section C, attach all pertinent information including but not limited to estimated quantities, volumes, weights, etc.***

Section D - Signatures

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

1. Signature of Responsible Official of Firm:		**2. Title of Responsible Official of Firm:** Chief Operating Officer
3. Print Name of Responsible Official of Firm: Douglas Halliday		**4. Date Signed:** 11/09/2017
5. Phone # of Responsible Official of Firm: (410) 770-9500	**6. Fax # of Responsible Official of Firm:**	**7. Email of Responsible Official of Firm:** halliday@beowulfenergy.com
8. Signature of Preparer, (if prepared by person other than responsible official of firm)**:**		**9. Title of Preparer:** Consultant
10. Print Name of Preparer: Gregory Darvin		**11. Date Signed:** 11/07/2017
12. Phone # of Preparer: (831) 620-0481	**13. Fax # of Preparer:**	**14. Email of Preparer:** darvin@atmosphericdynamics.com

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND ANY ATTACHMENTS WITH FORM 400-A.

[4] Table 1 – Regulated Substances List and Threshold Quantities for Accidental Release Prevention can be found in the Instructions for Form 400-CEQA.

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South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
Bicent (California) Malburg, LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
155474

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

4963 Soto Street
Street Address

Vernon , CA 90058
City Zip

Kyle McCormack Environmental Manager
Contact Name Title

(303) 442-5590 Ext. Fax #
Phone #

E-Mail: kmccormack@heorotpower.com

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

4963 Soto Street
Address

Vernon , CA 90058
City State Zip

Kyle McCormack Environmental Manager
Contact Name Title

(303) 442-5590 Ext. Fax #
Phone #

E-Mail: kmccormack@heorotpower.com

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (●) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- (●) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- ( ) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 03/05/2018

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Title V Amendment due to turbine modifications.

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process): 2

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less **OR** a not-for-profit training center) (●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? ( ) No (●) Yes
If Yes, provide NOV/NC#: P62077

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System): 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? (●) No ( ) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: D. Halliday

18. Title of Responsible Official:
Chief Operating Officer

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (●) Yes

20. Print Name:
Douglas Halliday

21. Date: 11/09/2017

22. Do you claim confidentiality of data? (If Yes, see instructions.) (●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

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South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator That Appears On Permit): BIcent (California) Malburg, LLC (Gas Turbine #1)

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 155474

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 4963 Soto St., Vernon, CA. 90058

(●) **Fixed Location** ( ) **Various Locations**

Section B - Equipment Description

Turbine

Manufacturer: Siemens **Model:** SGT-800 **Serial No.:** GT No. 1

Size (based on Higher Heating Value - HHV):

Manufacturer Maximum Input Rating: _____ MMBTU/hr _____ kWh

Manufacturer Maximum Output Rating: _____ MMBTU/hr _____ kWh

Function (Check all that apply)

☒ **Electrical Generation** ☐ **Driving Pump/Compressor** ☐ **Emergency Peaking Unit**
☐ **Steam Generation** ☐ **Exhaust Gas Recovery** ☐ **Other** (specify): _____

Cycle Type

( ) **Simply Cycle** ( ) **Regenerative Cycle**
(●) **Combined Cycle** ( ) **Other** (specify): _____

Combustion Type

( ) **Tubular** ( ) **Can-Annular** ( ) **Annular**

Fuel (Turbine)

☒ **Natural Gas** ☐ **LPG** ☐ **Digester Gas***
☐ **Landfill Gas*** ☐ **Propane** ☐ **Refinery Gas*** ☐ **Other***: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

Heat Recovery Steam Generator (HRSG)

Steam Turbine Capacity: 55 MW

Low Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

High Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

Superheated Steam Output Capacity: _____ lb/hr @ _____ °F

Duct Burner

Manufacturer: **Model:**

Number of burners: _____ **Rating of each burner** (HHV): 81

Type: ( ) **Low NOx** (please attach manufacturer's specifications)

( ) **Other:** _____
Show all heat transfer surface locations with the HRSG and temperature profile

Fuel (Duct Burner)

(●) **Natural Gas** ( ) **LPG** ( ) **Digester Gas***
( ) **Landfill Gas*** ( ) **Propane** ( ) **Refinery Gas*** ( ) **Other***: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

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South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section B - Equipment Description (Cont.)

Air Pollution Control

○ Selective Catalytic Reduction (SCR)* ○ Selective Non-Catalytic Reduction (SNCR)*

○ Oxidation Catalyst* ◉ Other (specify)*: Existing SCR will not be modified

○ Steam/Water Injection: Injection Rate:_____ lbs. water/lbs. fuel, or_____ mole water/mole fuel

* Separate application is required.

Capital Cost:_____ Installation Cost:_____ Annual Operating Cost:_____

Oxidation Catalyst Data (If Applicable)

Manufacturer: Existing CO Cat will not be modified Model:_____

Catalyst Dimensions: Length:_____ ft._____ in. Width:_____ ft._____ in. Height:_____ ft._____ in.

Catalyst Cell Density:_____ cells/sq.in. Pressure Drop Across Catalyst:_____

Manufacturer's Guarantee: CO Control Efficiency:_____ % Catalyst Life:_____ yrs

VOC Control Efficiency:_____ % Operating Temp. Range:_____ °F

Space Velocity (gas flow rate/catalyst volume):_____ Area Velocity (gas flow/wetted catalyst surface area):_____

VOC Concentration into Catalyst:_____ PPMVD@ 15%O_2 CO Concentration inot Catalyst:_____ PPMVD@ 15%O_2

Section C - Operation Information

On-line Emissions Data

Pollutants	Maximum Emissions Before Control *		Maximum Emissions After Control	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG			2	
NOx			2	
CO			2	
PM_{10}				3.89
SOx				0.16
NH_3			5	

* Based on temperature, fuel consumption, and MW output.

Reference (attach data):

☒ Manufacturer Emission Data ☐ EPA Emission Factors ☐ AQMD Emission Factors ☐ Source Test

Stack or Vent Data

Stack Height:_____ ft._____ in. Stack Diameter:_____ ft. _____ in.

Exhaust Temperature:_____ °F Exhaust Pressure:_____ inches water column

Exhaust Flow Rate:_____ CFM Oxygen Level:_____ %

South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section C - Operation Information (cont.)

Startup Data

No. of Startups per day:_____ No. of Startups per year:_____ Duration of each startup:_____ hrs.

Shutdown Data

No. of Shutdowns per day:_____ No. of Shutdowns per year:_____ Duration of each Shutdown:_____ hrs.

Startup and Shutdown Emissions Data

Pollutants	Startup Emissions		Shutdown Emissions	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG				
NOx				
CO				
PM_{10}				
SOx				
NH_3				

Monitoring and Reporting

Continuous Emission Monitoring System (CEMS): CEMS Make: NOx, CO, O2 no change to existing system

CEMS Model:_____

Will the CEMS be used to measure both on-line and startup/shutdown emissions? ○ Yes ○ No

The following parameters will be continuously monitored:

☒ NOx ☒ CO ☒ O_2

☒ Fuel Flow Rate ☒ Ammonia Injection Rate ☐ Other (specify):_____

☐ Ammonia Stack Concentration: Ammonia CEMS Make:_____

Ammonia CEMS Model:_____

Operating Schedule

Normal: 24 hours/day 7 days/week 52 weeks/yr

Maximum: 24 hours/day 7 days/week 52 weeks/yr

Section D - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature: _____ Date: 11/7/2017

Title: Consultant Company Name: Atmospheric Dynamics

Name: Gregory Darvin

Phone #: (831) 620-0481 Fax #:_____

Email: darvin@atmosphericdynamics.com

Contact Info

Name: Kyle McCormack

Title: Environmental Mngr Company Name: Malburg LLC

Phone #: (303) 442-5590 Fax #:_____

Email: kmccormack@heorotpower.com

THIS IS A PUBLIC DOCUMENT

Pursuant to the California Public Records Act, your permit application and any supplemental documentation are public records and may be disclosed to a third party. If you wish to claim certain limited information as exempt from disclosure because it qualifies as a trade secret, as defined in the District's Guidelines for Implementing the California Public Records Act, you must make such claim at the time of submittal to the District.

Check here if you claim that this form or its attachments contain confidential trade secret information. ☐

South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator That Appears On Permit): BIcent (California) Malburg, LLC (Gas Turbine #2)

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 155474

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 4963 Soto St., Vernon, CA. 90058

(●) **Fixed Location** ( ) **Various Locations**

Section B - Equipment Description

Turbine

Manufacturer: Siemens **Model:** SGT-800 **Serial No.:** GT No. 2

Size (based on Higher Heating Value - HHV):

Manufacturer Maximum Input Rating: _____ MMBTU/hr _____ kWh

Manufacturer Maximum Output Rating: _____ MMBTU/hr _____ kWh

Function (Check all that apply)

☒ **Electrical Generation** ☐ **Driving Pump/Compressor** ☐ **Emergency Peaking Unit**
☐ **Steam Generation** ☐ **Exhaust Gas Recovery** ☐ **Other** (specify): _____

Cycle Type

( ) **Simply Cycle** ( ) **Regenerative Cycle**
(●) **Combined Cycle** ( ) **Other** (specify): _____

Combustion Type

( ) **Tubular** ( ) **Can-Annular** ( ) **Annular**

Fuel (Turbine)

☒ **Natural Gas** ☐ **LPG** ☐ **Digester Gas***
☐ **Landfill Gas*** ☐ **Propane** ☐ **Refinery Gas*** ☐ **Other***: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

Heat Recovery Steam Generator (HRSG)

Steam Turbine Capacity: 55 MW

Low Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

High Pressure Steam Output Capacity: _____ lb/hr @ _____ °F

Superheated Steam Output Capacity: _____ lb/hr @ _____ °F

Duct Burner

Manufacturer: **Model:**

Number of burners: _____ **Rating of each burner** (HHV): 81

Type: ( ) **Low NOx** (please attach manufacturer's specifications)

( ) **Other:** _____
Show all heat transfer surface locations with the HRSG and temperature profile

Fuel (Duct Burner)

(●) **Natural Gas** ( ) **LPG** ( ) **Digester Gas***
( ) **Landfill Gas*** ( ) **Propane** ( ) **Refinery Gas*** ( ) **Other***: _____

* (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

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South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section B - Equipment Description (Cont.)

Air Pollution Control

○ Selective Catalytic Reduction (SCR)* ○ Selective Non-Catalytic Reduction (SNCR)*

○ Oxidation Catalyst* ◉ Other (specify)*: Existing SCR will not be modified

○ Steam/Water Injection: Injection Rate:_____ lbs. water/lbs. fuel, or_____ mole water/mole fuel

* Separate application is required.

Capital Cost:_____ Installation Cost:_____ Annual Operating Cost:_____

Oxidation Catalyst Data (If Applicable)

Manufacturer: Existing CO Cat will not be modified Model:_____

Catalyst Dimensions: Length:_____ ft._____ in. Width:_____ ft._____ in. Height:_____ ft._____ in.

Catalyst Cell Density:_____ cells/sq.in. Pressure Drop Across Catalyst:_____

Manufacturer's Guarantee: CO Control Efficiency:_____ % Catalyst Life:_____ yrs

VOC Control Efficiency:_____ % Operating Temp. Range:_____ °F

Space Velocity (gas flow rate/catalyst volume):_____ Area Velocity (gas flow/wetted catalyst surface area):_____

VOC Concentration into Catalyst:_____ PPMVD@ 15%O_2 CO Concentration inot Catalyst:_____ PPMVD@ 15%O_2

Section C - Operation Information

On-line Emissions Data

Pollutants	Maximum Emissions Before Control *		Maximum Emissions After Control	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG			2	
NOx			2	
CO			2	
PM_{10}				3.89
SOx				0.16
NH_3			5	

* Based on temperature, fuel consumption, and MW output.

Reference (attach data):

☒ Manufacturer Emission Data ☐ EPA Emission Factors ☐ AQMD Emission Factors ☐ Source Test

Stack or Vent Data

Stack Height:_____ ft._____ in. Stack Diameter:_____ ft. _____ in.

Exhaust Temperature:_____ °F Exhaust Pressure:_____ inches water column

Exhaust Flow Rate:_____ CFM Oxygen Level:_____ %

South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section C - Operation Information (cont.)

Startup Data

No. of Startups per day:_____ No. of Startups per year:_____ Duration of each startup:_____ hrs.

Shutdown Data

No. of Shutdowns per day:_____ No. of Shutdowns per year:_____ Duration of each Shutdown:_____ hrs.

Startup and Shutdown Emissions Data

Pollutants	Startup Emissions		Shutdown Emissions	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG				
NOx				
CO				
PM_{10}				
SOx				
NH_3				

Monitoring and Reporting

Continuous Emission Monitoring System (CEMS): CEMS Make: NOx, CO, O2 no change to existing system

CEMS Model:_____

Will the CEMS be used to measure both on-line and startup/shutdown emissions? ○ Yes ○ No

The following parameters will be continuously monitored:

☒ NOx ☒ CO ☒ O_2

☒ Fuel Flow Rate ☒ Ammonia Injection Rate ☐ Other (specify):_____

☐ Ammonia Stack Concentration: Ammonia CEMS Make:_____

Ammonia CEMS Model:_____

Operating Schedule

Normal: 24 hours/day 7 days/week 52 weeks/yr

Maximum: 24 hours/day 7 days/week 52 weeks/yr

Section D - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature: Date: 11/07/2017

Name: Gregory Darvin

Title: Consultant Company Name: Atmospheric Dynamics

Phone #: (831) 620-0481 Fax #:

Email: darvin@atmosphericdynamics.com

Contact Info

Name: Kyle McCormack

Title: Environmental Mngr Company Name: Malburg LLC

Phone #: (303) 442-5590 Fax #:

Email: kmccormack@heorotpower.com

THIS IS A PUBLIC DOCUMENT

Pursuant to the California Public Records Act, your permit application and any supplemental documentation are public records and may be disclosed to a third party. If you wish to claim certain limited information as exempt from disclosure because it qualifies as a trade secret, as defined in the District's Guidelines for Implementing the California Public Records Act, you must make such claim at the time of submittal to the District.

Check here if you claim that this form or its attachments contain confidential trade secret information. ☐

South Coast Air Quality Management District

Form 500-A2
Title V Application Certification

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): Bicent (California) Malburg LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 155474

3. This Certification is submitted with a (Check one):

- **a.** (●) Title V Application (Initial, Revision or Renewal)
- **b.** ( ) Supplement/Correction to a Title V Application
- **c.** ( ) MACT Part 1

4. Is Form 500-C2 included with this Certification? ( ) Yes ( ) No

Section II - Responsible Official Certification Statement

Read each statement carefully and check each that applies – ***You must check 3a or 3b.***

1. For Initial, Permit Renewal, and Administrative Application Certifications:

- **a.** (●) The facility, including equipment that are exempt from written permit per Rule 219, is currently operating and will continue to operate in compliance with all applicable requirement(s) identified in Section II and Section III of Form 500-C1,
  - i. [ ] except for those requirements that do not specifically pertain to such devices or equipment and that have been identified as "Remove" on Section III of Form 500-C1.
  - ii. [ ] except for those devices or equipment that have been identified on the completed and attached Form 500-C2 that will not be operating in compliance with the specified applicable requirement(s).
- **b.** ( ) The facility, including equipment that are exempt from written permit per Rule 219, will meet in a timely manner, all applicable requirements with future effective dates.

2. For Permit Revision Application Certifications:

- **a.** [ ] The equipment or devices to which this permit revision applies, will in a timely manner comply with all applicable requirements identified in Section II and Section III of Form 500-C1.

3. For MACT Hammer Certifications:

- **a.** ( ) The facility is subject to Section 112(j) of the Clean Air Act (Subpart B of 40 CFR part 63), also known as the MACT "hammer." The following information is submitted with a Title V application to comply with the Part 1 requirements of Section 112(j).
- **b.** (●) The facility is not subject to Section 112(j) of the Clean Air Act (Subpart B of 40 CFR part 63).

Section III - Authorization/Signature

I certify under penalty of law that I am the responsible official for this facility as defined in AQMD Regulation XXX and that based on information and belief formed after reasonable inquiry, the statement and information in this document and in all attached application forms and other materials are true, accurate, and complete.

1. Signature of Responsible Official:	2. Title of Responsible Official:
D. Halliday.	Chief Operating Officer
3. Print Name:	**4. Date:**
Douglas Halliday	11/09/2017
5. Phone #:	**6. Fax #:**
(410) 770-9500	

7. Address of Responsible Official:

Street #	City	State	Zip
9 Federal St.	Easton	MD	21601

Acid Rain Facilities Only: Please Complete Section IV

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Acid Rain facilities must certify their compliance status of the devices subject to applicable requirements under Title IV by an individual who meets the definition of Designated (or Alternate) Representative in 40 CFR Part 72.

Section IV - Designated Representative Certification Statement	
***For Acid Rain Facilities Only*: I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.**	
1. Signature of Designated Representative or Alternate: D. Halliday.	**2. Title of Designated Representative or Alternate:** Chief Operating Officer
3. Print Name of Designated Representative or Alternate: Douglas Halliday	**4. Date:** 11/09/2017
5. Phone #: (410) 770-9500	**6. Fax #:**

7. Address of Designated Representative or Alternate:

9 Federal St.	Easton	MD	21601
Street #	City	State	Zip

South Coast Air Quality Management District

Form 500-B
Title V List of Exempt Equipment

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Use this form for all application submittals requesting an initial Title V permit or permit renewal. If you are applying for a permit revision, you may also use this form to have your exempt equipment listing updated prior to renewing your permit.

This form is designed to summarize all of the equipment at a facility that is exempt per SCAQMD Rule 219 from SCAQMD permit requirements (e.g., I.C. Engines ≤ 50 BHP, Boilers < 2 MM BTU/hr etc.). This equipment can be listed according to category. However, if there is a specific device that is vented to control equipment, then the equipment must be listed separately. Trivial activities listed on the back of this form or the Technical Guidance Document do not have to be listed on this form. Note: If your facility is in the RECLAIM program, it is not necessary to repeat any equipment currently listed in Appendix A of the RECLAIM permit.

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): Bicent (California) Malburg LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 155474

3. Check box if facility is in RECLAIM program: ☒

4. Provide Current Permit Issue Date: 11/03/2015

5. Permit Revision No.: 11

Section II - Summary of Equipment Exempt from Permit Requirements (Including Portable)

Exempt Equipment Description [e.g., Small Boilers (75,000 BTU/hr-2,000,000 BTU/hr)]	**Venting to Control** (Device# or Application#)	**Control Device Description**	**Basis for Exemption** [e.g., Rule 219 (b)(2), 05/19/00]	**Source Specific Rule** [e.g., Rule 1146.2]
None				

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Trivial Activities	
• Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources • Air-conditioning units used for human comfort that do not have applicable requirements under Title VI of the Act • Ventilating units used for human comfort that do not exhaust air pollutants into the ambient air from any manufacturing/industrial or commercial process • Non-commercial food preparation • Consumer use of office equipment and products, not including printers or businesses primarily involved in photographic reproduction • Janitorial services and consumer use of janitorial products • Internal combustion engines used for landscaping purposes • Laundry activities, except for dry-cleaning and steam boilers • Bathroom/toilet vent emissions • Emergency (backup) electrical generators at residential locations • Tobacco smoking rooms and areas • Blacksmith forges • Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit modification[1] • Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification • Portable electrical generators that can be moved by hand from one location to another[2] • Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic • Brazing, soldering and welding equipment, and cutting torches related to manufacturing and construction activities that do not result in emission of HAP metals[3] • Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents[4] • Routine calibration and maintenance of laboratory equipment or other analytical instruments • Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis • Hydraulic and hydrostatic testing equipment • Environmental chambers not using hazardous air pollutant (HAP) gasses • Shock chambers • Humidity chambers • Solar simulators	• Fugitive emission related to movement of passenger vehicles, provided any required fugitive dust control plan or its equivalent is submitted • Process water filtration systems and demineralizers • Demineralized water tanks and demineralizer vents Air compressors and pneumatically operated equipment, including hand tools • Batteries and battery charging stations, except at battery manufacturing plants • Storage tanks, vessels and containers holding or storing liquid substances that will not emit any VOC or HAP[5] • Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized • Equipment used to mix and package soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized • Drop hammers or hydraulic presses for forging or metalworking • Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment • Vents from continuous emissions monitors and other analyzers • Natural gas pressure regulator vents, excluding venting at oil and gas production facilities • Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation • Equipment used for surface coating, painting, dipping or spraying operations, except those that will emit VOC or HAP • CO_2 lasers, used only on metals and other materials which do not emit HAP in the process • Consumer use of paper trimmers/binders • Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substance being processed in the ovens or autoclaves or the boilers delivering the steam • Salt baths using nonvolatile salts that do not result in emissions of any regulated air pollutants • Laser trimmers using dust collection to prevent fugitive emissions • Boiler water treatment operations, not including cooling towers • Oxygen scavenging (de-aeration) of water • Ozone generators • Fire suppression systems • Emergency road flares • Steam vents and safety relief valves • Steam leaks • Steam cleaning operations • Steam sterilizers

[1] Cleaning and painting activities qualify as trivial if they are not subject to VOC or HAP control requirements. Asphalt batch plant owners/operators must still get a permit if otherwise required.

[2] "Moved by hand" means it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance or device.

[3] Brazing, soldering and welding equipment, and cutting torches related to manufacturing and construction activities that emit HAP metals are more appropriate for treatment as unpermitted equipment. Brazing, soldering, welding and cutting torches directly related to plant maintenance and upkeep and repair or maintenance shop activities that emit HAP metals are treated as trivial and listed separately in this appendix.

[4] Many lab fume hoods or vents might qualify for treatment as unpermitted equipment.

[5] Exemptions for storage tanks containing petroleum liquids or other volatile organic liquids should be based on size limits such as storage tank capacity and vapor pressure of liquids stored and are not appropriate for this list.

South Coast Air Quality Management District

Form 500-C1

Title V Compliance Status Report

To provide the compliance status of your facility with applicable federally enforceable requirements and identify other local-only requirements, complete this form and attach it to a completed compliance certification Form 500-A2. As appropriate, all submittals of Form 500-C2 as appropriate should also be attached to this form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit):
Bicent (California) Malburg LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
155474

PROCEDURES FOR DETERMINING COMPLIANCE STATUS

1. **Equipment verification:** Review the list of pending applications, and either the preliminary Title V facility permit or the list of current permits to operate that the AQMD provided you, to determine if they completely and accurately describe all equipment operating at the facility. Attach a statement to describe any discrepancies.
2. **Identify applicable requirements*:** Use the checklist in Section II to identify all applicable and federally-enforceable local, state, and federal rules and regulations, test methods, and monitoring, recordkeeping and reporting (MRR) requirements that apply to any equipment or process (including equipment exempt from a permit by Rule 219) at your facility.
   The potential applicable requirements, test methods and MRR requirements are identified and listed adjacent to each given equipment/process description. Check off each box adjacent to the corresponding requirement as it applies to your particular equipment/process.
   Note: Even if there is only one piece of equipment that is subject to a particular requirement, the appropriate box should be checked.
3. **Identify additional applicable requirements*:** Use Section III to identify any additional requirements not found in Section II. Section II is not a complete list of all applicable requirements. It does not include recently adopted NESHAP regulations by EPA or recent amendments to AQMD rules. Do not add rules listed in Section V here.
4. **Identify any requirements that do not apply to a specific piece of equipment or process:** Also use Section III to identify any requirements that are listed in Section II but that do not apply to a specific piece of equipment or process. Fill out Section III of this form and attach a separate sheet to explain the reason(s) why the identified rules do not apply. Note: Listing any requirement that does not apply to a specific piece of equipment will not provide the facility with a permit shield unless one is specifically requested by completing Form 500-D and is approved by AQMD.
5. **Identify SIP-approved rules that are not current AQMD rules:** Use Section IV to identify older versions of current AQMD rules that are the EPA-approved versions in the State Implementation Plan (SIP), and that are still applicable requirements as defined by EPA. The facility is not required to certify compliance with the items checked in Section IV provided that the non-SIP approved rule in Section II is at least as stringent as the older SIP-approved version in Section IV. **
6. **Identify Local-Only Enforceable Regulatory Requirements:** Use Section V to identify AQMD rules that are not SIP-approved and are not federally enforceable.
7. **Determine compliance:** Determine if all equipment and processes are complying with all requirements identified in Sections II and III. If each piece of equipment complies with all applicable requirements, complete and attach Form 500-A2 to certify the compliance status of the facility. If any piece of equipment is not in compliance with any of the applicable requirements, complete and attach Form 500-C2 in addition to Form 500-A2.

* The following AQMD rules and regulations are not required to be included in Section II and do not have to be added to Section III: Regulation I, List and Criteria in Regulation II, Rule 201, Rule 201.1, Rule 202, Rule 203, Rule 205, Rule 206, Rule 207, Rule 208, Rule 209, Rule 210, Rule 212, Rule 214, Rule 215, Rule 216, Rule 217, Rule 219, Rule 220, Rule 221, Regulation III, Regulation V, Regulation VIII, Regulation XII, Regulation XV, Regulation XVI, Regulation XIX, Regulation XXI, Regulation XXII, and Regulation XXX.

** Emission units adversely affected by the gap between current and SIP-approved versions of rules may initially be placed in a non-Title V portion of the permit

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ All Air Pollution Control Equipment Using Combustion (RECLAIM & non-RECLAIM sources)	☐ Rule 480 (10/07/77)	N/A	N/A
☐ All Coating Operations (12/15/00)	☐ Rule 442	☐ Rule 442(f)	☐ Rule 442(g)
☐ All Combustion Equipment, ≥ 555 Mmbtu/Hr (except for NOx RECLAIM sources)	☐ Rule 474 (12/04/81)	☐ AQMD TM 7.1 or 100.1	
☑ All Combustion Equipment Except Internal Combustion Engines (RECLAIM & non-RECLAIM sources)	☑ Rule 407 (04/02/82) ☑ Rule 409 (08/07/81)	☐ AQMD TM 100.1 or 10.1, 307-91 ☐ AQMD TM 5.1, 5.2, or 5.3	
☑ All Combustion Equipment Using Gaseous Fuel (except SOx RECLAIM sources)	☑ Rule 431.1 (06/12/98)	☑ Rule 431.1(f)	☑ Rule 431.1(d) & (e)
☑ All Combustion Equipment Using Liquid Fuel (except SOx RECLAIM sources)	☑ Rule 431.2 (09/15/00)	☑ Rule 431.2(g)	☑ Rule 431.2(f)
☐ All Combustion Equipment Using Fossil Fuel (except SOx RECLAIM sources)	☐ Rule 431.3 (05/07/76)		
☑ All Equipment	☑ Rule 401 (11/09/01) ☐ Rule 405 (02/07/86) ☑ Rule 408 (05/07/76) ☑ Rule 430 (07/12/96) ☑ Rule 701 (06/13/97) ☑ New Source Review, BACT ☑ Rule 1703 (10/07/88) ☑ 40 CFR68 - Accidental Release Prevention	☑ California Air Resources Board Visible Emission Evaluation ☐ AQMD TM 5.1, 5.2, or 5.3 N/A See Applicable Subpart	☑ Rule 430(b) See Applicable Subpart
☐ All Equipment Processing Solid Materials	☐ Rule 403 (06/03/05)	☐ Rule 403(d)(3)	☐ Rule 403(f)
☐ All Equipment With Exhaust Stack (except cement kilns subject to Rule 1112.1)	☐ Rule 404 (02/07/86)	☐ AQMD TM 5.1, 5.2, or 5.3	
☑ All Facilities Using Solvents to Clean Various Items or Equipment	☑ Rule 109 (05/02/03) ☑ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART T	☑ Rule 109(g) ☑ Rule 1171(e) See Applicable Subpart	☑ Rule 109(c) ☑ Rule 1171(c)(6) See Applicable Subpart
☑ All RECLAIM Equipment (NOx & SOx)	☑ Reg. XX - RECLAIM	☐ Rule 2011, App. A (05/06/05) ☑ Rule 2012, App. A (05/06/05)	☐ Rule 2011, App. A (05/06/05) ☑ Rule 2012, App. A (05/06/05)
☐ Abrasive Blasting	☐ Rule 1140 (08/02/85)	☐ Rule 1140(d) & (e), AQMD Visible Emission Method	

KEY ABBREVIATIONS: **Reg**. = AQMD Regulation; **Rule** = AQMD Rule; **App**. = Appendix; **AQMD TM** = AQMD Test Method; **CFR** = Code of Federal Regulations; **CCR** = California Code of Regulations

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Aggregate and Related Operations	☐ Rule 1157 (09/08/06)	☐ Rule 1157(f)	☐ Rule 1157(e)
☐ Appliances Containing Ozone Depleting Substances (except Motor Vehicle Air Conditioners): Manufacturing, Repair, Maintenance, Service, & Disposal	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Asphalt	See Manufacturing, Asphalt Processing & Asphalt Roofing		
☐ Asphalt Concrete/Batch Plants	☐ 40 CFR60 SUBPART I	See Applicable Subpart	See Applicable Subpart
☐ Benzene Emissions, Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, Benzene Storage Vessels, Benzene Equipment Leaks, & Coke By-Product Recovery Plants	☐ Rule 1173 (02/06/09) ☐ Rule 1176 (09/13/96) ☐ 40 CFR61 SUBPART L ☐ 40 CFR61 SUBPART Y ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART CC	☐ Rule 1173(j) ☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1173(i) ☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Benzene Transfer Operations	☐ Rule 1142 (07/19/91) ☐ 40 CFR61 SUBPART BB ☐ 40 CFR63 SUBPART Y	☐ Rule 1142(e) See Applicable Subpart See Applicable Subpart	☐ Rule 1142(h) See Applicable Subpart See Applicable Subpart
☐ Benzene Waste Operations	☐ Rule 1176 (09/13/96) ☐ 40 CFR61 SUBPART FF ☐ 40 CFR63 SUBPART CC	☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart	☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart
☐ Beryllium Emissions	☐ 40 CFR61 SUBPART C	See Applicable Subpart	See Applicable Subpart
☐ Beryllium Emissions, Rocket Motor Firing	☐ 40 CFR61 SUBPART D	See Applicable Subpart	See Applicable Subpart
☐ Boiler, < 5 Mmbtu/Hr (non-RECLAIM sources)	☐ Rule 1146.1 (09/05/08) ☐ Rule 1146.2 (05/05/06) ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146.1(d) N/A See Applicable Subpart	☐ Rule 1146.1(c)(2) & (c)(3) N/A See Applicable Subpart
☐ Boiler, < 5 Mmbtu/Hr (RECLAIM sources)	☐ Rule 1146.1 (09/05/08) - excluding NOx requirements ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146.1(d) See Applicable Subpart	☐ Rule 1146.1(c)(2) & (c)(3) See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Boiler, ≥ 5 Mmbtu/Hr (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 475 (08/07/78) ☐ Rule 476 (10/08/76) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBPART D ☐ 40 CFR60 SUBPART Da ☐ 40 CFR60 SUBPART Dc ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 7.1, 100.1, 5.1, 5.2, or 5.3 ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Boiler, ≥ 5 Mmbtu/Hr (RECLAIM sources)	☐ Rule 475 (08/07/78) ☐ Rule 476 (10/08/76) - excluding NOx requirements ☐ Rule 1146 (09/05/08) - excluding NOx requirements ☐ Rule 2011 (05/06/05) ☐ or Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART D ☐ 40 CFR60 SUBPART Da ☐ 40 CFR60 SUBPART Dc ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 7.1, 100.1, 5.1, 5.2, or 5.3 ☐ Rule 1146(d) ☐ Rule 2011, App. A (05/06/05) ☐ or Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1146(c)(6) & (c)(7) ☐ Rule 2011, App. A (05/06/05) ☐ or Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Boiler, Petroleum Refining (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 431.1 (06/12/98) ☐ Rule 475 (08/07/78) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBBPART J ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ Rule 431.1(f) ☐ AQMD TM 5.1, 5.2, or 5.3 ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 431.1(d) & (e) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Boiler, Petroleum Refining (RECLAIM sources)	☐ Rule 1146 (09/05/08) - excluding NOx requirements ☐ Rule 2011 (05/06/05) ☐ or ☐ Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART J ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146(d) ☐ Rule 2011, App. A (05/06/05) ☐ or ☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart	☐ Rule 1146(c)(6) & (c)(7) ☐ Rule 2011, App. A (05/06/05) ☐ or ☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart
☐ Boilers, Electric Utility (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 1135 (07/19/91) ☐ 40 CFR60 SUBPART Db ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ Rule 1135(e) See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 1135(e) See Applicable Subpart See Applicable Subpart
☐ Boilers, Electric Utility (RECLAIM sources)	☐ Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART Db ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart	☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart
☐ Bulk Loading Of Organic Liquids	☐ Rule 462 (05/14/99) ☐ 40 CFR60 SUBPART XX ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART BBBBBB ☐ 40 CFR63 SUBPART EEEE	☐ Rule 462(f) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 462(g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Cadmium Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Calciner, Mineral Industries	☐ 40 CFR60 SUBPART UUU	See Applicable Subpart	See Applicable Subpart
☐ Calciner, Petroleum Coke	☐ Rule 477 (04/03/81) ☐ Rule 1119 (03/02/79) ☐ 40 CFR63 SUBPART L	☐ AQMD Visible Emissions, AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 6.1 or 100.1 See Applicable Subpart	See Applicable Subpart
☐ Charbroilers	☐ Rule 1174 (10/05/90) ☐ Rule 1138 (11/14/97)	☐ AQMD Test Protocol ☐ Rule 1138(g)	☐ Rule 1138(d)
☐ Chrome Plating & Chromic Acid Anodizing Operation	☐ Rule 1426 (05/02/03) ☐ Rule 1469 (12/05/08)	☐ Rule 1469(e)	☐ Rule 1426(e) ☐ Rule 1469(g), (j) & (k)

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Adhesive Application Operation	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1168 (01/07/05) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART RR	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1168(f) & (e) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1132(g) ☐ Rule 1168(d) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Aerospace Assembly & Component Manufacturing	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1124 (09/21/01) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART GG	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1124(e) & (f) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1124(j) & (d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Graphic Arts (Gravure, Letter Press, Flexographic & Lithographic Printing Process, Etc.)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1130 (10/08/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART QQ ☐ 40 CFR60 SUBPART RR ☐ 40 CFR60 SUBPART FFF ☐ 40 CFR60 SUBPART VVV ☐ 40 CFR63 SUBPART KK ☐ 40 CFR63 SUBPART JJJJ	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1130(h) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1130(e) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Magnet Wire Coating	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1126 (01/13/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09)	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1126(d) ☐ Rule 1132(f) ☐ Rule 1171(e)	☐ Rule 109(c) ☐ Rule 1126(c)(4) ☐ Rule 1132(g) ☐ Rule 1171(c)(6)

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Marine Coating (Except for recreational equipment)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1106 (01/13/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1106(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1106(c)(5) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Metal Coating	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1107 (01/06/06) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART EE ☐ 40 CFR60 SUBPART SS ☐ 40 CFR63 SUBPART NNNN ☐ 40 CFR63 SUBPART MMMM ☐ 40 CFR63 SUBPART RRRR	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1107(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1107(j) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Metal Containers, Closure, & Coil Coating Operations	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1125 (03/07/08) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART TT ☐ 40 CFR60 SUBPART WW ☐ 40 CFR63 SUBPART KKKK ☐ 40 CFR63 SUBPART SSSS	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1125(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1125(c)(6) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Motor Vehicle & Mobile Equipment Non-Assembly Line Coating Operation	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1151 (12/02/05) ☐ Rule 1171 (05/01/09)	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1151(h) ☐ Rule 1171(e)	☐ Rule 109© ☐ Rule 1132(g) ☐ Rule 1151(f) ☐ Rule 1171(c)(6)

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Motor Vehicle Assembly Line	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1115 (05/12/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART MM ☐ 40 CFR63 SUBPART IIII	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1115(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1115(g) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Paper, Fabric, & Film Coating Operations	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1128 (03/08/96) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART VVV ☐ 40 CFR63 SUBPART OOOO	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1128(f) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1128(e) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Plastic, Rubber, & Glass	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1145 (12/04/09) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART TTT ☐ 40 CFR63 SUBPART NNNN ☐ 40 CFR63 SUBPART PPPP	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1145(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1145(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Pleasure Craft	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1106.1 (02/12/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1106.1(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1106.1(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Screen Printing	☐ Rule 109 (05/02/03) ☐ Rule 1130.1 (12/13/96) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART KK	☐ Rule 109(g) ☐ Rule 1130.1(g) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1130.1(c)(5) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Use Of Architectural Coating (Stationary Structures)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1113 (07/13/07) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09)	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1113(e) ☐ Rule 1132(f) ☐ Rule 1171(e)	☐ Rule 109(c) ☐ Rule 1132(g) ☐ Rule 1171(c)(6)
☐ Coating Operation, Wood Flat Stock	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1104 (08/13/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1104(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1104(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Wood Products (Commercial Furniture, Cabinets, Shutters, Frames, Toys)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1136 (06/14/96) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART JJ	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1136(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1132(g) ☐ Rule 1136(d) & (g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coater	See Coating Operations		
☐ Columns	See Petroleum Refineries, Fugitive Emissions		
☐ Composting Operation	☐ Rule 1133 (01/10/03) ☐ Rule 1133.1 (01/10/03) ☐ Rule 1133.2 (01/10/03)	☐ Rule 1133.1(e) ☐ Rule 1133.2(g)	☐ Rule 1133.1(d) ☐ Rule 1133.2(h)
☐ Compressors	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Concrete Batch Plants	See Nonmetallic Mineral Processing Plants		
☐ Consumer Product Manufacturing	See Manufacturing, Consumer Product		
☐ Cooling Tower, Hexavalent Chromium	☐ 40 CFR63 SUBPART Q	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Copper Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Crude Oil Production	See Oil Well Operations		
☐ Crusher	See Nonmetallic Mineral Processing Plants		
☐ Dairy Farms and Related Operations	☐ Rule 1127 (08/06/04)	☐ Rule 1127(h)	☐ Rule 1127(g)
☐ Degreasers	☐ Rule 109 (05/02/03) ☐ Rule 1122 (05/01/09) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART T	☐ Rule 109(g) ☐ Rule 1122(h) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1122(i) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Dry Cleaning, Perchloroethlyene	☐ Rule 1421 (12/06/02)	☐ Rule 1421(e) & (i)	☐ Rule 1421(g) & (h)
☐ Dry Cleaning, Petroleum Solvent	☐ Rule 109 (05/02/03) ☐ Rule 1102 (11/17/00) ☐ 40 CFR60 SUBPART JJJ	☐ Rule 109(g) ☐ Rule 1102(g) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1102(f) See Applicable Subpart
☐ Dryers, Mineral Industries	☐ 40 CFR60 SUBPART UUU	See Applicable Subpart	See Applicable Subpart
☐ Ethylene Oxide Sterilizer	See Sterilizer, Ethylene Oxide		
☐ Flanges	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Fluid Catalytic Cracking Unit	☐ Rule 218 (05/14/99) ☐ Rule 1105 (09/01/84) ☐ Rule 1105.1 (11/07/03)	☐ AQMD TM 100.1 ☐ Rule 1105(c)(1) ☐ Rule 1105.1(f)	☐ Rule 218(e) & (f) ☐ Rule 1105(c)(2) ☐ Rule 1105.1(e)
☐ Foundries, Iron and Steel	☐ 40 CFR63 SUBPART EEEEE	See Applicable Subpart	See Applicable Subpart
☐ Friction Materials Manufacturing	See Manufacturing, Friction Materials		
☐ Fugitive Emissions, Benzene	☐ Rule 1173 (12/06/02) ☐ 40 CFR61 SUBPART L ☐ 40 CFR61 SUBPART V ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART CC	☐ Rule 1173(j) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1173(i) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Fugitive Emissions, Chemical Plant	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR60 SUBPART VV	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Fugitive Emissions, Natural Gas Processing Plant	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR60 SUBPART KKK	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Fugitive Emissions, Oil & Gas Production Facility	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Fugitive Emissions, Pipeline Transfer Station	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Basic Oxygen Process	☐ 40 CFR60 SUBPART Na	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Electric Arc, For Steel Plants: Constructed After August 17, 1983	☐ 40 CFR60 SUBPART AAa	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Electric Arc, For Steel Plants: Constructed After Oct. 21, 1974, & On Or Before Aug. 17, 1983	☐ 40 CFR60 SUBPART AA	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Glass Melting	☐ Rule 1117 (01/06/84)	☐ Rule 1117(c), AQMD TM 7.1 or 100.1	
	☐ 40 CFR60 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Lead Melting, Automotive Batteries	☐ Rule 1101 (10/07/77)	☐ AQMD TM 6.1	
	☐ 40 CFR63 SUBPART X	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Gasoline Transfer & Dispensing Operation	☐ Rule 461 (06/03/05)	☐ Rule 461(f)	☐ Rule 461(e)(6) & (e)(7)
☐ Glass Manufacturing	See Manufacturing, Glass		
☐ Grain Elevators	☐ 40 CFR60 SUBPART DD	See Applicable Subpart	See Applicable Subpart
☐ Halon-containing Equipment, Use for Technician Training, Testing, Maintenance, Service, Repair, or Disposal	☐ 40 CFR82 SUBPART H	See Applicable Subpart	See Applicable Subpart
☐ Hazardous Waste Combustors	☐ 40 CFR63 SUBPART EEE	See Applicable Subpart	See Applicable Subpart
☐ Heater, Asphalt Pavement	☐ Rule 1120 (08/04/78)	☐ AQMD Visible Emissions, AQMD TM 6.2	☐ Rule 1120(f)
☐ Heaters, Petroleum Refinery Process	☐ Rule 429 (12/21/90) ☐ Rule 431.1 (06/12/98) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBPART J ☐ 40 CFR63 SUBPART DDDDD	N/A ☐ Rule 431.1(f) ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart	☐ Rule 429(d) ☐ Rule 431.1(d) & (e) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart
☐ Heaters, Process	See Boilers		
☐ Incinerators	☐ 40 CFR60 SUBPART E ☐ 40 CFR60 SUBPART CCCC	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Inorganic Arsenic Emissions, Arsenic Trioxide & Metallic Arsenic Production Facilities	☐ 40 CFR61 SUBPART P	See Applicable Subpart	See Applicable Subpart
☑ Internal Combustion Engines, Reciprocating	☐ Rule 1110.2 (07/09/10) ☐ 40 CFR60 SUBPART IIII and JJJJ ☐ 40 CFR63 SUBPART ZZZZ	Rule 1110.2(g) See Applicable Subpart See Applicable Subpart	Rule 1110.2(f) See Applicable Subpart See Applicable Subpart
☐ Kiln, Cement Plant	☑ Rule 1112 (06/06/86) ☐ Rule 1112.1 (12/04/09) ☑ 40 CFR60 SUBPART F	N/A N/A See Applicable Subpart	N/A N/A See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Landfills	☐ Rule 1150 (10/15/82) ☐ Rule 1150.1 (03/17/00) ☐ 40 CFR60 SUBPART WWW ☐ 40 CFR63 SUBPART AAAA	☐ Rule 1150.1(j) See Applicable Subpart See Applicable Subpart	☐ Rule 1150.1(e) & (f) See Applicable Subpart See Applicable Subpart
☐ Lead Acid Battery Manufacturing Plants	See Manufacturing, Lead Acid Battery		
☐ Lead Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Manufacturing, Asphalt Processing & Asphalt Roofing	☐ Rule 470 (05/07/76) ☐ Rule 1108 (02/01/85) ☐ Rule 1108.1 (11/04/83) ☐ 40 CFR60 SUBPART UU ☐ 40 CFR63 SUBPART LLLLL	N/A ☐ Rule 1108(b) ☐ Rule 1108.1 (b) See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Brick & Structural Clay Products	☐ 40 CFR63 SUBPART JJJJJ	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Cement	☐ Rule 1156 (03/06/09)	☐ Rule 1156(g)	☐ Rule 1156(f)
☐ Manufacturing, Clay Ceramics	☐ 40 CFR63 SUBPART KKKKK	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Coatings & Ink (SIC Code 2851)	☐ Rule 1141.1 (11/17/00) ☐ 40 CFR63 SUBPART HHHHH	N/A See Applicable Subpart	☐ Rule 1141.1(c) See Applicable Subpart
☐ Manufacturing, Consumer Product	☐ Title 17 CCR 94500		
☐ Manufacturing, Food Product	☐ Rule 1131 (06/06/03)	☐ Rule 1131(e)	☐ Rule 1131(d)
☐ Manufacturing, Friction Materials	☐ 40 CFR63 SUBPART QQQQQ	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Glass	☐ Rule 1117 (01/06/84) ☐ 40 CFR60 SUBPART CC ☐ 40 CFR61 SUBPART N	☐ Rule 1117(c), AQMD TM 7.1 or 100.1 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Hydrochloric Acid	☐ 40 CFR63 SUBPART NNNNN	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Lead-Acid Battery	☐ 40 CFR60 SUBPART KK	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Manufacturing, Lime	☐ 40 CFR63 SUBPART AAAAA	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Magnetic Tape Industry	☐ 40 CFR60 SUBPART SSS ☐ 40 CFR63 SUBPART EE	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Miscellaneous Organic Chemical	☐ 40 CFR63 SUBPART FFFF	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Nitric Acid	☐ Rule 218 (05/14/99) ☐ Rule 1159 (12/06/85) ☐ 40 CFR60 SUBPART G	☐ AQMD TM 100.1 ☐ AQMD TM 7.1 or 100.1 See Applicable Subpart	☐ Rule 218(e) & (f) See Applicable Subpart
☐ Manufacturing, Plywood & Composite Wood Products	☐ Rule 1137 (02/01/02) ☐ 40 CFR63 SUBPART DDDD	N/A See Applicable Subpart	☐ Rule 1137(e) See Applicable Subpart
☐ Manufacturing, Polymer Industry	☐ 40 CFR60 SUBPART DDD ☐ 40 CFR63 SUBPART W ☐ 40 CFR63 SUBPART J	See Applicable Subpart See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Polymeric Cellular Foam	☐ Rule 1175 (09/07/07) ☐ 40 CFR63 SUBPART UUUU	☐ Rule 1175(f) See Applicable Subpart	☐ Rule 1175(e) See Applicable Subpart
☐ Manufacturing, Products Containing Halon Blends	☐ 40 CFR82 SUBPART H	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Products Containing Organic Solvents	☐ Rule 443.1 (12/05/86)	N/A	N/A
☐ Manufacturing, Products Containing Ozone Depleting Substances (ODS)	☐ 40 CFR82 SUBPART A ☐ 40 CFR82 SUBPART E	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Reinforced Plastic Composites	☐ 40 CFR63 SUBPART WWWW	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Refractory Products	☐ 40 CFR63 SUBPART SSSSS	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Resin	☐ Rule 1141 (11/17/00) ☐ 40 CFR63 SUBPART W	☐ Rule 1141(d) See Applicable Subpart	☐ Rule 1141(c) See Applicable Subpart
☐ Manufacturing, Rubber Tire	☐ 40 CFR63 SUBPART XXXX	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Semiconductors	☐ Rule 109 (05/02/03) ☐ Rule 1164 (01/13/95) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART BBBBB	☐ Rule 109(g) ☐ Rule 1164(e) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1164(c)(5) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Manufacturing, Solvent	☐ Rule 443 (05/07/76)	N/A	N/A

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
Manufacturing, Sulfuric Acid	Rule 469 (02/13/81) 40 CFR60 SUBPART H 40 CFR60 SUBPART Cd	AQMD TM 6.1 or 6.2 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
Manufacturing, Surfactant	Rule 1141.2 (01/11/02)	Rule 1141.2(e) AQMD TM 25.1	
Manufacturing, Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes	40 CFR60 SUBPART III 40 CFR60 SUBPART NNN	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
Manufacturing, Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes	40 CFR60 SUBPART RRR	See Applicable Subpart	See Applicable Subpart
Manufacturing, Vinyl Chloride	40 CFR61 SUBPART F	See Applicable Subpart	See Applicable Subpart
Manufacturing, Water Heaters	Rule 1121 (09/03/04)	N/A	N/A
Manufacturing, Wool Fiberglass Insulation	40 CFR60 SUBPART PPP	See Applicable Subpart	See Applicable Subpart
Manure Processing Operations	Rule 1127 (08/06/04)	Rule 1127(h)	Rule 1127(g)
Marine Tank Vessel Operations	Rule 1142 (07/19/91) Rule 1173 (02/06/09) 40 CFR63 SUBPART Y	Rule 1142(e) Rule 1173(j) See Applicable Subpart	Rule 1142(h) Rule 1173(i) See Applicable Subpart
Mercury Emissions	40 CFR61 SUBPART E 40 CFR63 SUBPART IIII	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
Motor Vehicle Air Conditioners with Ozone Depleting Substances (ODS): Repair, Service, Manufacturing, Maintenance, or Disposal	40 CFR82 SUBPART B 40 CFR82 SUBPART F	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
Municipal Waste Combustors	40 CFR60 SUBPART Cb 40 CFR60 SUBPART Ea 40 CFR60 SUBPART Eb	See Applicable Subpart See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart See Applicable Subpart
Negative Air Machines/HEPA, Asbestos	40 CFR61 SUBPART M	See Applicable Subpart	See Applicable Subpart
Nickel Electroplating Operation	Rule 1426 (05/02/03)		Rule 1426(e)
Nonmetallic Mineral Processing Plants	Rule 404 (02/07/86) Rule 405 (02/07/86) 40 CFR60 SUBPART OOO	AQMD TM 5.1, 5.2, or 5.3 AQMD TM 5.1, 5.2, or 5.3 See Applicable Subpart	See Applicable Subpart
Off-site Waste and Recovery Operation	40 CFR63 SUBPART DD	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Oil and Gas Well Operation	☐ Rule 1148 (11/05/82) ☐ Rule 1148.1 (03/05/04)	☐ AQMD TM 25.1 ☐ Rule 1148.1 (g)	☐ Rule 1148.1 (f)
☐ Onshore Natural Gas Processing, SO2 Emissions	☐ 40 CFR60 SUBPART LLL	See Applicable Subpart	See Applicable Subpart
☐ Open Fires	☐ Rule 444 (11/07/08)		
☐ Open Storage, Petroleum Coke	☐ Rule 403 (06/03/05) ☐ Rule 403.1 (04/02/04) ☐ Rule 1158 (06/11/99)	☐ Rule 403(d)(4) ☐ Rule 1158(h)	☐ Rule 403(f) ☐ Rule 403.1(h) ☐ Rule 1158(j)
☐ Open Storage	☐ Rule 403 (06/03/05) ☐ Rule 403.1 (04/02/04)	☐ Rule 403(d)(4)	☐ Rule 403(f) ☐ Rule 403.1(h)
☐ Outer Continental Shelf Platform	☐ Rule 1183 (03/12/93) ☐ 40 CFR55	☐ 40 CFR55 See Applicable Subpart	☐ 40 CFR55 See Applicable Subpart
☐ Oven, Commercial Bakery	☐ Rule 1153 (01/13/95)	☐ Rule 1153(h)	☐ Rule 1153(g)
☐ Oven, Petroleum Coke	☐ Rule 477 (04/03/81) ☐ 40 CFR63 SUBPART L ☐ 40 CFR63 SUBPART CCCCC	☐ AQMD Visible Emissions, AQMD TM 5.1, 5.2, or 5.3 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Ozone Depleting Substances (ODS) or Alternative ODS, Use	☐ 40 CFR82 Subpart G	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Petroleum Refineries	☐ Rule 218 (05/14/99)	☐ AQMD TM 100.1	☐ Rule 218(e) & (f)
	☐ Rule 465 (08/13/99)		
	☐ Rule 468 (10/08/76)	☐ AQMD TM 6.1 or 6.2	
	☐ Rule 469 (02/13/81)	☐ AQMD TM 6.1 or 6.2	
	☐ Rule 1118 (11/04/05)	☐ Rule 1118(j)	☐ Rule 1118(f), (g), (h), & (i)
	☐ Rule 1123 (12/07/90)	N/A	☐ Rule 1123(c)
	☐ Rule 1189 (01/21/00)	☐ Rule 1189(f)	☐ Rule 1189(e)
	☐ 40 CFR60 SUBPART J	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART EEEE	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART GGGGG	See Applicable Subpart	See Applicable Subpart
	☐ Title 13 CCR 2250		
☐ Petroleum Refineries, Fugitive Emissions	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ 40 CFR60 SUBPART GGG	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Petroleum Refineries, Storage Tanks	☐ Rule 463 (05/06/05)	☐ Rule 463(g)	☐ Rule 463(e)(5)
	☐ Rule 1178 (04/07/06)	☐ Rule 1178(i)	☐ Rule 1178(f) & (h)
	☐ 40 CFR60 SUBPART K	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Ka	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Kb	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART EEEE	See Applicable Subpart	See Applicable Subpart
☐ Petroleum Refineries, Wastewater Systems	☐ Rule 1176 (09/13/96)	☐ Rule 1176(h)	☐ Rule 1176(f) & (g)
	☐ Rule 464 (12/07/90)	N/A	
	☐ 40 CFR60 SUBPART QQQ	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Pharmaceuticals & Cosmetics Manufacturing	☐ Rule 1103 (03/12/99)	☐ Rule 1103(f)	☐ Rule 1103(e)
	☐ 40 CFR63 SUBPART GGG	See Applicable Subpart	See Applicable Subpart
☐ Polyester Resin Operation	☐ Rule 109 (05/02/03)	☐ Rule 109(g)	☐ Rule 109(c)
	☐ Rule 1162 (07/08/05)	☐ Rule 1162(f)	☐ Rule 1162(e)
	☐ Rule 1171 (05/01/09)	☐ Rule 1171(e)	☐ Rule 1171(c)(6)
☐ Primary Magnesium Refining	☐ 40 CFR63 SUBPART TTTTT	See Applicable Subpart	See Applicable Subpart
☐ Printing Press	See Coating Operations		
☐ Publicly Owned Treatment Works Operations	☐ Rule 1179 (03/06/92)	☐ Rule 1179(e)	☐ Rule 1179(c) & (d)
	☐ 40 CFR60 SUBPART O	See Applicable Subpart	See Applicable Subpart
☐ Pumps	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Recycling & Recovery Equipment for Ozone Depleting Substances (ODS),	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Refrigerant Reclaimers for Ozone Depleting Substances (ODS)	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Rendering Plant	☐ Rule 472 (05/07/76)	N/A	☐ Rule 472(b)
☐ Rock Crushing	See Nonmetallic Mineral Processing Plants		
☐ Secondary Aluminum Production	☐ 40 CFR63 SUBPART LL	See Applicable Subpart	See Applicable Subpart
☐ Semiconductor Manufacturing	See Manufacturing, Semiconductors		
☐ Sewage Treatment Plants	See Publicly Owned Treatment Works Operation		
☐ Site Remediation	☐ 40 CFR63 SUBPART GGGGG	See Applicable Subpart	See Applicable Subpart
☐ Smelting, Primary Copper	☐ 40 CFR63 SUBPART QQQ	See Applicable Subpart	See Applicable Subpart
☐ Smelting, Secondary Lead	☐ 40 CFR60 SUBPART L ☐ 40 CFR63 SUBPART X	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Soil Decontamination / Excavation	☐ Rule 1166 (05/11/01) ☐ 40 CFR63 SUBPART GGGGG	☐ Rule 1166(e) See Applicable Subpart	☐ Rule 1166(c)(1)(C) See Applicable Subpart
☐ Spray Booth	See Coating Operations		
☐ Sterilizer, Ethylene Oxide	☐ 40 CFR63 SUBPART O	See Applicable Subpart	See Applicable Subpart
☐ Storage Tank, Degassing Operation	☐ Rule 1149 (07/14/95) ☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Storage Tank, Greater Than 19,815 Gallon Capacity	☐ Rule 463 (05/06/05) ☐ Rule 1178 (04/07/06) ☐ 40 CFR63 SUBPART F ☐ 40 CFR63 SUBPART G ☐ 40 CFR63 SUBPART H ☐ 40 CFR63 SUBPART I ☐ 40 CFR60 SUBPART K ☐ 40 CFR60 SUBPART Ka ☐ 40 CFR60 SUBPART Kb ☐ 40 CFR63 SUBPART R ☐ 40CFR63 SUBPART BBBBBB ☐ 40 CFR63 SUBPART CC	☐ Rule 463(g) ☐ Rule 1178(i) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 463(e)(5) ☐ Rule 1178(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Synthetic Fiber Production Facilities	☐ 40 CFR60 SUBPART HHH	See Applicable Subpart	See Applicable Subpart
☐ Taconite Iron Ore Processing Facilities	☐ 40 CFR63 SUBPART RRRRR	See Applicable Subpart	See Applicable Subpart
☑ Turbine, Stationary Gas-Fired	☐ Rule 1134 (08/08/97) ☑ Rule 475 (08/07/78) ☐ 40 CFR60 SUBPART GG ☑ 40 CFR60 SUBPART KKKK ☑ 40 CFR63 SUBPART YYYY	☐ Rule 1134(e) & (g) ☑ AQMD TM 5.1, 5.2, or 5.3 See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1134(d) & (f) See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Turbine, Stationary Oil-Fired	☐ 40 CFR63 SUBPART YYYY	See Applicable Subpart	See Applicable Subpart
☐ Valves	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Vessel, Refinery Process	☐ Rule 1123 (12/07/90)	N/A	☐ Rule 1123(c)
☐ Vessels	See Petroleum Refineries, Fugitive Emissions		

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Section II - Applicable Requirements, Test Methods, & MRR Requirements			
Equipment/Process	**Applicable Requirement**	**Test Method**	**MRR Requirement**
☐ Wastewater, Chemical Plant	☐ Rule 464 (12/07/90) ☐ Rule 1176 (09/13/96) ☐ 40 CFR63 SUBPART F ☐ 40 CFR63 SUBPART G ☐ 40 CFR63 SUBPART H ☐ 40 CFR63 SUBPART I ☐ 40 CFR63 SUBPART CC	N/A ☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Wastewater Treatment, Other	☐ Rule 464 (12/07/90) ☐ Rule 1176 (09/13/96)	N/A ☐ Rule 1176(h)	☐ Rule 1176(f) & (g)
☐ Woodworking Operations	☐ Rule 1137 (02/01/02)	N/A	☐ Rule 1137(e)

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Section III - Supplemental Identification of Specific Requirements

Complete this section <u>only</u> if there is a specific requirement (i.e., rule reference, test method, or MRR requirement) that is:

1. Listed for a specific type of equipment or process in Section II of this form & **DOES NOT** pertain to a specific device at your facility*; OR,
2. Is **NOT** Listed for a specific type of equipment or process in Section II of this form but it **IS** applicable to a specific device at your facility.

NOTES:

1. For any specific requirement, test method, or MRR requirement that is identified as "Remove," attach additional sheets to explain the reasons why the specific requirement does not pertain to the device listed.
2. All boxes that are checked in Section II and any additional requirements identified in this section as "Add" will be used to determine the facility's compliance status. This information will be used to verify the certification statements made on Form 500-A2.
3. Do not use this section to identify equipment that is exempt from specific rule requirements. Your equipment is automatically considered to be in compliance with the rule that specifically exempts the equipment from those requirements.
4. Listing any requirement that does not apply to a specific piece of equipment in this section will not provide the facility with a permit shield unless one is specifically requested by completing Form 500-D and approved by the AQMD.

* If this section is completed as part of the initial Title V application & there is no device number assigned, refer to the existing permit or application number in this column.

Device No.*	Specific Requirement (Rule Number & Date)	Add (A) or Remove (R) (Check one)	Test Method	Add (A) or Remove (R) (Check one)	MRR Requirement	Add (A) or Remove (R) (Check one)
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
		○ A ○ R		○ A ○ R		○ A ○ R
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		○ A ○ R		○ A ○ R		○ A ○ R

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Section IV - SIP-Approved Rules That Are Not The Most Current AQMD Rules					
Check off each SIP-Approved Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
401	03/02/84	☑			☐
431.2	05/04/90	☑			☐
461	6/3/05	☐			☐
466.1	05/02/80	☐			☐
469	04/07/76	☐			☐
475	10/08/76	☑			☐
1112	01/06/84	☐			☐
1112.1	2/7/86	☐			☐
1113	11/08/96	☑			☐
1117	1/6/83	☐			☐
1122	07/11/97	☐			☐
1132	03/05/04	☐			☐
1140	02/01/80	☐			☐
1146	11/17/00	☐			☐
1146.1	5/13/94	☐			☐
1151	12/11/98	☐			☐
1158	6/11/99	☐			☐
1162	11/17/00	☐			☐
1166	07/14/95	☐			☐
1171	11/07/03	☑			☐
1175	05/13/94	☐			☐
1186	09/10/99	☐			☐

Section V - AQMD Rules That Are Not SIP-Approved (Continued on Following Page)					
Check off each AQMD Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
Non SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**Non SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
53 Los Angeles Co.	N/A	☑	1192	06/16/00	☐
53 Orange Co.	N/A	☐	1193	07/09/10	☐
53 Riverside Co.	N/A	☐	1194	10/20/00	☐
53 San Bernardino Co.	N/A	☐	1195	05/05/06	☐
53A San Bernardino Co.	N/A	☐	1196	06/06/08	☐
402	05/07/76	☑	1401	09/10/10	☑
429	12/21/90	☐	1401.1	11/04/05	☐
430	07/12/96	☑	1402	03/04/05	☑
441	05/07/76	☐	1403	10/05/07	☐
473	05/07/76	☐	1404	04/06/90	☑
477	04/03/81	☐	1405	01/04/91	☐
480	10/07/77	☐	1406	07/08/94	☐
1109	08/05/88	☐	1407	07/08/94	☐
1110.2	07/09/10	☑	1411	03/01/91	☐
1116.1	10/20/78	☐	1414	05/03/91	☐
1127	08/06/04	☐	1415	10/14/94	☐
1143	07/09/10	☐	1418	09/10/99	☐
1147	12/05/08	☐	1420	09/11/92	☐
1148.1	03/05/04	☐	1420.1	11/05/10	☐
1150	10/15/82	☐	1421	12/06/02	☐
1155	12/04/09	☐	1425	03/16/01	☐
1156	03/06/09	☐	1426	05/02/03	☐
1157	09/08/06	☐			☐
1163	06/07/85	☐			☐
1170	05/06/88	☐			☐
1183	03/12/93	☐			☐
1186.1	01/09/09	☐			☐
1191	06/16/00	☐			☐

Section V - AQMD Rules That Are Not SIP-Approved (Continued on Following Page)					
Check off each AQMD Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
Non SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**Non SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
1469	12/05/08	☐	2009.1	05/11/01	☐
1469.1	03/04/05	☐	2501	05/09/97	☐
1470	06/01/07	☑	2506	12/10/99	☐
1472	03/07/08	☐			☐
2009	01/07/05	☐			☐
		☐			☐
		☐			☐
		☐			☐
		☐			☐
		☐			☐

South Coast Air Quality Management District

Form 500-F1 (Title V)

Title IV - Acid Rain Phase II Facility Information Summary

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

This form shall be completed by Acid Rain facilities ONLY and shall accompany all requests for Phase II permit actions unique to Acid Rain facilities. Also attach a completed Form 500-A2. In addition, if an initial Title V permit, permit renewal, or permit revision is requested, attach Form 500-A1 and any supplemental Acid Rain forms (Forms 500-F2, 500-F3, and 500-F4), as appropriate.

Section I - General Information

1. Facility Name (Business Name of Operator That Appears On Permit): Bicent (California) Malburg LLC

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 155474

3. ORIS Code (5-Digit): 56041

4. This is an application for a (Check all that apply to the facility):

- **a.** ☑ Phase II Acid Rain Permit or Revision (Complete Section II of this form)
- **b.** ☐ Repowering Extension Plan or Revision (Complete Form 500-F2)
- **c.** ☐ New Unit Exemption or Revision (Complete Form 500-F3)
- **d.** ☐ Retired Unit Exemption or Revision (Complete Form 500-F4)

5. The requested permit action involves a(n) (Check one):

- **a.** ○ Administrative Permit Revision
- **b.** ○ Significant Permit Revision
- **c.** ○ Fast Track Permit Revision
- **d.** ○ Automatic Permit Revision
- **e.** ◉ Other (specify): Revision due to facility modifications (turbine enhancement project)

6. For all applications requesting a permit revision, provide a general description of the proposed changes (Attach additional sheets as necessary):

Revision to permit conditions due to physical modifications to the gas turbines from the turbine enhancement project, i.e., changes to applicable NSPS, changes to fuel and emissions limits, etc.

Section II - Phase II Acid Rain Device Summary

1. The following information is (Check one): **a.** ○ New **b.** ○ Revised

AQMD Device #	EPA Unit #	Will device need a Repowering Extension Plan?	Has device started operations on or after 11/15/90?	Device Operations Start Date (mo/day/yr)	For devices starting-up after 11/15/90, provide date when Monitoring Certification will begin (mo/day/yr)
D27	M1	○ Yes ◉ No	◉ Yes ○ No	07/23/2005	07/23/2005
D36	M2	○ Yes ◉ No	◉ Yes ○ No	07/23/2005	07/23/2005
		○ Yes ○ No	○ Yes ○ No		
		○ Yes ○ No	○ Yes ○ No		
		○ Yes ○ No	○ Yes ○ No		

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To complete this application, type or print the information in the appropriate blanks.

Section I - General Information

1. **Facility Name:** Provide the name of the legal entity that operates the facility.

   AQMD Facility ID: Complete only if the facility has been issued a 6-digit identification or ID number by AQMD. If not, leave these boxes blank. An ID number will be assigned when the application is submitted.

   ORIS Code: Provide the 5-digit code that has been assigned to facility by Department of Energy.

2. Check all applicable boxes to indicate the type of Acid Rain application filed. If box 1a. is checked, complete Section II of this form. If box 1b. is checked, complete and attach Form 500-F2 - Title IV Phase II Acid Rain Repowering Extension Plan. If box 1c. is checked, complete and attach Form 500-F3 - Title IV Phase II Acid Rain New Unit Exemption Request. If box 1d. is checked, complete and attach Form 500-F4 - Title IV Phase II Acid Rain Retired Unit Exemption Request.

3. Check one box that best represents the type of permit action requested. If box 1e. is checked, in the space provided identify any additional elements regarding the application or the facility that need to be considered during the processing of this application (i.e., Initial Title V Permit Application).

4. If the application is a revision request, describe in general terms the changes that are proposed in the application revision request. Attach additional sheets as necessary.

Section II - Phase II Acid Rain Device Summary

1. Before completing this section, check one box to indicate whether this is a new application or a revision.

AQMD Device #:	Provide the identification number for each AQMD-assigned device subject to Phase II requirements.
EPA Unit #:	Provide the identification number for each EPA-assigned device subject to Phase II requirements.
Will device need a Repowering Extension Plan?:	Indicate with a "yes" or "no" if the device is or will be participating under a Repowering Extension Plan.
Has device started operations on or after 11/15/90?:	Indicate with a "yes" or "no" if the device was source tested or started operating on or after November 15, 1990.
Device Operations Start Date:	Complete this column only if the device was source tested or started operating on or after November 15, 1990. Provide the date (mo/day/yr) when the device started or will start operating. Note: If the date of beginning operations changes, an administrative permit revision application will be required.
For Devices starting-up after 11/15/90, provide date when Monitoring Certification will begin:	Complete this column only if the device was source tested or started operating on or after November 15, 1990. Provide the date (mo/day/yr) when compliance with the monitoring procedures for the device will begin. Refer to 40 CFR Part 75.4 to determine this date. Note: If the monitoring certification date changes, an administrative permit revision application will be required.

Attachment 2

Current PTO

South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178

Title Page
Facility ID: 155474
Revision #: 11
Date: November 03, 2015

FACILITY PERMIT TO OPERATE

BICENT (CALIFORNIA) MALBURG LLC
4963 S SOTO ST
VERNON, CA 90058

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR A COPY THEREOF MUST BE KEPT AT THE LOCATION FOR WHICH IT IS ISSUED.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT SHALL NOT BE CONSTRUED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF ANY OTHER FEDERAL, STATE OR LOCAL GOVERNMENTAL AGENCIES.

Barry R. Wallerstein, D. Env.
EXECUTIVE OFFICER

By _____ for
Mohsen Nazemi, P.E.
Deputy Executive Officer
Engineering & Complianee

South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

TABLE OF CONTENTS

South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION A: FACILITY INFORMATION

LEGAL OWNER &/OR OPERATOR:	BICENT (CALIFORNIA) MALBURG LLC
LEGAL OPERATOR (if different than owner):	
EQUIPMENT LOCATION:	4963 S SOTO ST VERNON, CA 90058-2911
MAILING ADDRESS:	4963 S SOTO ST VERNON, CA 90058-2911
RESPONSIBLE OFFICIAL:	DOUGLAS HALLIDAY
TITLE:	CHIEF OPERATING OFFICER
TELEPHONE NUMBER:	(410) 770-9500
CONTACT PERSON:	DOUGLAS HALLIDAY
TITLE:	CHIEF OPERATING OFFICER
TELEPHONE NUMBER:	(410) 770-9500
TITLE V PERMIT ISSUED:	November 03, 2015
TITLE V PERMIT EXPIRATION DATE:	November 02, 2020

TITLE V	RECLAIM	
YES	NOx:	YES
	SOx:	NO
	CYCLE:	2
	ZONE:	COASTAL

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NOx RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NOx emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

The following table lists the annual allocations that were issued to this facility and the amounts of RTCs held by this facility on the day of printing this Section.

RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin (month/year)	Year End	Zone	NOx RTC Initially Allocated	NOx RTC [1] Holding as of 11/03/2015 (pounds)	Non-Tradable [2] Non-Usable RTCs (pounds)
7/2012	6/2013	Coastal	28480	7933	0
1/2013	12/2013	Coastal	0	4991	0
7/2013	6/2014	Coastal	28480	1967	0
1/2014	12/2014	Coastal	0	2947	0
7/2014	6/2015	Coastal	28480	6293	0
1/2015	12/2015	Coastal	0	27940	0
7/2015	6/2016	Coastal	28480	26866	0
1/2016	12/2016	Coastal	0	26867	0
7/2016	6/2017	Coastal	28480	26866	0
1/2017	12/2017	Coastal	0	26867	0
7/2017	6/2018	Coastal	28480	26866	0
1/2018	12/2018	Coastal	0	26867	0
7/2018	6/2019	Coastal	28480	26866	0
1/2019	12/2019	Coastal	0	26867	0
7/2019	6/2020	Coastal	28480	26866	0
1/2020	12/2020	Coastal	0	26867	0
7/2020	6/2021	Coastal	28480	26866	0

Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.

2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NOx RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NOx emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

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RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin (month/year)	Year End (month/year)	Zone	NOx RTC Initially Allocated	NOx RTC [1] Holding as of 11/03/2015 (pounds)	Non-Tradable [2] Non-Usable RTCs (pounds)
1/2021	12/2021	Coastal	0	26867	0
7/2021	6/2022	Coastal	28480	26866	0
1/2022	12/2022	Coastal	0	26867	0
7/2022	6/2023	Coastal	28480	26866	0
1/2023	12/2023	Coastal	0	26867	0
7/2023	6/2024	Coastal	28480	26866	0
1/2024	12/2024	Coastal	0	26867	0
7/2024	6/2025	Coastal	28480	26866	0
1/2025	12/2025	Coastal	0	26867	0
7/2025	6/2026	Coastal	28480	26866	0
1/2026	12/2026	Coastal	0	26867	0
7/2026	6/2027	Coastal	28480	26866	0
1/2027	12/2027	Coastal	0	26867	0
7/2027	6/2028	Coastal	28480	26866	0
1/2028	12/2028	Coastal	0	26867	0
7/2028	6/2029	Coastal	28480	26866	0
1/2029	12/2029	Coastal	0	26867	0

Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.

2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NOx RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NOx emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

The following table lists the annual allocations that were issued to this facility and the amounts of RTCs held by this facility on the day of printing this Section.

RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin (month/year)	Year End (month/year)	Zone	NOx RTC Initially Allocated	NOx RTC [1] Holding as of 11/03/2015 (pounds)	Non-Tradable [2] Non-Usable RTCs (pounds)
7/2029	6/2030	Coastal	28480	26866	0
1/2030	12/2030	Coastal	0	26867	0

Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.

2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. If the facility submits a permit application to increase in an annual allocation to a level greater than the facility's starting Allocation plus Non-Tradable credits as listed below, the application will be evaluated for compliance with Rule 2005 (c)(4). Rule 2005 (e) - Trading Zone Restrictions applies if an annual allocation is increased to a level greater than the facility's Starting Allocation plus Non-Tradable Credits:

Year Begin (month/year)	Year End (month/year)	Zone	NOx RTC Starting Allocation (pounds)	Non-Tradable Credits(NTC) (pounds)
7/1994	6/1995	Coastal	296280	7720

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION C: FACILITY PLOT PLAN

(TO BE DEVELOPED)

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1: INTERNAL COMBUSTION					
System 3: ELECTRIC GENERATION, GAS TURBINE (MGS POWER ISLAND NO. 1)					

* (1) (1A) (1B) Denotes RECLAIM emission factor
(2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1: INTERNAL COMBUSTION					
GAS TURBINE, NO.1, NATURAL GAS, ALSTOM, MODEL GTX100, 454.05 MMBTU/HR AT 38 DEGREES F (HHV) WITH A/N: 517249 GENERATOR, CTG NO. 1, 44.2 MW HEAT EXCHANGER, HRSG NO. 1 GENERATOR, STEAM TURBINE GENERATOR (STG), COMMON WITH HRSG NO. 2	D27	C32 C33	NOX: MAJOR SOURCE**	**CO**: 2 PPMV NATURAL GAS (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1) -BACT, 12-6-2002*]; **CO**: 2000 PPMV NATURAL GAS (5) **[RULE 407, 4-2-1982]**; **NOX**: 2 PPMV NATURAL GAS (4) **[RULE 2005, 6-3-2011]**; **NOX**: 110 PPMV NATURAL GAS (8) **[40CFR 60 Subpart GG, 2-27-2014]**; **PM**: 0.01 GRAINS/SCF (5A) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **PM**: 0.1 GRAINS/SCF (5) **[RULE 409, 8-7-1981]**; **PM**: 11 LBS/HR (5B) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **SO2**: (9) **[40CFR 72 - Acid Rain Provisions, 11-24-1997]**; **SOX**: 150 PPMV NATURAL GAS (8) **[40CFR 60 Subpart GG, 2-27-2014]**; **VOC**: 2 PPMV NATURAL GAS (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]	A63.3, A99.3, A99.4, A99.5, A195.1, A195.2, A195.3, A327.1, C1.4, D12.3, D29.2, D82.1, D82.2, E57.1, I298.1, K40.1

* (1) (1A) (1B) Denotes RECLAIM emission factor
(2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1: INTERNAL COMBUSTION					
BURNER, DUCT BURNER, NATURAL GAS, SERVING HRSG NO. 1, 81.2 MMBTU/HR A/N: 517249	D31	C32 C33	NOX: MAJOR SOURCE**	**CO**: 2 PPMV NATURAL GAS (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1) -BACT, 12-6-2002*]; **CO**: 2000 PPMV NATURAL GAS (5) **[RULE 407, 4-2-1982]**; **NOX**: 2 PPMV NATURAL GAS (4) **[RULE 2005, 6-3-2011]**; **NOX**: 110 PPMV NATURAL GAS (8) **[40CFR 60 Subpart GG, 2-27-2014]**; **PM**: 0.01 GRAINS/SCF (5A) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **PM**: 0.1 GRAINS/SCF (5) **[RULE 409, 8-7-1981]**; **PM**: 11 LBS/HR (5B) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **SO2**: (9) **[40CFR 72 - Acid Rain Provisions, 11-24-1997]**; **SOX**: 150 PPMV NATURAL GAS (8) **[40CFR 60 Subpart GG, 2-27-2014]**; **VOC**: 2 PPMV NATURAL GAS (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]	A63.3, A99.3, A99.4, A99.5, A195.1, A195.2, A195.3, A327.1, C1.4, D12.3, D29.2, D82.1, D82.2, E57.1, I298.2, K40.1, K67.4
CO OXIDATION CATALYST, NO.1, EMERACHEM, METAL MONOLITH, SERVING TURBINE NO.1, VOLUME 63 CU. FT. A/N: 482570	C32	D27 D31			

* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1: INTERNAL COMBUSTION					
SELECTIVE CATALYTIC REDUCTION, NO. 1, SERVING TURBINE NO. 1, 537.1 CU.FT.; WIDTH: 10 FT 11 IN; HEIGHT: 47 FT 7 IN; LENGTH: 3 FT 6 IN WITH A/N: 482570 AMMONIA INJECTION	C33	D27 D31		**NH3**: 5 PPMV (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]	A195.4, D12.4, D12.5, D12.6, D29.3, E179.4, E179.5
STACK, NO. 1, SERVING TURBINE NO. 1, HEIGHT: 110 FT ; DIAMETER: 12 FT A/N: 517249	D35				
System 4: ELECTRIC GENERATION, GAS TURBINE (MGS POWER ISLAND NO. 2)					

* (1) (1A) (1B) Denotes RECLAIM emission factor
(2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1: INTERNAL COMBUSTION					
GAS TURBINE, NO. 2, NATURAL GAS, ALSTOM, MODEL GTX100, 454.05 MMBTU/HR AT 38 DEGREES F (HHV) WITH A/N: 517250 GENERATOR, CTG NO. 2, 44.2 MW HEAT EXCHANGER, HRSG NO. 2 GENERATOR, STEAM TURBINE GENERATOR (STG), COMMON WITH HRSG NO. 1	D36	C40 C41	NOX: MAJOR SOURCE**	**CO**: 2 PPMV NATURAL GAS (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1) -BACT, 12-6-2002*]; **CO**: 2000 PPMV NATURAL GAS (5) **[RULE 407, 4-2-1982]**; **NOX**: 2 PPMV NATURAL GAS (4) **[RULE 2005, 6-3-2011]**; **NOX**: 110 PPMV NATURAL GAS (8) **[40CFR 60 Subpart GG, 2-27-2014]**; **PM**: 0.01 GRAINS/SCF (5A) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **PM**: 0.1 GRAINS/SCF (5) **[RULE 409, 8-7-1981]**; **PM**: 11 LBS/HR (5B) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **SO2**: (9) **[40CFR 72 - Acid Rain Provisions, 11-24-1997]**; **SOX**: 150 PPMV NATURAL GAS (8) **[40CFR 60 Subpart GG, 2-27-2014]**; **VOC**: 2 PPMV NATURAL GAS (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]	A63.3, A99.3, A99.4, A99.5, A195.1, A195.2, A195.3, A327.1, C1.4, D12.3, D29.2, D82.1, D82.2, E57.1, I298.3, K40.1

* (1) (1A) (1B) Denotes RECLAIM emission factor (2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit (8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits (10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1: INTERNAL COMBUSTION					
BURNER, DUCT BURNER, NATURAL GAS, SERVING HRSG NO. 2, 81.2 MMBTU/HR A/N: 517250	D39	C40 C41	NOX: MAJOR SOURCE**	**CO**: 2 PPMV NATURAL GAS (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1) -BACT, 12-6-2002*]; **CO**: 2000 PPMV NATURAL GAS (5) **[RULE 407, 4-2-1982]**; **NOX**: 2 PPMV NATURAL GAS (4) **[RULE 2005, 6-3-2011]**; **NOX**: 110 PPMV NATURAL GAS (8) **[40CFR 60 Subpart GG, 2-27-2014]**; **PM**: 0.01 GRAINS/SCF (5A) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **PM**: 0.1 GRAINS/SCF (5) **[RULE 409, 8-7-1981]**; **PM**: 11 LBS/HR (5B) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **SO2**: (9) **[40CFR 72 - Acid Rain Provisions, 11-24-1997]**; **SOX**: 150 PPMV NATURAL GAS (8) **[40CFR 60 Subpart GG, 2-27-2014]**; **VOC**: 2 PPMV NATURAL GAS (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]	A63.3, A99.3, A99.4, A99.5, A195.1, A195.2, A195.3, A327.1, C1.4, D12.3, D29.2, D82.1, D82.2, E57.1, I298.4, K40.1, K67.4
CO OXIDATION CATALYST, NO. 2, EMERACHEM, METAL MONOLITH, SERVING TURBINE NO.2, VOLUME 63 CU. FT. A/N: 482571	C40	D36 D39			

* (1) (1A) (1B) Denotes RECLAIM emission factor
(2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 1: INTERNAL COMBUSTION					
SELECTIVE CATALYTIC REDUCTION, NO. 2, SERVING TURBINE NO. 2, 537.1 CU.FT.; WIDTH: 10 FT 11 IN; HEIGHT: 47 FT 7 IN; LENGTH: 3 FT 6 IN WITH A/N: 482571 AMMONIA INJECTION	C41	D36 D39		**NH3**: 5 PPMV (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]	A195.4, D12.4, D12.5, D12.6, D29.3, E179.4, E179.5
STACK, NO. 2, SERVING TURBINE NO. 2, HEIGHT: 110 FT ; DIAMETER: 12 FT A/N: 517250	D43				
System 5: FIRE WATER PUMP DRIVER					
INTERNAL COMBUSTION ENGINE, EMERGENCY FIRE, DIESEL FUEL, DEUTZ, MODEL BF6M2012, FIRE WATER PUMP DRIVER, WITH AFTERCOOLER, TURBOCHARGER, 173 BHP A/N: 482576	D48		NOX: PROCESS UNIT**	**CO**: 0.4 GRAM/BHP-HR DIESEL (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]; **NOX**: 3.9 GRAM/BHP-HR DIESEL (4) **[RULE 2005, 6-3-2011]**; **NOX**: 469 LBS/1000 GAL DIESEL (1) **[RULE 2012, 5-6-2005]**; **PM10**: 0.09 GRAM/BHP-HR DIESEL (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]; **VOC**: 0.1 GRAM/BHP-HR DIESEL (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]	B61.2, C1.5, D12.2, E193.1, I298.5, K48.1, K67.2
Process 4: INORGANIC CHEMICAL STORAGE					

* (1) (1A) (1B) Denotes RECLAIM emission factor
(2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 4: INORGANIC CHEMICAL STORAGE					
TANK, AQUEOUS AMMONIA, AMMONIA, 19% SOLUTION WITH VAPOR RETURN LINE, 8800 GALS; DIAMETER: 10 FT ; HEIGHT: 15 FT A/N: 482573	D44				C157.1, E144.1
Process 5: OIL_WATER_SEPARATION					
OIL WATER SEPARATOR A/N: 482574	D45				
Process 6: Rule 219 Exempt Equipment Subject to Source Specific Rules					
RULE 219 EXEMPT EQUIPMENT, ARCHITECTURAL COATING	E47			**ROG**: (9) **[RULE 1113, 7-13-2007;** *RULE 1113, 9-6-2013;* **RULE 1171, 2-1-2008;** *RULE 1171, 5-1-2009*]	K67.1

* (1) (1A) (1B) Denotes RECLAIM emission factor
(2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: DEVICE ID INDEX

The following sub-section provides an index to the devices that make up the facility description sorted by device ID.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: DEVICE ID INDEX

Device Index For Section D			
Device ID	**Section D Page No.**	**Process**	**System**
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D31	3	1	3
C32	3	1	3
C33	4	1	3
D35	4	1	3
D36	5	1	4
D39	6	1	4
C40	6	1	4
C41	7	1	4
D43	7	1	4
D44	8	4	0
D45	8	5	0
E47	8	6	0
D48	7	1	5

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

FACILITY CONDITIONS

F9.1 Except for open abrasive blasting operations, the operator shall not discharge into the atmosphere from any single source of emissions whatsoever any air 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 Ringelmann 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, 3-2-1984;** RULE 401, 11-9-2001]

F14.1 The operator shall not use diesel fuel containing sulfur compounds in excess of 15 ppm by weight as supplied by the supplier.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 1303(b)(1)-Modeling, 5-10-1996;** RULE 1303(b)(1)-Modeling, 12-6-2002; RULE 431.2, 9-15-2000]

F14.2 The operator shall not use diesel fuel containing sulfur compounds in excess of 0.05 percent by weight.

[**RULE 431.2, 5-4-1990;** RULE 431.2, 9-15-2000]

F16.2 The operator 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.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002; **RULE 431.2, 5-4-1990;** RULE 431.2, 9-15-2000]

DEVICE CONDITIONS

A. Emission Limits

A63.3 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
CO	Less than 7633 LBS IN ANY ONE MONTH
PM10	Less than 4876 LBS IN ANY ONE MONTH
VOC	Less than 3236 LBS IN ANY ONE MONTH
SOX	Less than 214 LBS IN ANY ONE MONTH

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

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

The operator shall calculate the emissions for CO, after the CO CEMS certification, based on the readings from the certified CO CEMS. In the event 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.

The operator shall calculate the emissions by using monthly fuel use data and the following emission factors: PM10 7.397 lbs/mmscf, VOC 1.63 lbs/mmscf and SOx 0.28 lb/mmscf.

The operator 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 personnel upon request.

[**RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002]

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

A99.3 The 2 PPM NOX emission limit(s) shall not apply during turbine startups and shutdowns.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

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. NOx emissions for a cold start-up, with or without trip(s), shall not exceed 122.8 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. NOx emissions for a non-cold startup, with or without trip(s), shall not exceed 51.3 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. NOx emissions for a shutdown shall not exceed 4.5 lbs.

The turbine shall be limited to a maximum of 10 startups per month, which includes no more than 5 cold startups 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 operator 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 personnel upon request.

[RULE 2005, 6-3-2011]

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

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

A99.4 The 2 PPM CO emission limit(s) shall not apply during turbine 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. CO emissions for a cold start-up, with or without trip(s), shall not exceed 204.8 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. CO emissions for a non-cold startup, with or without trip(s), shall not exceed 59.9 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. CO emissions for a shutdown shall not exceed 10.8 lbs.

The turbine shall be limited to a maximum of 10 startups per month, which includes no more than 5 cold startups 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 operator 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 personnel upon request.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

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

A99.5 The 2 PPM VOC emission limit(s) shall not apply during turbine startups and shutdowns.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

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. VOC emissions for a cold start-up, with or without trip(s), shall not exceed 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. VOC emissions for a non-cold startup, with or without trip(s), shall not exceed 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. VOC emissions for a shutdown shall not exceed 0.71 lbs.

The turbine shall be limited to a maximum of 10 startups per month, which includes no more than 5 cold startups 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 operator 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 personnel upon request.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

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

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

A195.1 The 2 PPMV NOX emission limit(s) is averaged over 1 hour at 15 percent oxygen, dry basis.

[**RULE 2005, 6-3-2011**]

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

A195.2 The 2 PPMV CO emission limit(s) is averaged over 3 hours at 15 percent oxygen, dry basis.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002]

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

A195.3 The 2 PPMV VOC emission limit(s) is averaged over 1 hour at 15 percent oxygen, dry basis.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002]

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

A195.4 The 5 PPMV NH3 emission limit(s) is averaged over 1 hour at 15 percent oxygen, dry basis. The operator shall calculate and continuously record the ammonia slip concentration using the following formula.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

NH3 (ppmv) = [a - (b*c/1000000)] * (1000000*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 concentration across SCR (ppmv, dry basis)

d = correction derived by comparing the measured and calculated NH3 slip concentrations during annual compliance testing

The operator 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 NH3 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, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : C33, C41]

A327.1 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 limits at the same time.

[**RULE 475, 10-8-1976;** RULE 475, 8-7-1978]

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

B. Material/Fuel Type Limits

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

B61.2 The operator shall only use diesel fuel containing the following specified compounds:

Compound	ppm by weight
Sulfur less than or equal to	15

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002; RULE 1470, 5-4-2012]

[Devices subject to this condition : D48]

C. Throughput or Operating Parameter Limits

C1.4 The operator shall limit the fuel usage to no more than 330 MM cubic feet in any one calendar month.

The purpose(s) of this condition is to ensure that the total PM10 emissions shall not exceed 2,438 lbs/month per turbine.

[**RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002]

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

C1.5 The operator shall limit the operating time to no more than 200 hour(s) 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.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[RULE 1110.2, 2-1-2008; RULE 1110.2, 9-7-2012; **RULE 1304(a)-Modeling and Offset Exemption, 6-14-1996;** RULE 1470, 5-4-2012; **RULE 2012, 5-6-2005]**

[Devices subject to this condition : D48]

C157.1 The operator shall install and maintain a pressure relief valve set at 25 psig.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D44]

D. Monitoring/Testing Requirements

D12.2 The operator shall install and maintain a(n) non-resettable elapsed time meter to accurately indicate the elapsed operating time of the engine.

[RULE 1110.2, 2-1-2008; RULE 1110.2, 9-7-2012; **RULE 1304(a)-Modeling and Offset Exemption, 6-14-1996; RULE 2012, 5-6-2005]**

[Devices subject to this condition : D48]

D12.3 The operator shall install and maintain a(n) non-resettable totalizing fuel flow meter to accurately indicate the fuel usage of the turbine.

[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002; **RULE 2005, 6-3-2011]**

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

D12.4 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia (NH3).

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

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

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2005, 6-3-2011**]

[Devices subject to this condition : C33, C41]

D12.5 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the exhaust at the inlet to the SCR reactor.

The operator 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 deg F and 750 deg F, except during startups and shutdowns.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2005, 6-3-2011**]

[Devices subject to this condition : C33, C41]

D12.6 The operator shall install and maintain a(n) pressure gauge to accurately indicate the pressure across the SCR catalyst bed in inches of water column.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

The operator 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 and 2.0 inches water column.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2005, 6-3-2011]**

[Devices subject to this condition : C33, C41]

D29.2 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
PM emissions	Approved District method	District-approved averaging time	Outlet of the SCR serving this equipment
VOC	Approved District method	1 hour	Outlet of the SCR serving this equipment
SOX emissions	Approved District method	District-approved averaging time	Fuel Sample

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

The test shall be conducted at least once every three years.

The test shall be conducted and the results submitted to the District within 60 days after the test date. The District 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 burner 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 test shall be conducted for compliance verification of the BACT VOC 2.0 ppmv limit. For natural gas fired turbines only, this shall be demonstrated by the following test method:

a) Stack gas samples are extracted into Summa canisters, maintaining a final canister pressure between 400 - 500 mm Hg absolute

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

c) Analysis of Summa canisters is per EPA Method TO-12 (with pre-concentration) and the temperature of the Summa canisters when extracting samples for analysis is not to be below 70 degrees F

Because the BACT level was set using data derived from various source test methods, this alternate method provides a fair comparison and represents the best sampling and analysis technique for this purpose at this time. The test results must be reported with two significant digits.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002]

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

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

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1 and 5.3 or EPA method 17	1 hour	Outlet of the SCR

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

The test shall be conducted at least once every calendar quarter for the first year and annually there after.

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

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2005, 6-3-2011**]

[Devices subject to this condition : C33, C41]

D82.1 The operator shall install and maintain a CEMS to measure the following parameters:

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

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 (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 minutes averaging time period

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002]

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

D82.2 The operator shall install and maintain a CEMS to measure the following parameters:

NOX concentration in ppmv

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

[**RULE 2012, 5-6-2005**]

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

E. Equipment Operation/Construction Requirements

E57.1 The operator shall vent this equipment to CO oxidation/SCR control system whenever the turbine is in operation.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2005, 6-3-2011**]

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

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

E144.1 The operator shall vent this equipment, during filling, only to the vessel from which it is being filled.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D44]

E179.4 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 Number D 12- 3

Condition Number D 12- 4

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2005, 6-3-2011]**

[Devices subject to this condition : C33, C41]

E179.5 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 month.

Condition Number D 12- 5

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2005, 6-3-2011]**

[Devices subject to this condition : C33, C41]

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SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

E193.1 The operator shall operate and maintain this equipment according to the following requirements:

The following requirements are effective no later than May 3, 2013, per Sect. 63.6595(a)(1).

The operator 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 program as described in Sect. 63.6625(i) in order to extend the specified oil change requirement.

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

The operator 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 operator 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 his own 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. 63.6625(e)(3) and Sect. 63.6640(a).

The operator 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, 1-30-2013]

[Devices subject to this condition : D48]

I. Administrative

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

I298.1 This equipment shall not be operated unless the facility holds 34349 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 34349 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, 6-3-2011**]

[Devices subject to this condition : D27]

I298.2 This equipment shall not be operated unless the facility holds 6143 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 6143 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.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[RULE 2005, 6-3-2011]

[Devices subject to this condition : D31]

I298.3 This equipment shall not be operated unless the facility holds 34349 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 34349 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, 6-3-2011]

[Devices subject to this condition : D36]

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

I298.4 This equipment shall not be operated unless the facility holds 6143 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 6143 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, 6-3-2011]

[Devices subject to this condition : D39]

I298.5 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.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[RULE 2005, 6-3-2011]

[Devices subject to this condition : D48]

K. Record Keeping/Reporting

K40.1 The operator 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.

Emission 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 emissions, if required to be tested, shall also be reported in terms of grains per DSCF.

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

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

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

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

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002; **RULE 2005, 6-3-2011]**

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

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

K48.1 The operator shall maintain records in a manner approved by the District, to demonstrate compliance with the following condition number(s):

Condition Number C 1- 5

Condition Number D 12- 2

[RULE 1110.2, 2-1-2008; RULE 1110.2, 9-7-2012; **RULE 1304(a)-Modeling and Offset Exemption, 6-14-1996]**

[Devices subject to this condition : D48]

K67.1 The operator 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 coating 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 used 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, 12-12-1997]

[Devices subject to this condition : E47]

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

K67.2 The operator 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

Maintenance and testing hours of operation

Hours of operation for emission testing to show rule compliance

Other operating hours

[**RULE 1110.2, 2-1-2008;** RULE 1110.2, 9-7-2012; **RULE 1304(a)-Modeling and Offset Exemption, 6-14-1996;** RULE 1470, 5-4-2012]

[Devices subject to this condition : D48]

K67.4 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Operational status of the duct burner and its fuel usage

[**RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002; **RULE 2005, 6-3-2011; RULE 2012, 5-6-2005**]

[Devices subject to this condition : D31, D39]

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SECTION E: ADMINISTRATIVE CONDITIONS

The operating conditions in this section shall apply to all permitted equipment at this facility unless superseded by condition(s) listed elsewhere in this permit.

1. The permit shall remain effective unless this permit is suspended, revoked, modified, reissued, denied, or it is expired for nonpayment of permit processing or annual operating fees. [201, 203, 209, 301]
   a. The permit must be renewed annually by paying annual operating fees, and the permit shall expire if annual operating fees are not paid pursuant to requirements of Rule 301(d). [301(d)]
   b. The Permit to Construct listed in Section H shall expire one year from the Permit to Construct issuance date, unless a Permit to Construct extension has been granted by the Executive Officer or unless the equipment has been constructed and the operator has notified the Executive Officer prior to the operation of the equipment, in which case the Permit to Construct serves as a temporary Permit to Operate. [202, 205]
   c. The Title V permit shall expire as specified under Section K of the Title V permit. The permit expiration date of the Title V facility permit does not supercede the requirements of Rule 205. [205, 3004]
2. The operator shall maintain all equipment in such a manner that ensures proper operation of the equipment. [204]
3. This permit does not authorize the emissions of air contaminants in excess of those allowed by Division 26 of the Health and Safety Code of the State of California or the Rules and Regulations of the SCAQMD. This permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other governmental agencies. [204]
4. The operator shall not use equipment identified in this facility permit as being connected to air pollution control equipment unless they are so vented to the identified air pollution control equipment which is in full use and which has been included in this permit. [204]

SECTION E: ADMINISTRATIVE CONDITIONS

5. The operator shall not use any equipment having air pollution control device(s) incorporated within the equipment unless the air pollution control device is in full operation.[204]

6. The operator shall maintain records to demonstrate compliance with rules or permit conditions that limit equipment operating parameters, or the type or quantity of material processed. These records shall be made available to SCAQMD personnel upon request and be maintained for at least: [204]

   a. Three years for a facility not subject to Title V; or

   b. Five years for a facility subject to Title V.

7. The operator shall maintain and operate all equipment to ensure compliance with all emission limits as specified in this facility permit. Compliance with emission limits shall be determined according to the following specifications, unless otherwise specified by SCAQMD rules or permit conditions: [204]

   a. For internal combustion engines and gas turbines, measured concentrations shall be corrected to 15 percent stack-gas oxygen content on a dry basis and be averaged over a period of 15 consecutive minutes; [1110.2, 1134, 204]

   b. For other combustion devices, measured concentrations shall be corrected to 3 percent stack-gas oxygen content on a dry basis and be averaged over a period of 15 consecutive minutes; [1146, 1146.1, 204]

   c. For a large NOx source, compliance with a RECLAIM concentration limit shall be measured over a continuous 60 minutes for that source; [2012]

   d. For non-combustion sources, compliance with emission limits shall be determined and averaged over a period of 60 minutes. [204]

SECTION E: ADMINISTRATIVE CONDITIONS

e. For the purpose of determining compliance with Rule 407, carbon monoxide (CO) shall be measured on a dry basis and be averaged over 15 consecutive minutes, and sulfur compound which would exist as liquid or gas at standard conditions shall be calculated as sulfur dioxide (SO2) and be averaged over 15 consecutive minutes; [407]

f. For the purpose of determining compliance with Rule 409, combustion contaminant emission measurements shall be corrected to 12 percent carbon dioxide (CO2) at standard conditions and averaged over 15 consecutive minutes. [409]

g. For the purpose of determining compliance with Rule 475, combustion contaminant emission measurements shall be corrected to 3 percent of oxygen (O2) at standard conditions and averaged over 15 consecutive minutes or any other averaging time specified by the Executive Officer. [475]

8. All equipment operating under the RECLAIM program shall comply concurrently with all SCAQMD Rules and Regulation, except those listed in Table 1 of Rule 2001 for NOx RECLAIM sources and Table 2 of Rule 2001 for SOx RECLAIM sources. Those provisions listed in Tables 1 or 2 shall not apply to NOx or SOx emissions after the date the facility has demonstrated compliance with all monitoring and reporting requirements of Rules 2011 or 2012, as applicable. Provisions of the listed SCAQMD rules in Tables 1 or 2 which have initial implementation dates in 1994 shall not apply to a RECLAIM NOx or SOx source, respectively. [2001]

9. The operator shall, when a source test is required by SCAQMD, provide a source test protocol to SCAQMD no later than 60 days before the proposed test date. The test shall not commence until the protocol is approved by SCAQMD. The test protocol shall contain the following information: [204, 304]

a. Brief description of the equipment tested.

SECTION E: ADMINISTRATIVE CONDITIONS

b. Brief process description, including maximum and normal operating temperatures, pressures, through-put, etc.

c. Operating conditions under which the test will be performed.

d. Method of measuring operating parameters, such as fuel rate and process weight. Process schematic diagram showing the ports and sampling locations, including the dimensions of the ducts/stacks at the sampling locations, and distances of flow disturbances, (e,g. elbows, tees, fans, dampers) from the sampling locations (upstream and downstream).

e. Brief description of sampling and analytical methods used to measure each pollutant, temperature, flow rates, and moisture.

f. Description of calibration and quality assurance procedures.

g. Determination that the testing laboratory qualifies as an "independent testing laboratory" under Rule 304 (no conflict of interest).

10. The operator shall submit a report no later than 60 days after conducting a source test, unless otherwise required by SCAQMD Rules or equipment-specific conditions. The report shall contain the following information: [204]

a. The results of the source test.

b. Brief description of the equipment tested.

c. Operating conditions under which the test will be performed.

d. Method of measuring operating parameters, such as fuel rate and process weight. Process schematic diagram showing the ports and sampling locations, including the dimensions of the ducts/stacks at the sampling locations, and distances of flow disturbances, (e,g. elbows, tees, fans, dampers) from the sampling locations (upstream and downstream).

e. Field and laboratory data forms, strip charts and analyses.

SECTION E: ADMINISTRATIVE CONDITIONS

f. Calculations for volumetric flow rates, emission rates, control efficiency, and overall control efficiency.

11. The operator shall, when a source test is required, provide and maintain facilities for sampling and testing. These facilities shall comply with the requirements of SCAQMD Source Test Method 1.1 and 1.2. [217]

12. Whenever required to submit a written report, notification or other submittal to the Executive Officer, SCAQMD, or the District, the operator shall mail or deliver the material to: Deputy Executive Officer, Engineering and Compliance, SCAQMD, 21865 Copley Drive, Diamond Bar, CA 91765-4178. [204]

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SECTION F: RECLAIM MONITORING AND SOURCE TESTING REQUIREMENTS

The Facility shall comply with all applicable monitoring and source testing requirements in Regulation XX. These requirements may include but are not limited to the following:

I. NOx Monitoring Conditions

A. The Operator of a NOx Major Source, as defined in Rule 2012, shall, as applicable:

1. Install, maintain, and operate an SCAQMD certified direct or time-shared monitoring device or an approved alternative monitoring device for each major NOx source to continuously measure the concentration of NOx emissions and all other applicable variables specified in Rule 2012, Table 2012-1 and Rule 2012, Appendix A, Table 2-A to determine the NOx emissions rate from each source. The time-sharing of CEMS among NOx sources may be allowed by the Executive Officer in accordance with the requirements for time sharing specified in Appendix A. [2012]

2. Install, maintain, and operate a totalizing fuel meter approved by the Executive Officer for each major source. [2012]

3. If the facility is operating existing CEMS and fuel meters, continue to follow recording and reporting procedures required by SCAQMD Rules and Regulations in effect prior to October 15, 1993 until the CEMS is certified pursuant to Rule 2012. [2012]

4. Use valid data collected by an SCAQMD certified or provisionally certified CEMS in proper operation that meets all the requirements of Appendix A of Rule 2012, unless final certification of the CEMS is denied, to determine mass emissions for all purposes, including, but not limited to, determining: [2012]
   a. compliance with the annual Allocation;
   b. excess emissions;
   c. the amount of penalties; and
   d. fees.

SECTION F: RECLAIM MONITORING AND SOURCE TESTING REQUIREMENTS

5. Follow missing data procedures as specified in Rule 2012 Appendix A whenever valid data is not available or collected to determine mass emissions for all purposes, including, but not limited to, determining: [2012]
   a. compliance with the annual Allocation;
   b. excess emissions;
   c. the amount of penalties; and
   d. fees.

B. The Operator of a NOx Large Source, as defined in Rule 2012, shall, as applicable:

Not Applicable

C. The Operator of a NOx Process Unit, as defined in Rule 2012, shall, as applicable:

1. Install, maintain, and operate a totalizing fuel meter or any device approved by the Executive Officer to measure quarterly fuel usage or other applicable variables specified in Rule 2012, Table 2012-1, and Rule 2012, Appendix A, Table 4-A. The sharing of totalizing fuel meters may be allowed by the Executive Officer if the fuel meter serves process units which have the same emission factor or emission rate. The sharing of totalizing meter shall not be allowed for process units which are required to comply with an annual heat input limit. [2012]

II. NOx Source Testing and Tune-up conditions

1. The operator shall conduct all required NOx source testing in compliance with an SCAQMD-approved source test protocol. [2012]

SECTION F: RECLAIM MONITORING AND SOURCE TESTING REQUIREMENTS

2. The operator shall, as applicable, conduct source tests for every large NOx source no later than June 30, 1997 and every 3 years thereafter. The source test shall include the determination of NOx concentration and a relative accuracy audit of the exhaust stack flow determination (e.g. in-stack flow monitor or fuel flow monitor based F-factor calculation). Such source test results shall be submitted per the schedule described by APEP. In lieu of submitting the first source test report, the facility permit holder may submit the results of a source test not more than 3 years old which meets the requirements when conducted. [2012]

3. All NOx large sources and NOx process units shall be tuned-up in accordance with the schedule specified in Rule 2012, Appendix A, Chapter 5, Table 5-B. [2012]

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SECTION G: RECORDKEEPING AND REPORTING REQUIREMENTS FOR RECLAIM SOURCES

The Facility shall comply with all applicable reporting and recordkeeping requirements in Regulation XX. These requirements may include but are not limited to the following:

I. Recordkeeping Requirements for all RECLAIM Sources

1. The operator shall maintain all monitoring data required to be measured or reported pursuant to Rule 2011 and Rule 2012, whichever is applicable. All records shall be made available to SCAQMD staff upon request and be maintained for at least:
    a. Three years after each APEP report is submitted to SCAQMD for a facility not subject to Title V, unless a different time period is required in Rule 2011 or Rule 2012 [2011 & 2012]; or
    b. Five years after each APEP report is submitted to SCAQMD for a facility subject to Title V. [3004(a)(4)(E)]
    c. Notwithstanding the above, all data gathered or computed for intervals of less than 15 minutes shall only be maintained a minimum of 48 hours. [2011 & 2012]
2. The operator shall store on site and make available to the Executive Officer upon request: records used to determine emissions, maintenance records, sources test reports, relative accuracy test audit reports, relative accuracy audit reports and fuel meter calibration records. [2011 & 2012]

II. Reporting Requirements for all RECLAIM Sources

1. The operator shall submit a quarterly certification of emissions including the facility's total NOx or SOx emissions, whichever is applicable, for the quarter within 30 days after the end of the first three quarters and 60 days after the end of the fourth quarter of a compliance year. [2011 & 2012]

NOx Reporting Requirements

A. The Operator of a NOx Major Source, as defined in Rule 2012, shall, as applicable:

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SECTION G: RECORDKEEPING AND REPORTING REQUIREMENTS FOR RECLAIM SOURCES

1. No later than 12 months after entry into the RECLAIM program or after the initial operation of a new major source, whichever is later, install, maintain, and operate a reporting device to electronically report everyday to the SCAQMD central station for each major NOx source, the total daily mass emissions of NOx and daily status codes. Such data shall be transmitted by 5:00 p.m. of the following day. If the facility experiences a power, computer, or other system failure that prevents the submittal of the daily report, the Facility Permit holder shall be granted 24 hours extension to submit the report. [2012]

2. Calculate NOx emissions pursuant to missing data procedures set forth in Appendix A, Chapter 2 of Rule 2012 if the Facility Permit holder fails to meet the deadline for submitting the daily report. Notwithstanding the preceding condition, in no more than three non-consecutive occurrences per compliance year the reporting deadline extension following a system failure that precludes the Facility Permit holder from timely reporting shall be 96 rather than 24 hours provided that the raw data as obtained by the direct monitoring device is stored at the facility. [2012]

3. Submit an electronic report within 15 days following the end of each month totaling NOX emissions from all major NOx sources during the month. [2012]

4. For those facilities with existing CEMS and fuel meters as of October 15, 1993, continue to follow recording and reporting procedures required by SCAQMD Rules and Regulations in effect until the CEMS is certified pursuant to Rule 2011 and/or Rule 2012, as applicable. [2012]

B. The Operator of a NOx Large Source, as defined in Rule 2012, shall:

Not Applicable

C. The Operator of a NOx Process Unit, as defined in Rule 2012, shall:

SECTION G: RECORDKEEPING AND REPORTING REQUIREMENTS FOR RECLAIM SOURCES

1. Electronically report the calculated quarterly NOx emissions for each NOx process unit. The Operator shall comply with this requirement within 12 months of the date of entry to the RECLAIM Program. [2012]

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SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

NONE

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SECTION I: PLANS AND SCHEDULES

This section lists all plans approved by AQMD for the purposes of meeting the requirements of applicable AQMD rules.

NONE

NOTE: This section does not list compliance schedules pursuant to the requirements of Regulation XXX - Title V Permits; Rule 3004(a)(10)(C). For equipment subject to a variance, order for abatement, or alternative operating condition granted pursuant to Rule 518.2, equipment specific conditions are added to the equipment in Section D or H of the permit.

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SECTION J: AIR TOXICS

NOT APPLICABLE

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SECTION K: TITLE V Administration

GENERAL PROVISIONS

1. This permit may be revised, revoked, reopened and reissued, or terminated for cause, or for failure to comply with regulatory requirements, permit terms, or conditions. [3004(a)(7)(C)]

2. This permit does not convey any property rights of any sort or any exclusive privilege. [3004(a)(7)(E)]

Permit Renewal and Expiration

3. (A) Except for solid waste incineration facilities subject to standards under section 129(e) of the Clean Air Act, this permit shall expire five years from the date that this Title V permit is issued. The operator's right to operate under this permit terminates at midnight on this date, unless the facility is protected by an application shield in accordance with Rule 3002(b), due to the filing of a timely and complete application for a Title V permit renewal, consistent with Rule 3003. [3004(a)(2), 3004(f)]

   (B) A Title V permit for a solid waste incineration facility combusting municipal waste subject to standards under Section 129(e) of the Clean Air Act shall expire 12 years from the date of issuance unless such permit has been renewed pursuant to this regulation. These permits shall be reviewed by the Executive Officer at least every five years from the date of issuance. [3004(f)(2)]

4. To renew this permit, the operator shall submit to the Executive Officer an application for renewal at least 180 days, but not more than 545 days, prior to the expiration date of this permit. [3003(a)(6)]

Duty to Provide Information

5. The applicant for, or holder of, a Title V permit shall furnish, pursuant to Rule 3002(d) and (e), timely information and records to the Executive Officer or designee within a reasonable time as specified in writing by the Executive Officer or designee. [3004(a)(7)(F)]

Payment of Fees

6. The operator shall pay all required fees specified in Regulation III - Fees. [3004(a)(7)(G)]

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION K: TITLE V Administration

Reopening for Cause

7. The Executive Officer will reopen and revise this permit if any of the following circumstances occur:

   (A) Additional regulatory requirements become applicable with a remaining permit term of three or more years. Reopening is not required if the effective date of the requirement is later than the expiration date of this permit, unless the permit or any of its terms and conditions has been extended pursuant to paragraph (f)(4) of Rule 3004.

   (B) The Executive Officer or EPA Administrator determines that this permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit.

   (C) The Executive Officer or EPA Administrator determines that the permit must be revised or revoked to assure compliance with the applicable requirements. [3005(g)(1)]

COMPLIANCE PROVISIONS

8. The operator shall comply with all regulatory requirements, and all permit terms and conditions, except:

   (A) As provided for by the emergency provisions of condition no. 17 or condition no. 18, or

   (B) As provided by an alternative operating condition granted pursuant to a federally approved (SIP-approved) Rule 518.2.

   Any non-compliance with any federally enforceable permit condition constitutes a violation of the Federal Clean Air Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or revision; or denial of a permit renewal application. Non-compliance may also be grounds for civil or criminal penalties under the California State Health and Safety Code. [3004(a)(7)(A)]

9. The operator shall allow the Executive Officer or authorized representative, upon presentation of appropriate credentials to:

   (A) Enter the operator's premises where emission-related activities are conducted, or records are kept under the conditions of this permit;

   (B) Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

   (C) Inspect at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and

   (D) Sample or monitor at reasonable times, substances or parameters for the purpose of assuring compliance with the facility permit or regulatory requirements. [3004(a)(10)(B)]

10. All terms and conditions in this permit, including any provisions designed to limit a facility's potential to emit, are enforceable by the EPA Administrator and citizens under the federal Clean Air Act, unless the term or condition is designated as not federally enforceable. Each day during any portion of which a violation occurs is a separate offense. [3004(g)]

11. A challenge to any permit condition or requirement raised by EPA, the operator, or any other person, shall not invalidate or otherwise affect the remaining portions of this permit. [3007(b)]

12. The filing of any application for a permit revision, revocation, or termination, or a notification of planned changes or anticipated non-compliance does not stay any permit condition. [3004(a)(7)(D)]

13. It shall not be a defense for a person in an enforcement action, including those listed in Rule 3002(c)(2), that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit, except as provided for in "Emergency Provisions" of this section. [3004(a)(7)(H)]

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14. The operator shall not build, erect, install, or use any equipment, the use of which, without resulting in a reduction in the total release of air contaminants to atmosphere, reduces or conceals an emission which would otherwise constitute a violation of Chapter 3 (commencing with Section 41700) of Part 4, of Division 26 of the California Health and Safety Code or of AQMD rules. This rule shall not apply to cases in which the only violation involved is of Section 41700 of the California Health and Safety Code, or Rule 402 of AQMD Rules. [408]

15. Nothing in this permit or in any permit shield can alter or affect:

    (A) Under Section 303 of the federal Clean Air Act, the provisions for emergency orders;

    (B) The liability of the operator for any violation of applicable requirements prior to or at the time of permit issuance;

    (C) The applicable requirements of the Acid Rain Program, Regulation XXXI;

    (D) The ability of EPA to obtain information from the operator pursuant to Section 114 of the federal Clean Air Act;

    (E) The applicability of state or local requirements that are not "applicable requirements", as defined in Rule 3000, at the time of permit issuance but which do apply to the facility, such as toxics requirements unique to the State; and

    (F) The applicability of regulatory requirements with compliance dates after the permit issuance date. [3004(c)(3)]

16. For any portable equipment that requires an AQMD or state permit or registration, excluding a) portable engines, b) military tactical support equipment and c) AQMD-permitted portable equipment that are not a major source, are not located at the facility for more than 12 consecutive months after commencing operation, and whose operation does not conflict with the terms or conditions of this Title V permit: 1) the facility operator shall keep a copy of the AQMD or state permit or registration; 2) the equipment operator shall comply with the conditions on the permit or registration and all other regulatory requirements; and 3) the facility operator shall treat the permit or registration as a part of its Title V permit, subject to recordkeeping, reporting and certification requirements. [3004(a)(1)]

EMERGENCY PROVISIONS

17. An emergency[1] constitutes an affirmative defense to an action brought for noncompliance with a technology-based emission limit only if:

    (A) Properly signed, contemporaneous operating records or other credible evidence demonstrate that:

        (1) An emergency occurred and the operator can identify the cause(s) of the emergency;

        (2) The facility was operated properly (i.e. operated and maintained in accordance with the manufacturer's specifications, and in compliance with all regulatory requirements or a compliance plan), before the emergency occurred;

        (3) The operator took all reasonable steps to minimize levels of emissions that exceeded emissions standard, or other requirements in the permit; and,

        (4) The operator submitted a written notice of the emergency to the AQMD within two working days of the time when the emissions limitations were exceeded due to the emergency. The notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken; and

    (B) The operator complies with the breakdown provisions of Rule 430 – Breakdown Provisions, or subdivision (i) of Rule 2004 – Requirements, whichever is applicable. [3002(g), 430, 2004(i)]

18. The operator is excused from complying with any regulatory requirement that is suspended by the Executive Officer during a state of emergency or state of war emergency, in accordance with Rule 118 - Emergencies. [118]

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1 "Emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the operator, including acts of God, which: (A) requires immediate corrective action to restore normal operation; and (B) causes the facility to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency; and (C) is not caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

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SECTION K: TITLE V Administration

RECORDKEEPING PROVISIONS

19. In addition to any other recordkeeping requirements specified elsewhere in this permit, the operator shall keep records of required monitoring information, where applicable, that include:

    (A) The date, place as defined in the Title V permit, and time of sampling or measurements;

    (B) The date(s) analyses were performed;

    (C) The company or entity that performed the analyses;

    (D) The analytical techniques or methods used;

    (E) The results of such analyses; and

    (F) The operating conditions as existing at the time of sampling or measurement. [3004(a)(4)(B)]

20. The operator shall maintain records pursuant to Rule 109 and any applicable material safety data sheet (MSDS) for any equipment claimed to be exempt from a written permit by Rule 219 based on the information in those records. [219(t)]

21. The operator shall keep all records of monitoring data required by this permit or by regulatory requirements for a period of at least five years from the date of the monitoring sample, measurement, report, or application. [3004(a)(4)(E)]

REPORTING PROVISIONS

22. The operator shall comply with the following requirements for prompt reporting of deviations:

    (A) Breakdowns shall be reported as required by Rule 430 – Breakdown Provisions or subdivision (i) of Rule 2004 - Requirements, whichever is applicable.

(B) Other deviations from permit or applicable rule emission limitations, equipment operating conditions, or work practice standards, determined by observation or by any monitoring or testing required by the permit or applicable rules that result in emissions greater than those allowed by the permit or applicable rules shall be reported within 72 hours (unless a shorter reporting period is specified in an applicable State or Federal Regulation) of discovery of the deviation by contacting AQMD enforcement personnel assigned to this facility or otherwise calling (800) CUT-SMOG.

(C) A written report of such deviations reported pursuant to (B), and any corrective actions or preventative measures taken, shall be submitted to AQMD, in an AQMD approved format, within 14 days of discovery of the deviation.

(D) All other deviations shall be reported with the monitoring report required by condition no. 23. [3004(a)(5)]

23. Unless more frequent reporting of monitoring results are specified in other permit conditions or in regulatory requirements, the operator shall submit reports of any required monitoring to the AQMD at least twice per year. The report shall include a) a statement whether all monitoring required by the permit was conducted; and b) identification of all instances of deviations from permit or regulatory requirements. A report for the first six calendar months of the year is due by August 31 and a report for the last six calendar months of the year is due by February 28. [3004(a)(4)(F)]

24. The operator shall submit to the Executive Officer and to the Environmental Protection Agency (EPA), an annual compliance certification. For RECLAIM facilities, the certification is due when the Annual Permit Emissions Program (APEP) report is due and shall cover the same reporting period. For other facilities, the certification is due on March 1 for the previous calendar year. The certification need not include the period preceding the date the initial Title V permit was issued. Each compliance certification shall include:

(A) Identification of each permit term or condition that is the basis of the certification;

(B) The compliance status during the reporting period;

(C) Whether compliance was continuous or intermittent;

(D) The method(s) used to determine compliance over the reporting period and currently, and

(E) Any other facts specifically required by the Executive Officer to determine compliance.

The EPA copy of the certification shall be sent to: Director of the Air Division Attn: Air-3 USEPA, Region IX 75 Hawthorne St. San Francisco, CA 94105 [3004(a)(10)(E)]

25. All records, reports, and documents required to be submitted by a Title V operator to AQMD or EPA shall contain a certification of accuracy consistent with Rule 3003(c)(7) by a responsible official (as defined in Rule 3000). [3004(a)(12)]

PERIODIC MONITORING

26. All periodic monitoring required by this permit pursuant to Rule 3004(a)(4)(c) is based on the requirements and justifications in the AQMD document "Periodic Monitoring Guidelines for Title V Facilities" or in case-by-case determinations documented in the TitleV application file. [3004(a)(4)]

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

SECTION K: TITLE V Administration

FACILITY RULES

This facility is subject to the following rules and regulations

With the exception of Rule 402, 473, 477, 1118 and Rules 1401 through 1420, the following rules that are designated as non-federally enforceable are pending EPA approval as part of the state implementation plan. Upon the effective date of that approval, the approved rule(s) will become federally enforceable, and any earlier versions of those rules will no longer be federally enforceable.

RULE SOURCE	Adopted/Amended Date	FEDERAL Enforceability
RULE 109	5-2-2003	Federally enforceable
RULE 1110.2	2-1-2008	Federally enforceable
RULE 1110.2	9-7-2012	Non federally enforceable
RULE 1113	7-13-2007	Federally enforceable
RULE 1113	9-6-2013	Non federally enforceable
RULE 1171	2-1-2008	Federally enforceable
RULE 1171	5-1-2009	Non federally enforceable
RULE 118	12-7-1995	Non federally enforceable
RULE 1303(a)(1)-BACT	12-6-2002	Non federally enforceable
RULE 1303(a)(1)-BACT	5-10-1996	Federally enforceable
RULE 1303(b)(1)-Modeling	12-6-2002	Non federally enforceable
RULE 1303(b)(1)-Modeling	5-10-1996	Federally enforceable
RULE 1303(b)(2)-Offset	12-6-2002	Non federally enforceable
RULE 1303(b)(2)-Offset	5-10-1996	Federally enforceable
RULE 1304(a)-Modeling and Offset Exemption	6-14-1996	Federally enforceable
RULE 1470	5-4-2012	Non federally enforceable
RULE 2005	6-3-2011	Federally enforceable
RULE 2012	5-6-2005	Federally enforceable
RULE 204	10-8-1993	Federally enforceable
RULE 217	1-5-1990	Federally enforceable
RULE 219	5-3-2013	Non federally enforceable

FACILITY PERMIT TO OPERATE
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SECTION K: TITLE V Administration

RULE SOURCE	Adopted/Amended Date	FEDERAL Enforceability
RULE 219	9-4-1981	Federally enforceable
RULE 3002	11-14-1997	Federally enforceable
RULE 3002	11-5-2010	Non federally enforceable
RULE 3003	11-14-1997	Federally enforceable
RULE 3003	11-5-2010	Non federally enforceable
RULE 3004(a)(4)-Periodic Monitoring	12-12-1997	Federally enforceable
RULE 3005	11-14-1997	Federally enforceable
RULE 3005	11-5-2010	Non federally enforceable
RULE 3007	10-8-1993	Federally enforceable
RULE 304	6-6-2014	Non federally enforceable
RULE 401	11-9-2001	Non federally enforceable
RULE 401	3-2-1984	Federally enforceable
RULE 402	5-7-1976	Non federally enforceable
RULE 407	4-2-1982	Federally enforceable
RULE 408	5-7-1976	Federally enforceable
RULE 409	8-7-1981	Federally enforceable
RULE 430	7-12-1996	Non federally enforceable
RULE 431.1	6-12-1998	Federally enforceable
RULE 431.2	5-4-1990	Federally enforceable
RULE 431.2	9-15-2000	Non federally enforceable
RULE 475	10-8-1976	Federally enforceable
RULE 475	8-7-1978	Non federally enforceable
RULE 701	6-13-1997	Federally enforceable
40CFR 60 Subpart GG	2-27-2014	Federally enforceable
40CFR 63 Subpart ZZZZ	1-30-2013	Federally enforceable
40CFR 72 - Acid Rain Provisions	11-24-1997	Federally enforceable

FACILITY PERMIT TO OPERATE
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APPENDIX A: NOX AND SOX EMITTING EQUIPMENT EXEMPT FROM WRITTEN PERMIT PURSUANT TO RULE 219

NONE

FACILITY PERMIT TO OPERATE
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APPENDIX B: RULE EMISSION LIMITS
[RULE 1113 07-13-2007]

(1) Except as provided in paragraphs (c)(2), (c)(3), (c)(4), and specified coatings averaged under (c)(6), no person shall supply, sell, offer for sale, manufacture, blend, or repackage any architectural coating for use in the District which, at the time of sale or manufacture, contains more than 250 grams of VOC per liter of coating (2.08 pounds per gallon), less water, less exempt compounds, and less any colorant added to tint bases, and no person shall apply or solicit the application of any architectural coating within the District that exceeds 250 grams of VOC per liter of coating as calculated in this paragraph.

(2) Except as provided in paragraphs (c)(3), (c)(4), and designated coatings averaged under (c)(6), no person shall supply, sell, offer for sale, manufacture, blend, or repackage, for use within the District, any architectural coating listed in the Table of Standards which contains VOC (excluding any colorant added to tint bases) in excess of the corresponding VOC limit specified in the table, after the effective date specified, and no person shall apply or solicit the application of any architectural coating within the District that exceeds the VOC limit as specified in this paragraph. No person shall apply or solicit the application within the District of any industrial maintenance coatings, except anti-graffiti coatings, for residential use or for use in areas such as office space and meeting rooms of industrial, commercial or institutional facilities not exposed to such extreme environmental conditions described in the definition of industrial maintenance coatings; or of any rust-preventative coating for industrial use, unless such a rust preventative coating complies with the Industrial Maintenance Coating VOC limit specified in the Table of Standards.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

~~APPENDIX B: RULE EMISSION LIMITS~~
[RULE 1113 07-13-2007]
TABLE OF STANDARDS
VOC LIMITS

Grams of VOC Per Liter of Coating, Less Water and Less Exempt Compounds

COATING CATEGORY	Ceiling Limit*	Current Limit	Effective Date					
			1/1/03	1/1/04	1/1/05	7/1/06	7/1/07	7/1/08
Bond Breakers	350							
Clear Wood Finishes	350					275		
Varnish	350					275		
Sanding Sealers	350					275		
Lacquer	680	550			275			
Clear Brushing Lacquer	680				275			
Concrete-Curing Compounds	350						100	
Concrete-Curing Compounds For Roadways and Bridges**	350							
Dry-Fog Coatings	400						150	
Fire-Proofing Exterior Coatings	450	350						
Fire-Retardant Coatings***								
Clear	650							
Pigmented	350							
Flats	250	100						50
Floor Coatings	420		100			50		
Graphic Arts (Sign) Coatings	500							
Industrial Maintenance (IM) Coatings	420			250		100		
High Temperature IM Coatings			420					
Zinc-Rich IM Primers	420		340			100		
Japans/Faux Finishing Coatings	700	350						
Magnesite Cement Coatings	600	450						
Mastic Coatings	300							
Metallic Pigmented Coatings	500							
Multi-Color Coatings	420	250						
Nonflat Coatings	250		150			50		

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

APPENDIX B: RULE EMISSION LIMITS
[RULE 1113 07-13-2007]

COATING CATEGORY	Ceiling Limit*	Current Limit	Effective Date					
			1/1/03	1/1/04	1/1/05	7/1/06	7/1/07	7/1/08
Nonflat High Gloss	250		150				50	
Pigmented Lacquer	680	550			275			
Pre-Treatment Wash Primers	780		420					
Primers, Sealers, and Undercoaters	350		200			100		
Quick-Dry Enamels	400		250			150	50	
Quick-Dry Primers, Sealers, and Undercoaters	350		200			100		
Recycled Coatings			250					
Roof Coatings Roof Coatings, Aluminum	300 500		250		50 100			
Roof Primers, Bituminous	350		350					
Rust Preventative Coatings	420		400			100		
Shellac Clear Pigmented	 730 550							
Specialty Primers	350					250	100	
Stains Stains, Interior	350 250		250				100	
Swimming Pool Coatings Repair Other	 650 340		340					
Traffic Coatings	250	150					100	
Waterproofing Sealers	400		250			100		
Waterproofing Concrete/Masonry Sealers	400					100		
Wood Preservatives Below-Ground Other	 350 350							

* The specified limits remain in effect unless revised limits are listed in subsequent columns in the Table of Standards.

** Does not include compounds used for curbs and gutters, sidewalks, islands, driveways and other miscellaneous concrete areas.

*** The Fire-Retardant Coating category will be eliminated on January 1, 2007 and subsumed by the coating category for which they are formulated.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

~~APPENDIX B: RULE EMISSION LIMITS~~

[RULE 1113 07-13-2007]

TABLE OF STANDARDS (cont.)
VOC LIMITS

Grams of VOC Per Liter of Material

COATING	Limit
Low-Solids Coating	120

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

APPENDIX B: RULE EMISSION LIMITS
[RULE 1113 09-06-2013]

(1) Except as provided in paragraphs (c)(3), (c)(4), and designated coatings averaged under (c)(6), no person shall supply, sell, offer for sale, market, manufacture, blend, repackage, apply, store at a worksite, or solid the application of any architectural coating within in the District:

(A) That is listed in the Table of Standards 1 and contains VOC (exclusing any colorant added to tint bases) in excess of the corresponding VOC limit specified in the table, after the effective date specified; or

(B) That is not listed in the Table of Standards 1, and contains VOC (excluding any colorant added to tint bases) in excess of 250 grams of VOC per liter of coating (2.08 pounds per gallon), less water, less exempt compounds, until January 1, 2014, at which time the limit drops to 50 grams of VOC per liter of coating, less water, less exempt compounds (0.42 pounds per gallon).

(2) No person within the District shall add colorant at the point of sale that is listed in the Table of Standards 2 and contains VOC in excess of the corresponding VOC limit specified in the Table of Standards 2, after the effective date specified.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

APPENDIX B: RULE EMISSION LIMITS

[RULE 1113 09-06-2013]

TABLE OF STANDARDS 1
VOC LIMITS

Grams of VOC Per Liter of Coating, Less Water and Less Exempt Compounds

COATING CATEGORY	Ceiling Limit[1]	Current Limit[2]	Effective Date		
			7/1/08	1/1/12	1/1/14
Bond Breakers		350			
Clear Wood Finishes		275			
Varnish	350	275			
Sanding Sealers	350	275			
Lacquer		275			
Concrete-Curing Compounds		100			
Concrete-Curing Compounds For Roadways and Bridges[3]		350			
Concrete Surface Retarder		250			50
Driveway Sealer		100		50	
Dry-Fog Coatings		150			50
Faux Finishing Coatings					
Clear Topcoat		350		200	100
Decorative Coatings		350			
Glazes		350			
Japan		350			
Trowel Applied Coatings		350		150	50
Fire-Proofing Coatings		350			150
Flats	250	50	50		
Floor Coatings	100	50			
Form Release Compound		250			100
Graphic Arts (Sign) Coatings		500			150
Industrial Maintenance (IM) Coatings	420	100			
High Temperature IM Coatings		420			
Non-SacrificialAnti-Graffiti Coatings		100			
Zinc-Rich IM Primers		100			
Magnesite Cement Coatings		450			
Mastic Coatings		300			100
Metallic Pigmented Coatings	500	500			150
Multi-Color Coatings		250			
Nonflat Coatings	150	50			
Pre-Treatment Wash Primers		420			
Primers, Sealers, and Undercoaters		100			
Reactive Penetrating Sealers		350			

[RULE 1113 09-06-2013]

Recycled Coatings		250			
Roof Coatings Roof Coatings, Aluminum		50 100			
Roof Primers, Bituminous		350			
Rust Preventative Coatings	400	100			
Sacrificial Anti-Graffiti Coatings		100		50	
Shellac Clear		730			

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

~~APPENDIX B: RULE EMISSION LIMITS~~
[RULE 1113 09-06-2013]

COATING CATEGORY	Ceiling Limit[1]	Current Limit[2]	Effective Date		
			7/1/08	1/1/12	1/1/14
Pigmented		550			
Specialty Primers		100			
Stains	350	100			
Stains, Interior	250	250			
Stone Consolidant		450			
Swimming Pool Coatings					
Repair		340			
Other		340			
Traffic Coatings		100			
Waterproofing Sealers		100			
Waterproofing Concrete/Masonry Sealers		100			
Wood Preservatives		350			

1 The specified ceiling limits are applicable to products sold under the Averaging Compliance Option.

2 The specified limits remain in effect unless revised limits are listed in subsequent columns in the Table of Standards.

3. Does not include compounds used for curbs and gutters, sidewalks, islands, driveways and other miscellaneous concrete areas.

TABLE OF STANDARDS 1 (cont.)
VOC LIMITS

Grams of VOC Per Liter of Material

COATING	Limit
Low-Solids Coating	120

TABLE OF STANDARDS 2
VOC LIMITS FOR COLORANTS

Grams of VOC Per Liter of Colorant
Less Water and Less Exempt Compounds

COLORANT ADDED TO	Limit[4]
Architectural Coatings, excluding IM Coatings	50
Solvent-Based IM	600
Waterborne IM	50

4. Effective January 1, 2014.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

APPENDIX B: RULE EMISSION LIMITS
[RULE 1171 02-01-2008]

(1) Solvent Requirements

A person shall not use a solvent to perform solvent cleaning operations unless the solvent complies with the applicable requirements set forth below:

	CURRENT LIMITS*	EFFECTIVE 1/1/2008*	EFFECTIVE 1/1/2009
SOLVENT CLEANING ACTIVITY	**VOC g/l (lb/gal)**	**VOC g/l (lb/gal)**	**VOC g/l (lb/gal)**
(A) Product Cleaning During Manufacturing Process Or Surface Preparation For Coating, Adhesive, Or Ink Application			
(i) General	25 (0.21)		
(ii) Electrical Apparatus Components & Electronic Components	100 (0.83)		
(iii) Medical Devices & Pharmaceuticals	800 (6.7)		
(B) Repair and Maintenance Cleaning			
(i) General	25 (0.21)		
(ii) Electrical Apparatus Components & Electronic Components	100 (0.83)		

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

~~APPENDIX B: RULE EMISSION LIMITS~~
[RULE 1171 02-01-2008]

	CURRENT LIMITS*	EFFECTIVE 1/1/2008*	EFFECTIVE 1/1/2009
SOLVENT CLEANING ACTIVITY (cont.)	**VOC g/l (lb/gal)**	**VOC g/l (lb/gal)**	**VOC g/l (lb/gal)**
(iii) Medical Devices & Pharmaceuticals			
(A) Tools, Equipment, & Machinery	800 (6.7)		
(B) General Work Surfaces	600 (5.0)		
(C) Cleaning of Coatings or Adhesives Application Equipment	25 (0.21)		
(D) Cleaning of Ink Application Equipment			
(i) General	25 (0.21)		
(ii) Flexographic Printing	25 (0.21)		
(iii) Gravure Printing			
(A) Publication	100 (0.83)		
(B) Packaging	25 (0.21)		
(iv) Lithographic (Offset) or Letter Press Printing			
(A) Roller Wash, Blanket Wash, & On-Press Components			
(I) Newsprint	100 (0.83)		

FACILITY PERMIT TO OPERATE
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APPENDIX B: RULE EMISSION LIMITS
[RULE 1171 02-01-2008]

	CURRENT LIMITS*	EFFECTIVE 1/1/2008*	EFFECTIVE 1/1/2009
SOLVENT CLEANING ACTIVITY (cont.)	**VOC g/l (lb/gal)**	**VOC g/l (lb/gal)**	**VOC g/l (lb/gal)**
(II) Other Substrates	500 (4.2)	100 (0.83)	
(B) Removable Press Components	25 (0.21)		
(v) Screen Printing	500 (4.2)	100 (0.83)	
(vi) Ultraviolet Ink/ Electron Beam Ink Application Equipment (except screen printing)	650 (5.4)	650 (5.4)	100 (0.83)
(vii) Specialty Flexographic Printing	100 (0.83)		
(E) Cleaning of Polyester Resin Application Equipment	25 (0.21)		

* The specified limits remain in effect unless revised limits are listed in subsequent columns.

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

APPENDIX B: RULE EMISSION LIMITS

[RULE 1171 05-01-2009]

(1) Solvent Requirements

A person shall not use a solvent to perform solvent cleaning operations unless the solvent complies with the applicable requirements set forth below:

	CURRENT LIMITS*	EFFECTIVE 1/1/2010
SOLVENT CLEANING ACTIVITY	**VOC g/l (lb/gal)**	**VOC g/l (lb/gal)**
(A) Product Cleaning During Manufacturing Process Or Surface Preparation For Coating, Adhesive, Or Ink Application		
(i) General	25 (0.21)	
(ii) Electrical Apparatus Components & Electronic Components	100 (0.83)	
(iii) Medical Devices & Pharmaceuticals	800 (6.7)	
(B) Repair and Maintenance Cleaning		
(i) General	25 (0.21)	
(ii) Electrical Apparatus Components & Electronic Components	100 (0.83)	

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

APPENDIX B RULE EMISSION LIMITS

[RULE 1171 05-01-2009]

SOLVENT CLEANING ACTIVITY (cont.)	CURRENT LIMITS* VOC g/l (lb/gal)	EFFECTIVE 1/1/2010 VOC g/l (lb/gal)
(iii) Medical Devices & Pharmaceuticals		
(A) Tools, Equipment, & Machinery	800 (6.7)	
(B) General Work Surfaces	600 (5.0)	
(C) Cleaning of Coatings or Adhesives Application Equipment	25 (0.21)	
(D) Cleaning of Ink Application Equipment		
(i) General	25 (0.21)	
(ii) Flexographic Printing	25 (0.21)	
(iii) Gravure Printing		
(A) Publication	100 (0.83)	
(B) Packaging	25 (0.21)	
(iv) Lithographic (Offset) or Letter Press Printing		
(A) Roller Wash, Blanket Wash, & On-Press Components	100 (0.83)	

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

APPENDIX B - RULE EMISSION LIMITS

[RULE 1171 05-01-2009]

	CURRENT LIMITS*	EFFECTIVE 1/1/2010
SOLVENT CLEANING ACTIVITY (cont.)	**VOC g/l (lb/gal)**	**VOC g/l (lb/gal)**
(B) Removable Press Components	25 (0.21)	
(v) Screen Printing	100 (0.83)	
(vi) Ultraviolet Ink/ Electron Beam Ink Application Equipment (except screen printing)	650 (5.4)	100 (0.83)
(vii) Specialty Flexographic Printing	100 (0.83)	
(E) Cleaning of Polyester Resin Application Equipment	25 (0.21)	

* The specified limits remain in effect unless revised limits are listed in subsequent columns.

[40CFR 72 - Acid Rain Provisions 11-24-1997]

1. A Title V permit revision is not required for emission increases that are authorized by allowances acquired under the Acid Rain Program, provided that the increases do not trigger a Title V permit revision under any other applicable requirement. [70.6 (a)(4)(ii)]

Monitoring Requirements

2. The owners and operators and, to the extent applicable, the designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR Parts 74, 75, and 76. [40 CFR 72.50, 72.31, 72.9(b)(1)]

3. The emissions measurements recorded and reported in accordance with 40 CFR Part 75 shall be used to determine compliance by the unit with the acid rain emissions limitations and emissions reduction requirements for sulfur dioxide (SO_2) under the Acid Rain Program. [40 CFR 72.9(b)(2), 40 CFR 75.2]

4. The requirements of 40 CFR Parts 74 and 75 shall not affect the responsibility of the operator to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements and other provisions of this permit. [40 CFR 72.9(b)(3), 40 CFR 72.5]

Sulfur Dioxide Requirements

5. The owners and operators of each source and each affected unit at the source shall:
(A) Hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR Part 73, Section 73.34(C)) not less than the total annual emissions of SO_2 for the previous calendar year from the unit; and, [40 CFR 72.9(c)(i)],

(B) Comply with the applicable acid rain emissions limitations for SO_2.[40 CFR 72.9(c)(ii)]

6. Each ton of SO_2 emitted in excess of the acid rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR 72.9(g)(7)]

[40CFR 72 - Acid Rain Provisions 11-24-1997]

7. SO_2 allowances shall be held in, deducted from, or transferred among allowance tracking system accounts in accordance with the Acid Rain Program. [40 CFR 72.9(g)(4)]

8. A SO_2 allowance shall not be deducted in order to comply with the requirements under paragraph 41(A) of the SO_2 requirements prior to the calendar year for which the allowance was allocated. [40 CFR 72.9(g)(5)]

9. An affected unit shall be subject to the SO_2 requirements under the Acid Rain Program as follows:[40 CFR 72.6(a)]

   (A) Starting January 1, 2000, an affected unit under 40 CFR Part 72, Section 72.6(a)(2); or [40 CFR 72.6(a)(2)]

   (B) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR Part 75, an affected unit under 40 CFR Part 72, Section 72.6(a)(3). [40CFR 72.6(a)(3)]

10. An allowance allocated by the EPA administrator under the Acid Rain Program is a limited authorization to emit SO_2 in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the acid rain permit application, the acid rain permit, or the written exemption under 40 CFR Part 72, Sections 72.7, 72.8, or 72.14, and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization. [40 CFR 72.9 (c)(6)]

11. An allowance allocated by the EPA Administrator under the Acid Rain Program does not constitute a property right. [40 CFR 72.9(c)(7)]

Excess Emissions Requirements

12. The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77. [40 CFR 72.9(e)]

[40CFR 72 - Acid Rain Provisions 11-24-1997]

13. The owners and operators of an affected unit that has excess emissions in any calendar year shall: [40 CFR 72.9(e)(2)]

(A) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR Part 77; and[40 CFR 72.9(e)(2)(i)]

(B) Comply with the terms of an approved offset plan, as required by 40 CFR Part 77. [40 CFR 72.9(e)(2)(ii)]

Recordkeeping and Reporting Requirements

14. Unless otherwise provided, the owners and operators of the source and each affected unit at the source that are subject to the acid rain provisions under Title IV shall keep on site at the source each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the EPA Administrator or the Executive Officer: [40 CFR 72.9(f)(1)]

(A) The certificate of representation for the designated representative for the source and each affected unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site at the source beyond such five year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative; [40 CFR 72.9(f)(1)(i)]

(B) All emissions monitoring information, in accordance with 40 CFR Part 75; [40 CFR 72.9(f)(1)(ii)]

(C) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and, [40 CFR 72.9(f)(1)(iii)]

(D) Copies of all documents used to complete an acid rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program. [40 CFR 72.9(f)(1)(iv)]

[40CFR 72 - Acid Rain Provisions 11-24-1997]

15. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR Part 72 Subpart I and 40 CFR Part 75. [40 CFR 72.9(f)(2)]

Liability

16. Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete acid rain permit application, an acid rain permit, or a written exemption under 40 CFR Part 72, Sections 72.7, 72.8, or 72.14, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to Section 113(c) of the Act. [40 CFR 72.9 (g)(1)]

17. Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to Section 113(c) of the Act and 18 U.S.C. 1001. [40 CFR 72.9 (g)(2)]

18. No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect. [40 CFR 72.9 (g)(3)]

19. Each affected source and each affected unit shall meet the requirements of the Acid Rain Program. [40 CFR 72.9 (g)(4)]

20. Any provision of the Acid Rain Program that applies to an affected source (including a provision applicable to the designated representative of an affected source) shall also apply to the owners and operators of such source and of the affected units at the source. [40 CFR 72.9 (g)(5)]

[40CFR 72 - Acid Rain Provisions 11-24-1997]

21. Any provision of the Acid Rain Program that applies to an affected unit (including a provision applicable to the designated representative of an affected unit) shall also apply to the owners and operators of such unit. Except as provided under 40 CFR Part 72, Section 72.44 (Phase II repowering extension plans) and 40 CFR Part 76, Section 76.11 (NOx averaging plans), and except with regard to the requirements applicable to units with a common stack under 40 CFR Part 75 (including 40 CFR Part 75, Sections 75.16, 75.17, and 75.18), the owners and operators and the designated representative of one affected unit shall not be liable for any violation by any other affected unit of which they are not owners or operators or the designated representative and that is located at a source of which they are not owners or operators or the designated representative. [40 CFR 72.9 (g)(6)]

22. Each violation of a provision of 40 CFR Parts 72, 73, 74, 75, 76, 77, and 78 by an affected source or affected unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act. [40 CFR 72.9 (g)(7)]

Effect on Other Authorities

23. No provision of the Acid Rain Program, an acid rain permit application, an acid rain permit, or a written exemption under 40 CFR Part 72, Sections 72.7, 72.8, or 72.14 shall be construed as: [40 CFR 72.9 (h)]

(A) Except as expressly provided in Title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an affected source or affected unit from compliance with any other provision of the Act, including the provisions of Title I of the Act relating to applicable National Ambient Air Quality Standards or state implementation plans; [40 CFR 72.9 (h)(1)]

(B) Limiting the number of allowances a unit can hold; *provided*, that the number of allowances held by the unit shall not affect the source's obligation to comply with any other provisions of the Act; [40 CFR 72.9 (h)(2)]

FACILITY PERMIT TO OPERATE
BICENT (CALIFORNIA) MALBURG LLC

APPENDIX B: RULE EMISSION LIMITS
[40CFR 72 - Acid Rain Provisions 11-24-1997]

(C) Requiring a change of any kind in any state law regulating electric utility rates and charges, affecting any state law regarding such state regulation, or limiting such state regulation, including any prudence review requirements under such state law; [40 CFR 72.9 (h)(3)]

(D) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or, [40 CFR 72.9 (h)(4)]

(E) Interfering with or impairing any program for competitive bidding for power supply in a state in which such program is established. [40 CFR 72.9 (h)(5)]

South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178

Attachment 3

Emissions Evaluations

Attachment 3 Table 1

Maximum Hourly, Daily, and Annual Emissions Calculations

Number of Identical Engines: 2

Case #: Max Ops Scenario

Turbine Model: SGT-800 upgrade

Input data per unit:

Max Operation hrs/day	Max Annual Op hrs	Avg # of Cold Startups day	Avg # of Warm Startups day	Avg # of Hot Startups day	Cold Startup Time hrs	Warm Startup Time hrs	Hot Startup Time hrs	Shutdown Time hrs	Cold Starts events/yr	Warm Starts events/yr	Hot Starts events/yr	Estimated Shutdowns yr	Max Estimated Shutdowns day
24	8760	1	1	0	2	1.5	1	0.5	30	26	0	56	2

	Cold Startup Emissions lbs/event	Warm Startup Emissions lbs/event	Hot Startup Emissions lbs/event	Shutdown Emissions lbs/event	Steady State Emissions w/o DB lbs/hr	Steady State Emissions w/DB lbs/hr	Worst Hr Emissions w/DB lbs/hr	Cold Start hrs/yr	Total SU/SD Time Warm Start hrs/yr	Hot Start hrs/yr	Shutdown hrs/yr	Annual Steady State Non SU/SD hrs/yr	Total Annual Emissions- SU/SDs Cold SU lbs/yr	Warm SU lbs/yr	Hot SU lbs/yr	Shutdowns lbs/yr
					Case S9	***Case S13***	***Case S13***									
NOx	122.80	51.30	51.30	4.50	3.54	4.16	4.16	60	39	0	28	8633	3684.0	1333.8	0.00	252.0
CO	204.80	59.90	59.90	10.80	2.16	2.53	2.53			Total SU-SD Hours/Yr:		127	6144.0	1557.4	0.00	604.8
VOC	1.75	1.55	1.55	0.71	0.74	0.87	0.87				Steady State Hour Breakdown		52.5	40.3	0.00	39.8
SOx	0.28	0.21	0.14	0.07	0.14	0.16	0.16					Hrs/yr	8.3	5.4	0.00	3.9
PM10	3.62	2.72	1.81	0.91	1.81	2.41	2.41		Duct burner firing, max hours/yr:			8633	108.6	70.6	0.00	50.7
PM2.5	3.62	2.72	1.81	0.91	1.81	2.41	2.41		Non-duct burner firing, hours/yr:			0	108.6	70.6	0.00	50.7
NH3	0.00	0.00	0.00	0.00	3.27	3.84	3.84						0.0	0.0	0.00	0.0

Notes:

		38F	38F	38 F
Cold start plus shutdown =	2.5	hrs	
Warm start plus shutdown =	2	hrs	
Hot start plus shutdown =	1.5	hrs	
Shut down =	0.5	hrs	

Annual Fuel Use Values	mmbtu/hr	hrs/yr*		mmbtu/yr	
SU/SD Case S9 w/o DB	491.76	127		62453.52	
Case S9 w/o DB	491.76	0		0	
Case S15 w/DB	555.81	8633		4798307.73	
			Per GT/DB	4860761.25	mmbtu/yr
			Per GT/DB	4774.81	mmscf/yr
			Total All GTs/DBs =	9549.63	mmscf/yr

Maximum Estimated Annual Emissions

Ops Scenario	NOx lbs/yr	CO lbs/yr	VOC lbs/yr	SOx lbs/yr	PM10 lbs/yr	PM2.5 lbs/yr	NH3 lbs/yr
Cold Startups	3684.0	6144.0	52.5	8.3	108.6	108.6	
Warm Startups	1333.8	1557.4	40.3	5.4	70.6	70.6	
Hot Startups	0.0	0.0	0.0	0.0	0.0	0.0	
Shutdowns	252.0	604.8	39.8	3.9	50.7	50.7	
Steady State w/o DB	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Steady State w/DB	35896.0	21832.9	7502.1	1381.3	20796.9	20796.9	33159.4
1 Turbine Total, lbs/yr:	*41165.8*	*30139.1*	*7634.6*	*1398.9*	*21026.8*	*21026.8*	*33159.4*
1 Turbine Total, tons/yr:	20.58	15.07	3.82	0.70	10.51	10.51	16.58

	NOx* tpy	CO tpy	VOC tpy	SOx tpy	PM10 tpy	PM2.5 tpy	NH3 tpy
Total Tons/Yr All Units:	**41.17**	**30.14**	**7.63**	**1.40**	**21.03**	**21.03**	**33.16**
Existing Facility PTE: (see note 4)	39.4	45.81	19.42	1.284	29.25	29.25	
Emissions Difference: (increases versus decreases)	1.77	-15.67	-11.79	0.11	-8.22	-8.22	
SCAQMD Air Agency Offset Trigger Levels, TPY:	4	29	4	4	4	4	

Maximum Estimated Daily Emissions based on a 24 Hr Ops Cold Day w/SUs/SDs

Max Daily Emissions Assumptions (Per turbine):		Hours
cold starts per day =	1	2
warm starts per day =	1	1.5
hot starts per day =	0	0
shutdowns per day =	1	0.5
Steady state ops hrs/day =	(emission values for case S13)	20

	1 GT lbs/day	All GTs lbs/day
NOx	261.80	523.60
CO	326.00	652.00
VOC	21.39	42.78
SOx	3.71	7.43
PM10	55.42	110.84
PM2.5	55.42	110.84
NH3	76.80	153.60

Maximum Estimated Hourly Emissions

Max hourly emissions assumptions (Per turbine):
1. worst case hour is the first 60 minutes of a cold start event for NOx and CO, with all others based on Case S13 steady state values

	1 GT lbs/hr	All GTs lbs/hr
NOx	61.40	122.80
CO	102.40	204.80
VOC	0.87	1.74
SOx	0.16	0.32
PM10	2.41	4.82
PM2.5	2.41	4.82
NH3	3.84	7.68

GHG Emissions Estimates

Fuel:	Natural Gas				short		CO2e	
Btu/scf:	1018	HHV	*Emissions*	lbs/yr	tons/yr	IPCC SAR	short	
Heat Rate:	4860761.25	mmbtu/yr		5.68E+08	2.84E+05	Values	tons/yr	
Fuel Rate:	4774.8146	mmscf/yr		1.07E+04	5.36E+00	1	2.84E+05	
Emissions Factors				1.07E+03	5.36E-01	21	1.13E+02	
CO2	116.89	lbs/mmbtu				310	1.66E+02	
CH4	0.002205	lbs/mmbtu				Total CO2e:	284,366	short TPY	1 Engine
N2O	0.0002205	lbs/mmbtu				Total CO2e:	568,732	short TPY	All Engines
						Total CO2e:	258,514	metric TPY	1 Engine
						Total CO2e:	**517,029**	**metric TPY**	All Engines

Emissions Factors for GHG, 40 CFR 98, Subpart C, Tables C-1, C-2.

1 short ton = 2000 lbs, 1 metric ton = 2200 lbs.

SCAQMD 30 Day Average Controlled Emissions per the CPP Manual

The maximum daily controlled emissions rate multiplied by the maximum days operated in any calendar month, and then divided by a constant of 30.

In the case of Malburg, the max daily emissions as shown to the left incorporate 2 SUs and 1 SD per day plus steady state operations. These values cannot be used to calculate the 30 day avg emissions because the current PTO limits monthly SUs to <=10, i.e., 5 cold SUs and 5 non-cold SUs. Therefore the average 30 day emissions have been calculated as follows:
1. 720 hrs per month = 30 days
2. 5 cold starts per month, 5 non-cold starts per month, and 10 SD per month
3. all remaining hours are at steady state operation conditions per Case S13

Steady State hours/month = 697.5

		lbs NOx	CO	VOC	SOx	PM10/2.5
5 Monthly Cold SU Emissions		614.00	1024.00	8.75	1.38	18.10
5 Monthly Non-Cold SU Emissions		256.50	299.50	7.75	1.04	13.58
10 Monthly SD Emissions		45.00	108.00	7.10	0.70	9.05
Monthly Steady State Emissions		2901.60	1761.19	606.13	110.21	1680.28
1 GT/DB	30 Day Avg Emissions	3817	3193	630	113	1721
All GT/DB	30 Day Avg Emissions	7634	6385	1259	227	3442
Current PTO Values	30 Day Avg Emissions	Note 1	7633	3236	214	4876

Notes:

1. existing facility NOx PTE based on RTC allocation + holdings in 2017
2. SU/SD data for existing turbine applied to turbine upgrade
3. case 9, 13, and 15 data is for the upgraded turbines
4. facility PTE is turbines/DBs plus ICE plus Ctower

Data References:

1. Siemens Peformance data sheet for the SGT800 upgrade dated 7/13/17.
2. SCAQMD Facility Permit, #155474, dated 11/3/15.
3. SCAQMD FDOC Analysis for Malburg LLC, dated 12/12/02.
4. SCAQMD letter dated 12/29/15, NOx RTC Reductions/Adjustments for Compliance Year 2016 and Beyond.
5. SCAQMD Facility Permit, #155474, dated 7/1/17, Rev #12, RECLAIM RTC Updated Allocation and Holdings.

indicates an input value is required

indicates a cell or group of cells which may required adjustments to cell formulas

Attachment 3 Table 2

Maximum Hourly, Daily, and Annual Emissions Calculations

Number of Identical Engines: 2

Case #: AVG Ops Scenario

Turbine Model: SGT-800 upgrade

Input data per unit:

Max Operation hrs/day	Max Annual Op hrs	Avg # of Cold Startups day	Avg # of Warm Startups day	Avg # of Hot Startups day	Cold Startup Time hrs	Warm Startup Time hrs	Hot Startup Time hrs	Shutdown Time hrs	Cold Starts events/yr	Warm Starts events/yr	Hot Starts events/yr	Estimated Shutdowns yr	Max Estimated Shutdowns day
24	8760	1	1	0	2	1.5	1	0.5	30	26	0	56	2

	Cold Startup Emissions lbs/event	Warm Startup Emissions lbs/event	Hot Startup Emissions lbs/event	Shutdown Emissions lbs/event	Steady State Emissions w/o DB lbs/hr	Steady State Emissions w/DB lbs/hr	Worst Hr Emissions w/DB lbs/hr	Cold Start hrs/yr	Total SU/SD Time Warm Start hrs/yr	Hot Start hrs/yr	Shutdown hrs/yr	Annual Steady State Non SU/SD hrs/yr	Total Annual Emissions- SU/SDs Cold SU lbs/yr	Warm SU lbs/yr	Hot SU lbs/yr	Shutdowns lbs/yr
					Case S11	***Case S15***	***Case S13***									
NOx	122.80	51.30	51.30	4.50	3.46	4.08	4.16	60	39	0	28	8633	3684.0	1333.8	0.00	252.0
CO	204.80	59.90	59.90	10.80	2.11	2.48	2.53			Total SU-SD Hours/Yr:		127	6144.0	1557.4	0.00	604.8
VOC	1.75	1.55	1.55	0.71	0.72	0.85	0.87				Steady State Hour Breakdown		52.5	40.3	0.00	39.8
SOx	0.28	0.21	0.14	0.07	0.13	0.15	0.16					Hrs/yr	8.3	5.4	0.00	3.9
PM10	3.46	2.60	1.73	0.87	1.69	2.28	2.35		Duct burner firing, max hours/yr:			8633	103.8	67.6	0.00	48.7
PM2.5	3.46	2.60	1.73	0.87	1.69	2.28	2.35		Non-duct burner firing, hours/yr:			0	103.8	67.6	0.00	48.7
NH3	0.00	0.00	0.00	0.00	3.32	3.89	4.01						0.0	0.0	0.00	0.0

Notes:

		65F	65F	38 F
Cold start plus shutdown =	2.5	hrs	
Warm start plus shutdown =	2	hrs	
Hot start plus shutdown =	1.5	hrs	
Shut down =	0.5	hrs	

Annual Fuel Use Values	mmbtu/hr	hrs/yr*		mmbtu/yr	
SU/SD Case S11 w/o DB	474.61	127		60275.47	
Case S11 w/o DB	474.61	0		0	
Case S15 w/DB	555.81	8633		4798307.73	
			Per GT/DB	4858583.2	mmbtu/yr
			Per GT/DB	4772.68	mmscf/yr
			Total All GTs/DBs =	9545.35	mmscf/yr

Maximum Estimated Annual Emissions

Ops Scenario	NOx lbs/yr	CO lbs/yr	VOC lbs/yr	SOx lbs/yr	PM10 lbs/yr	PM2.5 lbs/yr	NH3 lbs/yr
Cold Startups	3684.0	6144.0	52.5	8.3	103.8	103.8	
Warm Startups	1333.8	1557.4	40.3	5.4	67.6	67.6	
Hot Startups	0.0	0.0	0.0	0.0	0.0	0.0	
Shutdowns	252.0	604.8	39.8	3.9	48.7	48.7	
Steady State w/o DB	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Steady State w/DB	35222.6	21409.8	7338.1	1295.0	19683.2	19683.2	33582.4
1 Turbine Total, lbs/yr:	*40492.4*	*29716.0*	*7470.6*	*1312.5*	*19903.4*	*19903.4*	*33582.4*
1 Turbine Total, tons/yr:	20.25	14.86	3.74	0.66	9.95	9.95	16.79

	NOx* tpy	CO tpy	VOC tpy	SOx tpy	PM10 tpy	PM2.5 tpy	NH3 tpy
Total Tons/Yr All Units:	**40.49**	**29.72**	**7.47**	**1.31**	**19.90**	**19.90**	**33.58**
Existing Facility PTE: (see note 4)	39.4	45.81	19.42	1.284	29.25	29.25	
Emissions Difference: (increases versus decreases)	1.09	-16.09	-11.95	0.03	-9.35	-9.35	
SCAQMD Air Agency Offset Trigger Levels, TPY:	4	29	4	4	4	4	

Maximum Estimated Daily Emissions based on a 24 Hr Ops Cold Day w/SUs/SDs

Max Daily Emissions Assumptions (Per turbine):		Hours
cold starts per day =	1	2
warm starts per day =	1	1.5
hot starts per day =	0	0
shutdowns per day =	1	0.5
Steady state ops hrs/day =	(emission values for case S13)	20

	1 GT lbs/day	All GTs lbs/day
NOx	261.80	523.60
CO	326.00	652.00
VOC	21.39	42.78
SOx	3.71	7.43
PM10	53.93	107.86
PM2.5	53.93	107.86
NH3	80.20	160.40

Maximum Estimated Hourly Emissions

Max hourly emissions assumptions (Per turbine):
1. worst case hour is the first 60 minutes of a cold start event for NOx and CO, with all others based on Case S13 steady state values

	1 GT lbs/hr	All GTs lbs/hr
NOx	61.40	122.80
CO	102.40	204.80
VOC	0.85	1.70
SOx	0.15	0.30
PM10	2.28	4.56
PM2.5	2.28	4.56
NH3	3.89	7.78

GHG Emissions Estimates

					short			
Fuel:	Natural Gas						CO2e	
Btu/scf:	1018	HHV	*Emissions*	lbs/yr	tons/yr	IPCC SAR	short	
Heat Rate:	4858583.2	mmbtu/yr		5.68E+08	2.84E+05	Values	tons/yr	
Fuel Rate:	4772.6750	mmscf/yr		1.07E+04	5.36E+00	1	2.84E+05	
Emissions Factors				1.07E+03	5.36E-01	21	1.12E+02	
CO2	116.89	lbs/mmbtu				310	1.66E+02	
CH4	0.002205	lbs/mmbtu				Total CO2e:	284,238	short TPY	1 Engine
N2O	0.0002205	lbs/mmbtu				Total CO2e:	568,477	short TPY	All Engines
						Total CO2e:	258,399	metric TPY	1 Engine
						Total CO2e:	**516,797**	**metric TPY**	All Engines

Emissions Factors for GHG, 40 CFR 98, Subpart C, Tables C-1, C-2.

1 short ton = 2000 lbs, 1 metric ton = 2200 lbs.

SCAQMD 30 Day Average Controlled Emissions per the CPP Manual

The maximum daily controlled emissions rate multiplied by the maximum days operated in any calendar month, and then divided by a constant of 30.

In the case of Malburg, the max daily emissions as shown to the left incorporate 2 SUs and 1 SD per day plus steady state operations. These values cannot be used to calculate the 30 day avg emissions because the current PTO limits monthly SUs to <=10, i.e., 5 cold SUs and 5 non-cold SUs. Therefore the average 30 day emissions have been calculated as follows:
1. 720 hrs per month = 30 days
2. 5 cold starts per month, 5 non-cold starts per month, and 10 SD per month
3. all remaining hours are at steady state operation conditions per Case S13

Steady State hours/month = 697.5

		lbs				
		NOx	**CO**	**VOC**	**SOx**	**PM10/2.5**
5 Monthly Cold SU Emissions		614.00	1024.00	8.75	1.38	17.30
5 Monthly Non-Cold SU Emissions		256.50	299.50	7.75	1.04	13.00
10 Monthly SD Emissions		45.00	108.00	7.10	0.70	8.70
Monthly Steady State Emissions		2901.60	1761.19	606.13	110.21	1639.13
1 GT/DB	30 Day Avg Emissions	3817	3193	630	113	1678
All GT/DB	30 Day Avg Emissions	7634	6385	1259	227	3356
Current PTO Values	30 Day Avg Emissions	Note 1	7633	3236	214	4876

Notes:

1. existing facility NOx PTE based on RTC allocation + holdings in 2017
2. SU/SD data for existing turbine applied to turbine upgrade
3. case 9, 13, and 15 data is for the upgraded turbines
4. facility PTE is turbines/DBs plus ICE plus Ctower

Data References:

1. Siemens Peformance data sheet for the SGT800 upgrade dated 7/13/17.
2. SCAQMD Facility Permit, #155474, dated 11/3/15.
3. SCAQMD FDOC Analysis for Malburg LLC, dated 12/12/02.
4. SCAQMD letter dated 12/29/15, NOx RTC Reductions/Adjustments for Compliance Year 2016 and Beyond.
5. SCAQMD Facility Permit, #155474, dated 7/1/17, Rev #12, RECLAIM RTC Updated Allocation and Holdings.

indicates an input value is required

indicates a cell or group of cells which may required adjustments to cell formulas

Attachment 3 Table 3 Malburg Fuel Use Calculations

Case #	Temp, F	Load %	Evap Status	DB Status	mmbtu/hr (HHV)	mmscf/hr	mmscf/day
1	38	60	Off	Off	345.89	0.33977	8.155
2	59	60	On	Off	338.98	0.33299	7.992
3	65	60	On	Off	335.57	0.32964	7.911
4	94	60	On	Off	317.32	0.31171	7.481
5	38	80	Off	Off	414.01	0.40669	9.761
6	59	80	On	Off	405.65	0.39848	9.563
7	65	80	On	Off	401.45	0.39435	9.464
8	94	80	On	Off	379.01	0.37231	8.935
9	38	100	Off	Off	491.76	0.48306	11.594
10	59	100	On	Off	480.12	0.47163	11.319
11	65	100	On	Off	474.61	0.46622	11.189
12	94	100	On	Off	446.36	0.43847	10.523
13	38	100	Off	On	572.96	0.56283	13.508
14	59	100	On	On	561.34	0.55141	13.234
15	65	100	On	On	555.83	0.54600	13.104
16	94	100	On	On	527.58	0.51825	12.438

Gas HHV	1018	btu/scf				
# of Units:	2					
DB	81.2	mmbtu/hr (HHV)			**All Units**	
Max hourly fuel use =		0.56283	mmscf	per turbine w/ DB	1.126	mmscf/hr
Max daily fuel use =		13.508	mmscf	per turbine w/ DB	27.016	mmscf/day
Max Monthly =		405.237	mmscf	per turbine w/ DB	810.474	mmscf/mo

Max Annual fuel use:

	Hrs/Yr	mmbtu/hr	mmscf/hr	Case ID		
GT w/o DB	0	474.61	0.46622	9	**1 Unit**	**All Units**
GT w/ DB	8633	555.83	0.54600	15	4772.84	9545.69
SU/SD	127	474.61	0.46622	9	mmscf/yr	mmscf/yr

Attachment 3 Table 4 EXPECTED INTERNAL COMBUSTION ENGINE EMISSIONS

Liquid Fuel		# of Identical Engines:	1
Engine Service:	Existing Fire Pump	Max Daily Op Hrs:	1
Mfg:	Deutz	Max Annual Op Hrs:	199
Model #:	BF6M2012		
Kw:	0		
BHP:	173		
RPM:			
Fuel:	#2 ULS Diesel		
Fuel Use:	9.2 gph (1)		
Fuel HHV:	139000 Btu/gal		
mmbtu/hr:	1.28 HHV		
EPA Tier:			
Fuel Wt:	6.87 Lbs/gal		
Fuel S:	0.0015 % wt.		
Fuel S:	0.10305 Lbs/1000 gal		
SO2:	0.2061 Lbs/1000 gal		

Notes:

1. Fuel consumption based on 0.055 gal/hp-hr (avg EPA and SCAQMD values) if no value given by mfg for specific engine.
2. Emissions factors from SCAQMD Permit-Facility 155474, 11/3/15.
3. PM10 used in HRA to represent DPM emissions. PM2.5 = PM10.
4. GHG Efs: FR 74, #209, Part 98 Subpart C, 10-30-2009, Pg. 56409-56411, Tables C-1 and C-2. #2 Diesel Fuel.
5. Fuel density and heat values are EPA defaults unless otherwise specified
6. This engine is not subject to SCAQMD ERC requirements Rule 1304(a)(4)
7. This engine is not subject to SCAQMD HRA requirements Rule 1401(g)(F)

		Single Engine				***All Engines***			
EFs (g/bhp-hr)		**Lb/Hr**	**Lb/Day**	**Lbs/Yr**	**Tons/Yr**	***Lb/Hr***	***Lb/Day***	***Lbs/Yr***	***Tons/Yr***
NOx	3.9	1.49	1.49	295.74	0.148	*1.49*	*1.49*	*295.74*	*0.15*
CO	0.4	0.15	0.15	30.33	0.015	*0.15*	*0.15*	*30.33*	*0.02*
VOC	0.1	0.04	0.04	7.58	0.004	*0.04*	*0.04*	*7.58*	*0.004*
PM10	0.09	0.03	0.03	6.82	0.003	*0.03*	*0.03*	*6.82*	*0.003*
SOx	NA	0.0019	0.0019	0.3773	0.0002	*0.0019*	*0.0019*	*0.3773*	*0.0002*
	lbs/mmbtu								
CO2	163.052	208.5	208.5	41493.7	20.7	*208.5*	*208.5*	*41493.7*	*20.7*
Methane	0.002205	0.0028	0.003	0.56	0.000	*0.00*	*0.00*	*0.56*	*0.000*
N2O	0.0002205	0.0003	0.000	0.06	0.0000	*0.00*	*0.00*	*0.06*	*0.0000*
CO2e					20.8				*20.8*

Attachment 3 Table 5 Cooling Towers-Wet Surface Condensers

Scenario or Project ID:	Malburg				
Cooling Tower/Wet SAC Particulate Emissions			**Tower Physical Data (optional)**		
# of Identical Towers:	1		# of Fans:	3	
# of Cells:	3		Fan ACFM:	750000	
Operational Schedule: Hrs/day	24		Fan Diam (ft):	22 ft	6.7056 m
Days/Year	365		Exit Vel (ft/sec)	32.9 ft/sec	10.028 m/s
Hrs/Year	8760		Length (ft)	113.94 ft	34.73 m
Pumping rate of recirculation pumps (gal/min)	26927.4		Width (ft)	37.34 ft	11.38 m
Flow of cooling water (lbs/hr)	13464777.1		Deck Ht (ft)	35.042 ft	10.68 m
TDS from water analysis: (mg/l or ppmw)	1125.0		Fan Ht (ft)	45.042 ft	13.73 m
Cycles of Concentration:	4.0				
Avg TDS of circ water (mg/l or ppmw)	4500.0	annual avg value			
Flow of dissolved solids (lbs/hr)	60591.50				
Fraction of flow producing drift*	1.00	1= worst case			
Control efficiency of drift eliminators, %	0.0005	0.000005			
Calculated drift rate (lbs water/hr)		67.32	1615.773252	Calc lbs/day	

	Per Tower	Per Cell	All Towers
PM10 emissions (lbs/hr)	**0.303**	**0.101**	**0.303**
PM10 emissions (lbs/day)	**7.271**	**2.424**	**7.271**
PM10 emissions (tpy)	**1.327**	**0.442**	**1.327**
PM2.5 fraction of PM10	1.00	1= worst case	
PM2.5 emissions (lbs/hr)	**0.303**	**0.101**	**0.303**
PM2.5 emissions (lbs/day)	**7.271**	**2.424**	**7.271**
PM2.5 emissions (tpy)	**1.327**	**0.442**	**1.327**

Notes:
Based on Method AP 42, Section 13.4, Jan 1995
*Technical Report EPA-600-7-79-251a, Page 63
Effects of Pathogenic and Toxic Materials Transported Via Cooling Device Drift - Volume 1.

Attachment 3 Table 6
Calculation of Hazardous and Toxic Pollutant Emissions from Combustion Turbines

# of Units: 2
Fuel HHV: 1018 btu/scf

				Single Turbine				All Turbines				
Pollutant	EF Src	Emission Factor, lb/MMscf	CO Catalyst Control Multiplier	Maximum Hourly Emissions, lb/hr	Maximum Daily Emissions, lb/day	Annual Emissions, lb/yr		Maximum Hourly Emissions, lb/hr	Maximum Daily Emissions, lb/day	Annual Emissions, lb/yr	Annual Emissions, tons/yr	Federal HAP
Acetaldehyde *	EPA	0.179168	1.00E+00	0.1008	2.4202	855.4932		0.2017	4.8404	1710.9863	0.8555	Yes
Acrolein *	EPA	0.003685	1.00E+00	0.0021	0.0498	17.5952		0.0041	0.0996	35.1903	0.0176	Yes
Ammonia		(3)		3.8400	92.16	33638.40		7.6800	184.32	67276.80	33.64	No
Benzene *	EPA	0.003319	1.00E+00	0.0019	0.0448	15.8476		0.0037	0.0897	31.6952	0.0158	Yes
1,3-Butadiene	EPA	0.000438	1.00E+00	0.0002	0.0059	2.0914		0.0005	0.0118	4.1827	0.0021	Yes
Ethylbenzene	EPA	0.032576	1.00E+00	0.0183	0.4400	155.5442		0.0367	0.8801	311.0884	0.1555	Yes
Formaldehyde *	EPA	0.366480	1.00E+00	0.2063	4.9504	1749.8724		0.4125	9.9008	3499.7447	1.7499	Yes
Hexane		0.000000	1.00E+00	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	Yes
Naphthalene	EPA	0.001323	1.00E+00	0.0007	0.0179	6.3171		0.0015	0.0357	12.6341	0.0063	Yes
PAHs as (BaP)	EPA	0.000916	1.00E+00	0.0005	0.0124	4.3737		0.0010	0.0247	8.7475	0.0044	Yes
Propylene		0.000000	1.00E+00	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	No
Propylene oxide	EPA	0.029522	1.00E+00	0.0166	0.3988	140.9619		0.0332	0.7976	281.9239	0.1410	Yes
Toluene	EPA	0.132340	1.00E+00	0.0745	1.7876	631.8984		0.1490	3.5753	1263.7967	0.6319	Yes
Xylene	EPA	0.065152	1.00E+00	0.0367	0.8801	311.0884		0.0733	1.7601	622.1768	0.3111	Yes
									Federal HAPs, tons/yr:		3.8911	

Notes:

(1) EPA AP-42, Section 3.1 Background Document, Table 3.4-1, 4/2000.
and EPA AP-42 Section 3.1, Table 3.1-3, 4/2000

(2) Based on maximum hourly turbine fuel use (cold day conditions): 0.5628 mmscf/hr

Based on a maximum daily turbine fuel use (cold day conditions): 13.508 mmscf/day

Based on maximum annual turbine fuel use (annual avg conditions): 4774.810 mmscf/yr

(3) Values for ammonia slip: calculated or derived from run case data.

(4) Fuel use values include HRSG duct burners (Yes or No) Yes

CO Catalyst HAP Control Efficiencies*

	Control Frac.	Multiplier
Organic HAPs	0.80	0.20
Inorganic HAPs	0.50	0.50

Each Turbine 24 Max hrs/day
Each Turbine 8760 Max Hrs/yr

* Ref: AP-42, Section 3.1, Background Document, Table 3.4-1, April 2000.
* Ref: AP-42, Section 3.1, April 2000, subsection 3.1.4.3, Catalytic Reduction Systems.
*Control efficiency was opnly applied to those pollutants as stated in the above references.

Attachment 3 Table 7 Calculation of Hazardous and Toxic Pollutant Emissions from Cooling Towers

Scenario: Malburg

Total Cells: 3 Max Drift Rate: 67.3 lbs/hr

Ops Data
Hrs/Day: 24
Hrs/Yr: 8760

Constituent	Concentration in Cooling Tower Water		Total All Cells Emissions, lb/hr	Total All Cells Emissions, lb/day	Total All Cells Emissions, lbs/yr		Single Cell Emissions, lb/hr	Single Cell Emissions, lb/day	Single Cell Emissions, lb/yr
Arsenic*	0.01	ppm	6.73E-07	1.62E-05	5.90E-03		2.24E-07	5.39E-06	1.97E-03
Beryllium*	0.0025	ppm	1.68E-07	4.04E-06	1.47E-03		5.61E-08	1.35E-06	4.91E-04
Cadmium*	0.0025	ppm	1.68E-07	4.04E-06	1.47E-03		5.61E-08	1.35E-06	4.91E-04
Chromium*	0.005	ppm	3.37E-07	8.08E-06	2.95E-03		1.12E-07	2.69E-06	9.83E-04
Copper	0.031	ppm	2.09E-06	5.01E-05	1.83E-02		6.96E-07	1.67E-05	6.09E-03
Lead*	0.005	ppm	3.37E-07	8.08E-06	2.95E-03		1.12E-07	2.69E-06	9.83E-04
Manganese	0.116	ppm	7.81E-06	1.87E-04	6.84E-02		2.60E-06	6.25E-05	2.28E-02
Mercury	0.0005	ppm	3.37E-08	8.08E-07	2.95E-04		1.12E-08	2.69E-07	9.83E-05
Nickel	0.015	ppm	1.01E-06	2.42E-05	8.85E-03		3.37E-07	8.08E-06	2.95E-03
Selenium	0.025	ppm	1.68E-06	4.04E-05	1.47E-02		5.61E-07	1.35E-05	4.91E-03
Silica	106	ppm	7.14E-03	1.71E-01	6.25E+01		2.38E-03	5.71E-02	2.08E+01
Vanadium	0.012	ppm	8.08E-07	1.94E-05	7.08E-03		2.69E-07	6.46E-06	2.36E-03
		ppm	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00
		ppm	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00

Notes:

(1) Water analysis data supplied by project applicant on 10/20/17, sample date 10/18/17, Table page 2.
(2) mg/l = ppm
(3) ug/l = ppb
* concentration was input as 1/2 the minimum detection limit or (PQL).

This calc is linked to CT-PM.

Attachment 3 Table 8 Conversion of HAPs Emissions Factor for Gas Turbines
AP-42, Section 3.1, April 2000, Table 3.1-3
Background Document for Section 3.1, April 2000, Table 3.4-1

Nat Gas, btu/scf	1018				
		High Load Table 3.4-1 Values	All Loads Table 3.4-1 Values	AP-42 Table 3.1-3 Values	SCAQMD Adjusted Tables 3.1-3, 3.4-1 Values
Emissions Factors	Note	**lb/mmbtu**	**lb/mmbtu**	**lb/mmbtu**	**lb/mmscf**
Acetaldehyde	*	0.000176	0.000176	0.00004	0.179168
Acrolein	*	0.00000362	0.00000362	0.0000064	0.003685
1-3 Butadiene		0.000000429	0.000000429	0.00000043	0.000438
Benzene	*	0.00000326	0.00000326	0.000012	0.003319
Ethylbenzene		0.000032	0.0000258	0.000032	0.032576
Formaldehyde	*	0.00036	0.00036	0.00071	0.366480
Naphthalene		0.00000127	0.00000137	0.0000013	0.001323
PAH w/ Naph		0.00000223	0.00000225	0.0000022	0.002240
PAH w/o Naph		0.00000096	0.00000088	0.0000009	0.000916
Propylene Oxide		0.0000286	0.0000286	0.000029	0.029522
Toluene		0.000134	0.0000937	0.00013	0.132340
Xylenes		0.0000638	0.0000548	0.000064	0.065152
Hexane		0	0	0	0
Propylene		0	0	0	0

* factors are controlled values by the CO Catalyst as listed in Table 3.4-1.
All other values are uncontrolled from Table 3.1-3.
Per the SCAQMD letter dated 10-6-17 we note that AQMD engr staff has used and converted the values in Table 3.1-3 for all of the pollutants except for those marked with *.
For those marked * the High Load values were converted based on fuel btu/scf, i.e., the High Load and All load values are the same.

Hexane and Propylene: We note no emissions factors for nat gas fired turbines were found in the following AQMD documents.

http://www.aqmd.gov/docs/default-source/ceqa/handbook/emission-factors/toxic-emission-factors-from-combustion-sources.pdf?sfvrsn=2
http://www.aqmd.gov/docs/default-source/permitting/toxics-emission-factors-from-combustion-process-.pdf
http://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/supplemental-instructions-for-ab2588-facilities.pdf

Attachment 4

Upgraded Turbine Performance Data

Table 1
Malburg Generating Station
Emissions and Operating Parameters for Gas Turbine
Specified Emission levels are expected, not guaranteed.

Standard Conditions: 59 F
Reference O2: 15.00%

Project:	Malburg									(Different on chiller)						
Date:	13-Jul-17															
Case	1) S1 Evap Cooler Off	2) S2 Evap Cooler On	3) S3 Evap Cooler On	4) S4 Evap Cooler On	5) S5 Evap Cooler Off	6) S6 Evap Cooler On	7) S7 Evap Cooler On	8) S8 Evap Cooler On	9) S9 Evap Cooler Off	10) S10 Evap Cooler On	11) S11 Evap Cooler On	12) S12 Evap Cooler On	13) S13 Evap Cooler Off	14) S14 Evap Cooler On	15) S15 Evap Cooler On	16) S16 Evap Cooler On
Ambient Temperature (F)	38	59	65	94	38	59	65	94	38	59	65	94	38	59	65	94
Turbine Load	60%	60%	60%	60%	80%	80%	80%	80%	100%	100%	100%	100%	100%	100%	100%	100%
Evap Cooler	Off	On	On	On	Off	On	On	On	Off	On	On	On	Off	On	On	On
Turbine Fuel Flow Rates kg/s	1.92	1.88	1.86	1.76	2.29	2.25	2.23	2.10	2.73	2.66	2.63	2.47	2.73	2.66	2.63	2.47
DB Status	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**On**	**On**	**On**	**On**
lbs/hr as fired	15,217	14,913	14,763	13,960	18,214	17,847	17,661	16,675	21,635	21,123	20,880	19,637	21,635	21,123	20,880	19,637
lbs/hr, dry, ash free	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MMbtu/hr (HHV)	345.89	338.98	335.57	317.32	414.01	405.65	401.45	379.01	491.76	480.12	474.61	446.36	491.76	480.12	474.61	446.36
MMbtu/hr (LHV)	312	306	303	286	373	366	362	342	443.39	432.90	428	402	443.39	432.90	428	402
DB Fuel (HHV)	-	-	-	-	-	-	-	-	-	-	-	-	81.20	81.10	81	81
Turbine Power and Heat Output																
MW (Gross, installed no auxilliaries)	29.052	28.292	27.896	25.673	38.736	37.723	37.194	34.231	48.420	47.154	46.493	42.788	48.420	47.154	46.493	42.788
MW(Net, minus auxiallary power)	28.949	28.197	27.801	25.578	38.651	37.628	37.099	34.136	48.335	47.059	46.398	42.693	48.335	47.059	46.398	42.693
BTU/kWh (LHV)	10,737	10,805	10,848	11,146	9,639	9,698	9,734	9,985	9,159	9,182	9,206	9,408	9,159	9,182	9,206	9,408
Turbine Exhaust Gas Parameters @ GT Exhaust																
Exhaust Flow Rate (acfm)	494,729	490,879	488,731	476,262	574,265	568,843	565,706	547,057	677,000	667,148	662,555	638,689	677,000	667,148	662,555	638,689
Exhaust Flow Rate (dscfm)	150,260	148,021	147,072	140,868	181,322	177,507	175,788	164,694	221,114	215,237	212,864	199,022	220,163	214,505	212,162	198,365
Exhaust Flow Rate (lbs/hr)	732,014	724,349	720,612	697,767	882,934	868,546	861,361	816,755	1,075,154	1,051,785	1,041,689	985,625	1,070,477	1,048,209	1,038,251	982,372
Exhaust Flow Rate (dscfm @ 15% O2)	173,181	168,092	167,014	157,581	205,908	201,575	199,623	189,817	243,600	240,774	238,119	222,635	279,868	276,312	273,293	255,522
Turbine Exhaust Temperature (F)	1,112	1,112	1,112	1,112	1,053	1,059	1,062	1,082	1,005	1,012	1,015	1,032	1,005	1,012	1,015	1,032
H2O, vol %, wet basis	7.4	8.0	8.2	9.8	7.3	8.0	8.2	9.9	7.1	7.9	8.1	9.8	7.1	7.9	8.1	9.8
H2O, mass %, wet basis	4.7	5.1	5.2	6.3	4.6	5.1	5.2	6.3	4.5	5.0	5.1	6.2	4.5	5.0	5.1	6.2
O2, vol-%, dry basis (calculated)	14.1	14.2	14.2	14.3	14.2	14.2	14.2	14.1	14.4	14.3	14.3	14.3	13.4	13.3	13.3	13.3
CO2, vol-%, dry basis (calculated)	3.9	3.9	3.9	3.8	3.9	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Excess Air, vol-%	13.1	13.0	13.0	12.9	13.2	13.0	13.0	12.7	13.3	13.2	13.2	12.9	13.3	13.2	13.2	12.9
Mol Wt (wet)	28.48	28.40	28.40	28.20	28.49	28.40	28.40	28.20	28.50	28.40	28.40	28.20	28.50	28.40	28.40	28.20
Stack Conditions																
Stack Temperature (F)	216	215	217	222	226	225	226	230	236	235	236	240	226	220	221	227
Stack Diameter	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stack Exhaust Flow Rate (acfm)*	212,757.7	210,791.5	210,490.9	206,649.0	260,388.2	256,488.5	254,942.9	244,791.9	321,571.7	315,013.1	312,699.5	299,572.9	316,951.5	308,214.3	305,960.3	294,009.4
Velocity (ft/sec)	31.35	31.06	31.02	30.45	38.37	37.80	37.57	36.07	47.39	46.42	46.08	44.15	46.71	45.42	45.09	43.33
Velocity (m/sec)	9.56	9.47	9.45	9.28	11.70	11.52	11.45	11.00	14.44	14.15	14.05	13.46	14.24	13.84	13.74	13.21
Pollutant Concentrationsat Ref. O2 (15%) @ GT Exhaust																
VOC as CH4, ppmvd	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
CO, ppmvd	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
NOx, ppmvd	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
NH3, ppmvd	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total PM10 (gr/dscf)	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
Pollutant Concentrations																
VOC as CH4, ppmvd	1.4	1.4	1.4	1.3	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.5	1.5	1.5	1.5
CO, ppmvd	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.5	2.6	2.6	2.6
NOx, ppmvd	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.235	2.2	2.5	2.6	2.571	2.6
NH3, ppmvd	5.8	5.7	5.7	5.6	5.7	5.7	5.7	5.8	5.5	5.6	5.6	5.6	6.3	6.4	6.4	6.4
Total PM10 (gr/dscf)	0.00096	0.00094	0.00094	0.00093	0.00094	0.00094	0.00094	0.00096	0.00091	0.00093	0.00093	0.00093	0.0011	0.0011	0.0011	0.0011
Pollutant Concentrations at Ref. O2 (15%)																
VOC as CH4, ppmvd	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
CO, ppmvd	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
NOx, ppmvd	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
NH3, ppmvd	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Total PM10 (gr/dscf)	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
Emission Rates lbs/MMbtu @ LHV																
VOC as CH4	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017
CO	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049
NOx	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081
SOx	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00031	0.00036	0.00036	0.00036	0.00037
Total PM10	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039
NH3	0.0075	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0075	0.0074	0.0075	0.0075	0.0074	0.0087	0.0088	0.0088	0.0088
Emissions Rates lbs/mmbtu @ HHV																
VOC, lbs/mmbtu	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
CO, lbs/mmbtu	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044
NOx, lbs/mmbtu	0.0073	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0073	0.0072	0.0073	0.0073	0.0072	0.0072	0.0073	0.0073	0.0072
NH3, lbs/mmbtu	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
PM10, lbs/mmbtu	0.0036	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035	0.0036	0.0035	0.0036	0.0036	0.0035	0.0035	0.0036	0.0036	0.0035
SOx, lbs/mmbtu	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
Emission Rates (lbs/hour)																
VOC as CH4	0.525	0.510	0.506	0.478	0.624	0.611	0.605	0.576	0.739	0.730	0.722	0.675	0.869	0.860	0.852	0.805
CO	1.532	1.487	1.477	1.394	1.821	1.783	1.766	1.679	2.155	2.130	2.106	1.969	2.529	2.503	2.480	2.343
NOx	2.516	2.443	2.427	2.290	2.992	2.929	2.901	2.758	3.541	3.499	3.460	3.235	4.158	4.115	4.078	3.853
SOx	0.097	0.095	0.094	0.089	0.116	0.114	0.112	0.106	0.138	0.134	0.133	0.125	0.160	0.157	0.156	0.148
NH3	2.325	2.257	2.242	2.116	2.764	2.706	2.680	2.548	3.271	3.233	3.197	2.989	3.841	3.802	3.767	3.559
Total PM10	1.231	1.195	1.187	1.120	1.463	1.433	1.419	1.349	1.732	1.711	1.693	1.582	2.322	2.301	2.283	2.173
Total PM10 with 53% conversion of SOx to PM10	1.282	1.245	1.237	1.167	1.525	1.493	1.478	1.405	1.805	1.783	1.763	1.649	2.407	2.385	2.366	2.251
PM10 from grain loading of 0.00083 gr/dscf @ 15 % O2	1.231	1.195	1.187	1.120	1.463	1.433	1.419	1.349	1.732	1.711	1.693	1.582	1.987	1.962	1.941	1.814

Note: these are values after the SCR. Typical emissions out of the gas turbine for Nox are 15-25 ppmvd (applying a 90-95% conversion rate from the SCR). These rates for NOx are pretty consistent from 55-100% load

MW	gas mol wt (wet)	
P	absolute pressure, psia (assumed for all cases)	14.7
T	conv temp, deg R	460
Ru	gas law constant	10.73

gas density at stack conditions : Pv=RT or p=(P x MW)/(Ru x T)
STP SCAQMD 60 deg F and 14.7 psia, and 379.46 ft3/lb-mol

DB Emission Factors (lb/mmbtu) @81.2 mmbtu/hr (HHV)		lbs/mmscf
NOx	0.0076	7.729
CO	0.0046	4.678
VOC	0.0016	1.63
PM10	0.007273	7.397
SOx	0.00028	0.285
NH3	0.00702	7.139

*Stack ACFM calculated directly from turbine ACFM, correcting only for temperature differences.

Attachment 5

Siemens Upgrade Information

SGT-800 PERFORMANCE ENHANCEMENT

Table of contents

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1 GENERAL

1.1 Introduction

The purpose with this Product Information is to provide Siemens sales teams and customers with information about the SGT-800 Performance Enhancement and how it shall be implemented.

1.2 Background

As a planned step in the Siemens strategy for the SGT-800, a new rating was officially launched at the Power Gen conference in Madrid, June 2007. The new rating is 47 MW at 37,5 % efficiency. The combined cycle performance has also improved from 64 MW with an efficiency of 53% to 66 MW with an efficiency of 54% with dual-pressure heat recovery steam generator (HRSG).
For new sales only the 47 MW rating will be offered from now on.

1.3 Definition

A requirement for the development for the new rating was that it should be easy to implement on existing units as an enhancement . As a result the specific components in the gas turbine which are modified are fully interchangeable between the 45 MW and the 47 MW rating. This makes it possible to upgrade existing SGT-800 installations to the new rating. The absolute performance after such an upgrade depends on the status of the engine before.

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2 Technical description

The SIT scope of the product is the provision and insertion of enhancement components instead of original components at an engine overhaul. It includes also an engineering study and performance enhancement evaluation.

2.1 Components

The enhancement kit for existing units consists of a new version of

- Compressor blade 1
- Turbine vane 1
- Turbine blade 1
- Turbine vane 2

and minor modifications of the turbine air cooling systems

- Swirl generator dimension
- Orifice dimension in extraction from compressor stage #10

The compressor efficiency has been improved due to increase of the mass flow. Compressor blade 1 has got a slightly opened profile but there is no change of material.

Several improvements have been done on turbine blade #1, new thermal barrier coating (TBC) and optimization of number and positioning of the cooling holes which results in reduced metal temperature
For vane 1 & 2 cooling air consumption has been optimized.
Otherwise there have not been any changes of casting, material or coating.

The enhancement parts are 100% compatible with the old version. It is therefore possible to install the enhancement at, e.g. a C-inspection, by ordering enhancement blading instead of the original design blading. At site the components are swapped as usual. That means the only "extra" hardware for installing the enhancement is the first stage compressor blading.

2.2 Performance

The enhancement, based on the exchanged parts, is the result of

- Increased air mass flow
- Optimised cooling air consumptions of the turbine section

The turbine inlet temperature (TIT) is not increased, thus there is no impact on emission or lifing of combustor or turbine components.

The expected performance increase is 2 MW and the following can in general be expected regarding efficiency and turbine data:

- + 0,4% efficiency (1,4 to 2,8% less fuel consumption/kWh)
- + 7°C exhaust temperature
- + 1,5 kg/s exhaust mass flow

A performance evaluation is done before and after the enhancement to determine the engine performance improvement.

2.3 Limitations

A maximum gas pressure of 30 bar(a) at the terminal point (upstream gas fuel unit 1) at maximum fuel flow is required. As the fuel flow increases due to the enhancement, the recommendation is to use 4" dimension for gas fuel filters (Gas fuel unit 1) and the pipes between the filter unit and the turbine enclosure.
If an existing 3" system will be used the possibility to increase gas pressure from either one gas compressor or reducing station have to be evaluated. The main gas valve has to be checked regarding sufficient opening angle for reduced pressure and increased fuel flow.

The resulting effect on the HRSG and related steam cycle components have to be checked in connection to the enhancement.

The maximum electric power to be transmitted in the gear box is limited to 53,5 MW, this means a flat rating below -17 deg C for a nominal output of 47 MWel at ISO conditions.

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3 Installation & Commissioning

As the enhancement involves swapping compressor stage 1 blades it is done most convenient at a C-inspection, but it can also be done at a B-inspection.
If the enhancement will be performed at a B-inspection the downtime increase is 2 working days and additional 2x60 personal x hours.
The scope of work is according to chapter 2 regarding parts and related to the performance test the control system will be adjusted due to optimization of the cooling air to the turbine section.

4 Benefits

The customer benefits are basically twofold:

- Increased income due to higher electricity output:
- Savings due to lower heat rate

The final benefit varies obviously with the gas and electricity prices and currency exchange rates at any given time. One should also bear in mind that the price for electricity is strongly varying during the day and seasons and that there may also be local pricing mechanisms. Therefore it will be different for each customer depending on her/his business case.

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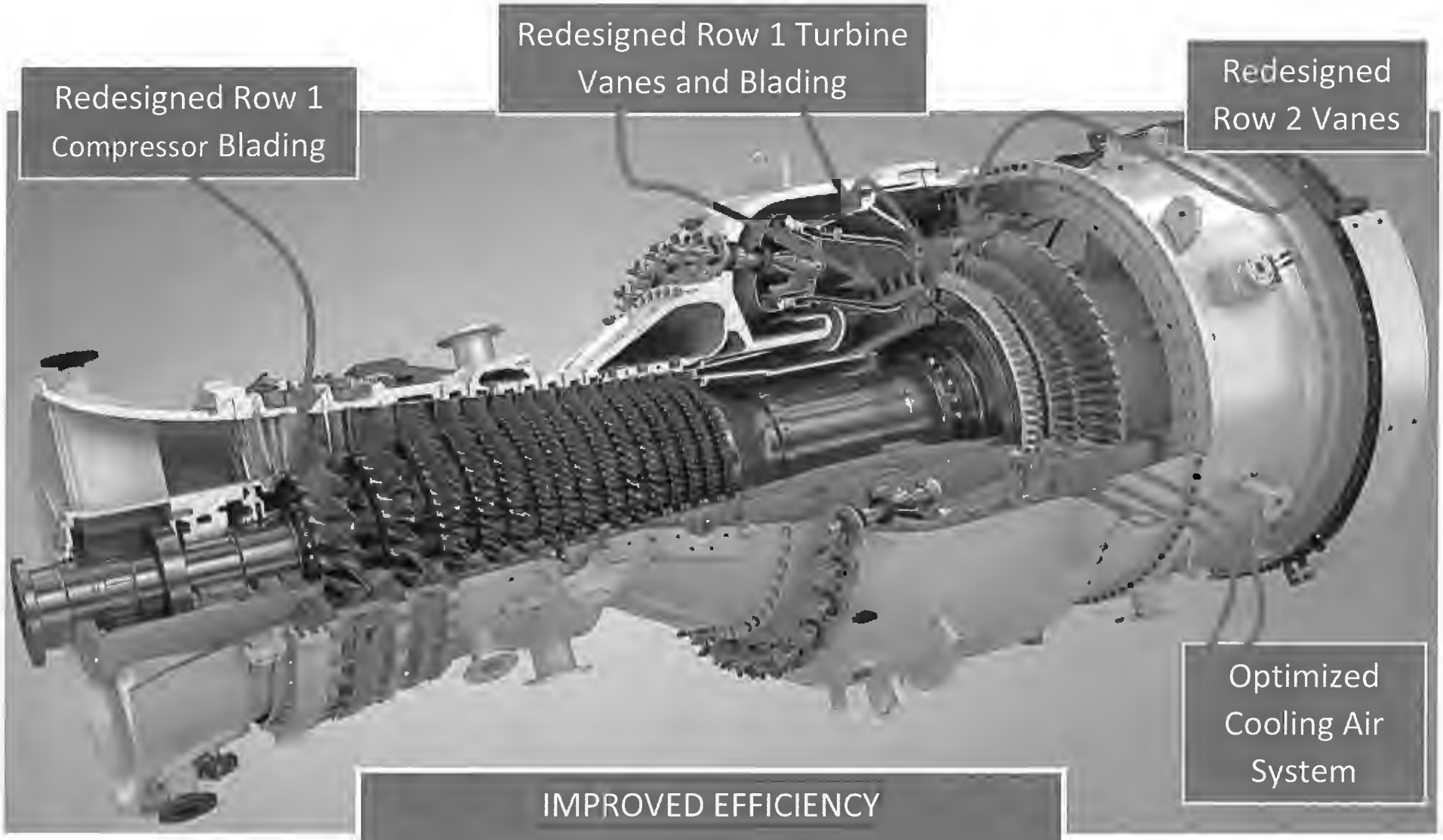
SIEMENS SGT-800 ~~~ A+ EFFICIENCY IMPROVEMENT



IMPROVED EFFICIENCY

- Compressor – improved pressure ratio
- Turbine - less cooling air needed
- **Overall 0.4% less fuel per MWh**

Rev B, 2016-04-27

Issued by: K.Södergren | Department: SBD | Telephone: +46 122 82350

To: Malburg Generating Station (City of Vernon)

Expected Emissions

The expected emissions and performance for Malburg Generating Station after upgrading of the two Gas Turbine Units with 2 MW at ISO conditions.

System	Expected Emissions after **upgrade without damped combustion chamber**	Remark
Gas Turbines	**Emissions** 70-100 % gas turbine load: NO_X : ≤ 25 ppmv at 15 % O_2 dry CO: ≤ 6 ppmv at 15 % O_2 dry VOC: ≤ 1.2 ppmv at 15 % O_2 dry PM10: ≤ 5 lb/hr for 2 units	

System	Expected Emissions after upgrade **with damped combustion chamber**	Remark
Gas Turbines	**Emissions** 70-100 % gas turbine load: NO_X : ≤ 15 ppmv at 15 % O_2 dry CO: ≤ 5 ppmv at 15 % O_2 dry VOC: ≤ 1.2 ppmv at 15 % O_2 dry PM10: ≤ 5 lb/hr for 2 units	

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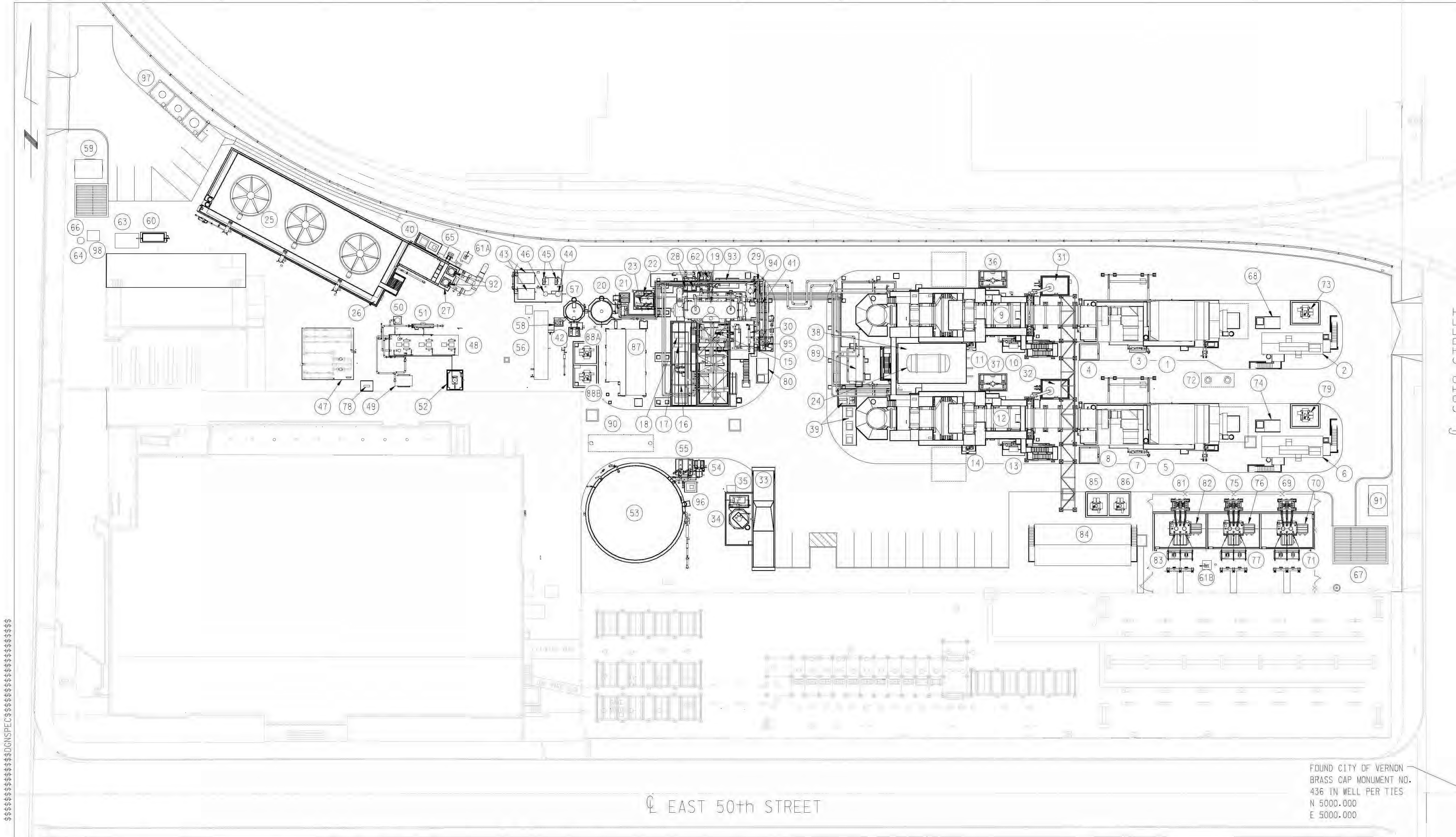
Attachment 6

Air Quality Impact Analysis Data



0 15 30 60 90 FEET
1" = 30'

LEGEND

1 – COMBUSTION TURBINE GENERATOR 1
2 – CTG 1 CONTROL MODULE
3 – CTG 1 FUEL GAS SKID
4 – CTG 1 CO2 MODULE
5 – COMBUSTION TURBINE GENERATOR 2
6 – CTG 2 CONTROL MODULE
7 – CTG 2 FUEL GAS SKID
8 – CTG 2 CO2 MODULE
9 – HEAT RECOVERY STEAM GENERATOR 1
10 – HRSG 1 DUCT BURNER FUEL CONTROL SKID
11 – HRSG 1 SCANNER COOLING FAN SKID
12 – HEAT RECOVERY STEAM GENERATOR 2
13 – HRSG 2 DUCT BURNER FUEL CONTROL SKID
14 – HRSG 2 SCANNER COOLING FAN SKID
15 – STEAM TURBINE GENERATOR
16 – STG LUBE OIL SKID
17 – STG OIL PURIFIER SKID
18 – STG HYDRAULIC OIL SKID
19 – CONDENSER
20 – CONDENSATE STORAGE TANK
21 – CONDENSATE TRANSFER PUMPS
22 – VACUUM PUMP SKID A
23 – VACUUM PUMP SKID B
24 – DEAERATOR & FEED PUMP STRUCTURE
25 – COOLING TOWER
26 – COOLING TOWER BASIN
27 – COOLING TOWER FORE BAY
28 – CIRCULATING WATER BOOSTER PUMPS
29 – AUXILIARY COOLING WATER PUMPS
30 – STG GLAND STEAM CONDENSER SKID
31 – HRSG 1 BLOW DOWN TANK PIT
32 – HRSG 2 BLOW DOWN TANK PIT
33 – AMMONIA UNLOADING RAMP
34 – AMMONIA STORAGE TANK
35 – AMMONIA PUMP SKID
36 – HRSG 1 AMMONIA VAPORIZING SKID
37 – HRSG 2 AMMONIA VAPORIZING SKID
38 – CYCLE SAMPLE RACK
39 – HRSG CHEMICAL FEED SYSTEM
40 – COOLING TOWER CHEMICAL FEED SYSTEM
41 – AUXILIARY COOLING WATER CHEMICAL FEED SYSTEM
42 – TREATED WATER TRANSFER PUMPS
43 – SERVICE AIR COMPRESSORS
44 – SERVICE AIR RECEIVER
45 – INSTRUMENT AIR DRYERS
46 – INSTRUMENT AIR RECEIVER
47 – FUEL GAS METERING PAD
48 – FUEL GAS COMPRESSOR SKID
49 – FUEL GAS BYPASS COOLER

92 – CIRCULATING WATER PUMPS
93 – AUX COOLING WATER HEAT EXCHANGER
94 – AUX COOLING WATER EXPANSION TANK
95 – ATMOSPHERIC FLASH TANK
96 – RAW WATER CHEMICAL FEED SYSTEM
97 – COOLING TOWER BULK CHEMICAL FEED SYSTEM
98 – WASTE WATER METERING PANEL

85 – MAIN STATION SERVICE TRANSFORMER A
86 – MAIN STATION SERVICE TRANSFORMER B
87 – AUXILIARY POWER DISTRIBUTION & CONTROL MODULE
88 – AUXILIARY STATION SERVICE TRANSFORMER A & B
89 – CEMS MODULE
90 – STG OIL COLLECTION SUMP
91 – DIESEL FIRE PUMP HOUSE

78 – FUEL GAS METERING PANEL
79 – CTG 2 STARTING MOTOR TRANSFORMER
80 – STG GENERATOR BREAKER SWITCHGEAR
81 – STG 13.8 KV CABLE SUPPORT
82 – STG GSU TRANSFORMER
83 – STG 69 KV DISCONNECT SWITCH
84 – MAIN POWER DISTRIBUTION & CONTROL MODULE

71 – CTG 1 69 KV DISCONNECT SWITCH
72 – CTG OIL COLLECTION SUMP
73 – CTG 1 STARTING MOTOR TRANSFORMER
74 – CTG 2 GENERATOR BREAKER SWITCHGEAR
75 – CTG 2 13.8 KV CABLE SUPPORT
76 – CTG 2 GSU TRANSFORMER
77 – CTG 2 69 KV DISCONNECT SWITCH

64 – WASTE WATER PARSHALL FLUME
65 – PROCESS DRAIN SUMP
66 – STORM WATER RETENTION VAULT (WEST)
67 – STORM WATER RETENTION VAULT (EAST)
68 – CTG 1 GENERATOR BREAKER SWITCHGEAR
69 – CTG 1 13.8 KV CABLE SUPPORT
70 – CTG 1 GSU TRANSFORMER

57 – TREATED WATER STORAGE TANK
58 – 2ND PASS RO BOOSTER PUMPS
59 – ELECTRIC FIRE PUMP HOUSE
60 – OIL WATER SEPARATOR
61 – OIL WATER SUMP 1 & 2
62 – CONDENSATE PUMPS
63 – WASTE WATER CLARIFIER TANK

50 – FUEL GAS DISCHARGE ACCUMULATOR
51 – FUEL GAS ELECTRIC HEATER
52 – FUEL GAS LIQUID WASTE DRAIN TANK
53 – RAW WATER STORAGE TANK
54 – CYCLE MAKEUP PUMPS
55 – COOLING TOWER MAKEUP PUMPS
56 – WATER TREATMENT CONTAINER

THIS DRAWING WAS PREPARED BY POWER ENGINEERS, INC. FOR A SPECIFIC PROJECT, TAKING INTO CONSIDERATION THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING OR ANY INFORMATION CONTAINED IN THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH POWER AND POWER'S CLIENT IS GRANTED.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
5	ISSUED FOR RECORD	11/30/05	AED	JAB	SWC	DEJ
4	REVISED PER DCN 108	07/02/04	AED	JAB	HJM	DEJ
3	REVISED PER DCN 057	12/05/03	AED	JAB	HJM	DEJ
2	REVISED PER DCN 005	6/20/03	AED	JAB	HJM	DEJ
1	RE-ISSUED FOR CONSTRUCTION	3/21/03	AED	JAB	HJM	DEJ
0	ISSUED FOR CONSTRUCTION	2/28/03	JAB	JAB	KPR	DEJ

REFERENCE DRAWINGS

DSGN	JAB	02/08/02
DRN	CEA	02/08/02
CKD	TLK	02/08/02

SCALE: 1" = 30'-0"
FOR 22x34 DWG ONLY

POWER ENGINEERS
3940 GLENBROOK DRIVE
HAILEY, ID 83333

CITY OF VERNON
MALBURG GENERATING STATION
GENERAL ARRANGEMENT

JOB NUMBER 516476-04
DRAWING NO. M1-1
REV 5

31cvgenar.dgn

Malburg Generating Station AERMOD Turbine Screening Results

Stack Base Elevation = 58.00 m amsl = 190.29 ft-amsl

110' StkHt

Emissions Case	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
											Ann.Avg					Ann.Avg
Evap.Cooler	**Off**	**On**	**On**	**On**	**Off**	**On**	**On**	**On**	**Off**	**On**	**On**	**On**	**Off**	**On**	**On**	**On**
Duct Burner	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**Off**	**On**	**On**	**On**	**On**
Load %	**60%**	**60%**	**60%**	**60%**	**80%**	**80%**	**80%**	**80%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Number of Turbines	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Ambient Temp, °F	38.0	59.0	65.0	94.0	38.0	59.0	65.0	94.0	38.0	59.0	65.0	94.0	38.0	59.0	65.0	94.0
Stack Exit Temp (deg.F)	216.0	215.0	217.0	222.0	226.0	225.0	226.0	230.0	236.0	235.0	236.0	240.0	226.0	220.0	221.0	227.0
Volumetric Flowrate ACFM	212,757.70	210,791.52	210,490.92	206,648.95	260,388.24	256,488.54	254,942.87	244,791.86	321,571.74	315,013.11	312,699.49	299,572.89	316,951.46	308,214.26	305,960.27	294,009.39
Stack Velocity (ft/sec)	31.35	31.06	31.02	30.45	38.37	37.80	37.57	36.07	47.39	46.42	46.08	44.15	46.71	45.42	45.09	43.33
Stack Inside Diameter (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Stack Height (m)	33.53	33.53	33.53	33.53	33.53	33.53	33.53	33.53	33.53	33.53	33.53	33.53	33.53	33.53	33.53	33.53
Stack Exit Temp (deg.K)	375.37	374.82	375.93	378.71	380.93	380.37	380.93	383.15	386.48	385.93	386.48	388.71	380.93	377.59	378.15	381.48
Stack Exit Velocity (m/s)	9.556	9.468	9.455	9.282	11.696	11.521	11.451	10.995	14.444	14.149	14.046	13.456	14.237	13.844	13.743	13.206
Stack Inside Diameter (m)	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576	3.6576
Normal Operations - Short-term Screening Emissions (lb/hr/turbine) and Unitized Screening Impacts (for 1.0 g/s/turbine)																
NOx (lb/hr/turbine)	2.516	2.443	2.427	2.290	2.992	2.929	2.901	2.758	3.541	3.499	3.460	3.235	**4.158**	4.115	4.078	3.853
CO (lb/hr/turbine)	1.532	1.487	1.477	1.394	1.821	1.783	1.766	1.679	2.155	2.130	2.106	1.969	**2.529**	2.503	2.480	2.343
SO2 (lb/hr/turbine)	0.097	0.095	0.094	0.089	0.116	0.114	0.112	0.106	0.138	0.134	0.133	0.125	**0.160**	0.157	0.156	0.148
PM10 (lb/hr/turbine)	1.282	1.245	1.237	1.167	1.525	1.493	1.478	1.405	1.805	1.783	1.763	1.649	**2.409**	2.387	2.368	2.254
1-Hr Unitized Conc (ug/m3)	10.94388	11.13104	11.01889	10.94594	8.72906	8.84639	8.86135	9.01031	7.33293	7.43408	7.45269	7.58514	7.53263	7.75364	7.77818	7.90190
X(m)	387232.9	387232.9	387232.9	387232.9	387360.0	387360.0	387360.0	387360.0	387420.0	387420.0	387420.0	387420.0	387420.0	387360.0	387360.0	387360.0
Y(m)	3762727.3	3762727.3	3762727.3	3762727.3	3762840.0	3762840.0	3762840.0	3762840.0	3762740.0	3762740.0	3762740.0	3762740.0	3762660.0	3762840.0	3762840.0	3762840.0
Z(m)	58.0	58.0	58.0	58.0	59.1	59.1	59.1	59.1	58.3	58.3	58.3	58.3	57.2	59.1	59.1	59.1
YYMMDDHH	15092510	15092510	15092510	15092510	12081009	12081009	12081009	12081009	12070811	12070811	12070811	12070811	12080611	12081009	12081009	12081009
3-Hr Unitized Conc (ug/m3)	9.09280	9.14975	9.12340	9.12427	7.98575	8.07817	8.09209	8.23048	6.79490	6.90903	6.93062	7.08290	7.00967	7.24112	7.26159	7.36570
X(m)	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0	387440.0
Y(m)	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0
Z(m)	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9
YYMMDDHH	16060515	16060515	16060515	16060515	16060515	16060515	16060515	16060515	16060515	16060515	16060515	16060515	16060515	16060515	16060515	16060515
8-Hr Unitized Conc (ug/m3)	6.87644	6.94198	6.92280	6.96253	5.81506	5.88972	5.90024	6.01460	4.94710	5.02026	5.03422	5.13096	5.08072	5.22417	5.24018	5.31915
X(m)	387520.0	387520.0	387520.0	387520.0	387440.0	387440.0	387440.0	387540.0	387560.0	387560.0	387560.0	387560.0	387560.0	387440.0	387440.0	387440.0
Y(m)	3762740.0	3762740.0	3762740.0	3762740.0	3762700.0	3762700.0	3762700.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762700.0	3762700.0	3762700.0
Z(m)	58.5	58.5	58.5	58.5	57.9	57.9	57.9	58.5	58.5	58.5	58.5	58.5	58.5	57.9	57.9	57.9
YYMMDDHH	16121616	16121616	16121616	16121616	16060516	16060516	16060516	16121616	16121616	16121616	16121616	16121616	16121616	16060516	16060516	16060516
24-Hr Unitized Conc (ug/m3)	2.87376	2.89936	2.88588	2.88169	2.43324	2.46695	2.47095	2.51615	2.00886	2.04827	2.05470	2.10425	2.09115	2.17690	2.18306	2.21396
X(m)	387480.0	387480.0	387480.0	387480.0	387480.0	387480.0	387480.0	387480.0	387500.0	387500.0	387500.0	387480.0	387500.0	387480.0	387480.0	387480.0
Y(m)	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0	3762700.0
Z(m)	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9
YYMMDDHH	16082024	16082024	16082024	16082024	16082024	16082024	16082024	16082024	16082024	16082024	16082024	16082024	16082024	16082024	16082024	16082024
Ann** Unitized Conc (ug/m3)	0.94223	0.95156	0.94652	0.94463	0.78583	0.79710	0.79829	0.81313	0.64758	0.66035	0.66230	0.67740	0.67524	0.70367	0.70545	0.71429
X(m)	387520.0	387520.0	387520.0	387520.0	387540.0	387540.0	387540.0	387520.0	387540.0	387540.0	387540.0	387540.0	387540.0	387540.0	387540.0	387540.0
Y(m)	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0	3762740.0
Z(m)	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5
Normal Operations - Short-term Pollutant Emissions (g/s/turbine) and Pollutant Screening Impacts																
NOx (g/s/turbine)	0.3170	0.3078	0.3058	0.2885	0.3770	0.3691	0.3655	0.3475	0.4462	0.4409	0.4360	0.4076	0.5239	0.5185	0.5138	0.4855
CO (g/s/turbine)	0.1930	0.1874	0.1861	0.1756	0.2294	0.2247	0.2225	0.2116	0.2715	0.2684	0.2654	0.2481	0.3187	0.3154	0.3125	0.2952
SO2 (g/s/turbine)	0.0122	0.0120	0.0118	0.0112	0.0146	0.0144	0.0141	0.0134	0.0174	0.0169	0.0168	0.0158	0.0202	0.0198	0.0197	0.0186
PM10 (g/s/turbine)	0.1615	0.1569	0.1559	0.1470	0.1922	0.1881	0.1862	0.1770	0.2274	0.2247	0.2221	0.2078	0.3035	0.3008	0.2984	0.2840
1-Hour NOx*** (ug/m3)	**3.469**	3.426	3.370	3.158	3.291	3.265	3.239	3.131	3.272	3.278	3.249	3.092	3.946	**4.020**	3.996	3.836
Annual NOx*** (ug/m3)	0.299	0.293	0.289	0.273	0.296	0.294	0.292	0.283	0.289	0.291	0.289	0.276	0.354	0.365	**0.362**	0.347
1-Hour CO (ug/m3)	**2.112**	2.086	2.051	1.922	2.002	1.988	1.972	1.907	1.991	1.995	1.978	1.882	2.401	**2.445**	2.431	2.333
8-Hour CO (ug/m3)	1.327	1.301	1.288	1.223	1.334	1.323	1.313	1.273	1.343	1.347	1.336	1.273	1.619	**1.648**	1.638	1.570
1-Hour SO2 (ug/m3)	0.134	0.134	0.130	0.123	0.127	0.127	0.125	0.121	0.128	0.126	0.125	0.120	0.152	**0.154**	0.153	0.147
3-Hour SO2 (ug/m3)	0.111	0.110	0.108	0.102	0.117	0.116	0.114	0.110	0.118	0.117	0.116	0.112	0.142	**0.143**	0.143	0.137
24-Hour SO2 (ug/m3)	0.035	0.035	0.034	0.032	0.036	0.036	0.035	0.034	0.035	0.035	0.035	0.033	0.042	**0.043**	0.043	0.041
Annual SO2 (ug/m3)	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.014	0.014	**0.014**	0.013
24-Hour PM10 (ug/m3)	0.464	0.455	0.450	0.424	0.468	0.464	0.460	0.445	0.457	0.460	0.456	0.437	0.635	**0.655**	0.651	0.629
Annual PM10 (ug/m3)	0.152	0.149	0.148	0.139	0.151	0.150	0.149	0.144	0.147	0.148	0.147	0.141	0.205	0.212	**0.211**	0.203

Worst-Case Operating Scenarios are **bolded/highlighted**. Worst-Case 60% load condition (Case 1) is also **bolded/highlighted** - used for startup analyses.

**Annual unitized/pollutant concentrations are the 3-year average of annual impacts, appropriate for PM2.5 NAAQS. Annual NO2/PM10 impacts (for NAAQS) and PSD increments would be slightly higher.

Attachment 6
Malburg Generating Station Emission Rates and Stack Parameters for Refined Modeling

	Stack Height meters	Temp, Kelvins	Exhaust Velocity, m/s	Stack Diam, m	Emission Rates, g/s NOx	SO2	CO	PM10/ PM2.5	Emission Rates, lb/hr NOx	SO2	CO	PM10/ PM2.5
Averaging Period: One hour for Normal Operations												
Each Turbine - Case 14	33.53	377.59	13.844	3.6576	0.5185	0.0198	0.3154	-	4.115	0.157	2.503	-
Fire Pump (a)	3.51	738.15	69.458	0.1143	0.2180	0.0003	0.0743	-	1.73	0.002	0.59	0.08
Averaging Period: Three hours for Normal Operations												
Each Turbine - Case 14	33.53	377.59	13.844	3.6576	-	0.0198	-	-	-	0.157	-	-
Fire Pump	3.51	738.15	69.458	0.1143	-	8.400E-5	-	-	-	6.667E-4	-	-
Averaging Period: Eight hours for Normal Operations												
Each Turbine - Case 14	33.53	377.59	13.844	3.6576	-	-	0.3154	-	-	-	2.503	-
Fire Pump	3.51	738.15	69.458	0.1143	-	-	9.293E-3	-	-	-	7.375E-2	-
Averaging Period: 24 hours for Normal Operations												
Each Turbine - Case 14	33.53	377.59	13.844	3.6576	-	0.0198	-	0.4207	-	0.157	-	3.339(b)
Fire Pump	3.51	738.15	69.458	0.1143	-	1.050E-5	-	4.200E-4	-	8.333E-5	-	3.333E-3
Cooling Tower - Each Cell	13.73	316.00	10.028	6.7056	-	-	-	0.0116	-	-	-	0.092
Averaging Period: Annual Periods (includes all Startups/Shutdowns)												
Each Turbine - Case 15	33.53	378.15	13.743	3.6576	0.5921	0.0201	-	0.4207	4.699	0.160	-	3.339(b)
Fire Pump = 52 hours/year (a)	3.51	738.15	69.458	0.1143	1.294E-3	1.496E-6	-	5.984E-5	1.027E-2	1.187E-5	-	4.749E-4
Cooling Tower - Each Cell	13.73	316.00	10.028	6.7056	-	-	-	0.0116	-	-	-	0.092
Averaging Period: One hour for Startup Periods - Scenario 1: One Turbine in Cold Startup												
One Turbine - Case 1	33.53	375.37	9.556	3.6576	7.7364	-	12.9024	-	61.40	-	102.40	-
Averaging Period: One hour for Startup Periods - Scenario 2: Two Turbines in Hot Startup												
Each Turbine - Case 1	33.53	375.37	9.556	3.6576	6.4638	-	7.5474	-	51.30	-	59.90	-
Averaging Period: Eight hours for Startup Periods												
Each Turbine - Case 1	33.53	375.37	9.556	3.6576	-	-	4.6683	-	-	-	37.052	-
Fire Pump	3.51	738.15	69.458	0.1143	-	-	9.293E-3	-	-	-	7.375E-2	-

Assumptions:

Turbine operates 24 hours per day for all cases and pollutants

Fire pump not tested during 1-hr startups (Cold or Hot)

(a) Due to intermittent use of firepump, annual average emissions used for 1-hour NO2 and SO2 NAAQS assessment per USEPA guidance.

(b) 24-hour and annual PM10/PM2.5 turbine emissions set equal to current permit limit (29.25 tons/year total for both turbines).

Annual Emissions Calculations (lbs/year)

#events	w/ Startups/Shutdowns	NOx	SO2	PM
30	Cold Startups	3,684.0	8.28	108.6
26	Warm Startups	1,333.8	5.38	70.6
0	Hot Startups	0.0	0.00	0.0
56	Shutdowns	252.0	3.92	50.7
8633hrs	Normal	35,896.0	1,381.28	20,796.9
	Total Emissions (lbs/year)	**41,165.8**	**1,398.86**	21,026.8
	Total Emissions (tons/yr)	20.583	0.699	10.513
	Permit Limits (tons/yr)	19.7	0.642	**14.625**

Startup Emissions Calculations

(lbs/event)	mins/event	1-hr NOx	1-hr SO2	1-hr PM	1-hr CO	8-hr CO	#events 8-hr CO
Cold Startup	120	122.8	0.276	3.620	204.8	204.8	1
Warm Startup	90	51.3	0.207	2.715	59.9	0	0
Hot Startup	60	51.3	0.138	1.810	59.9	59.9	1
Shutdown	30	4.5	0.070	0.905	10.8	21.6	2
Max Normal (lb/hr)		4.158	**0.160**	**2.409**	2.529	2.529	240 mins
Cold Startup (lbs/hr)	Scenario 1	**61.40**	0.138	1.810	**102.40**	#N/A	
Warm Startup (lbs/hr)		34.20	0.138	1.810	39.93	#N/A	
Hot Startup (lbs/hr)	Scenario 2	**51.30**	0.138	1.810	**59.90**	#N/A	
Shutdown (lb/hr)		6.58	0.150	2.110	12.06	#N/A	
8-hr CO Startup (lb/hr)		#N/A	#N/A	#N/A	#N/A	37.052	

FIGURE 1
ANNUAL WIND ROSE OF
20012 & 2015-2016 COMPTON METEOROLOGICAL DATA
PROCESSED BY SCAQMD FOR AERMOD

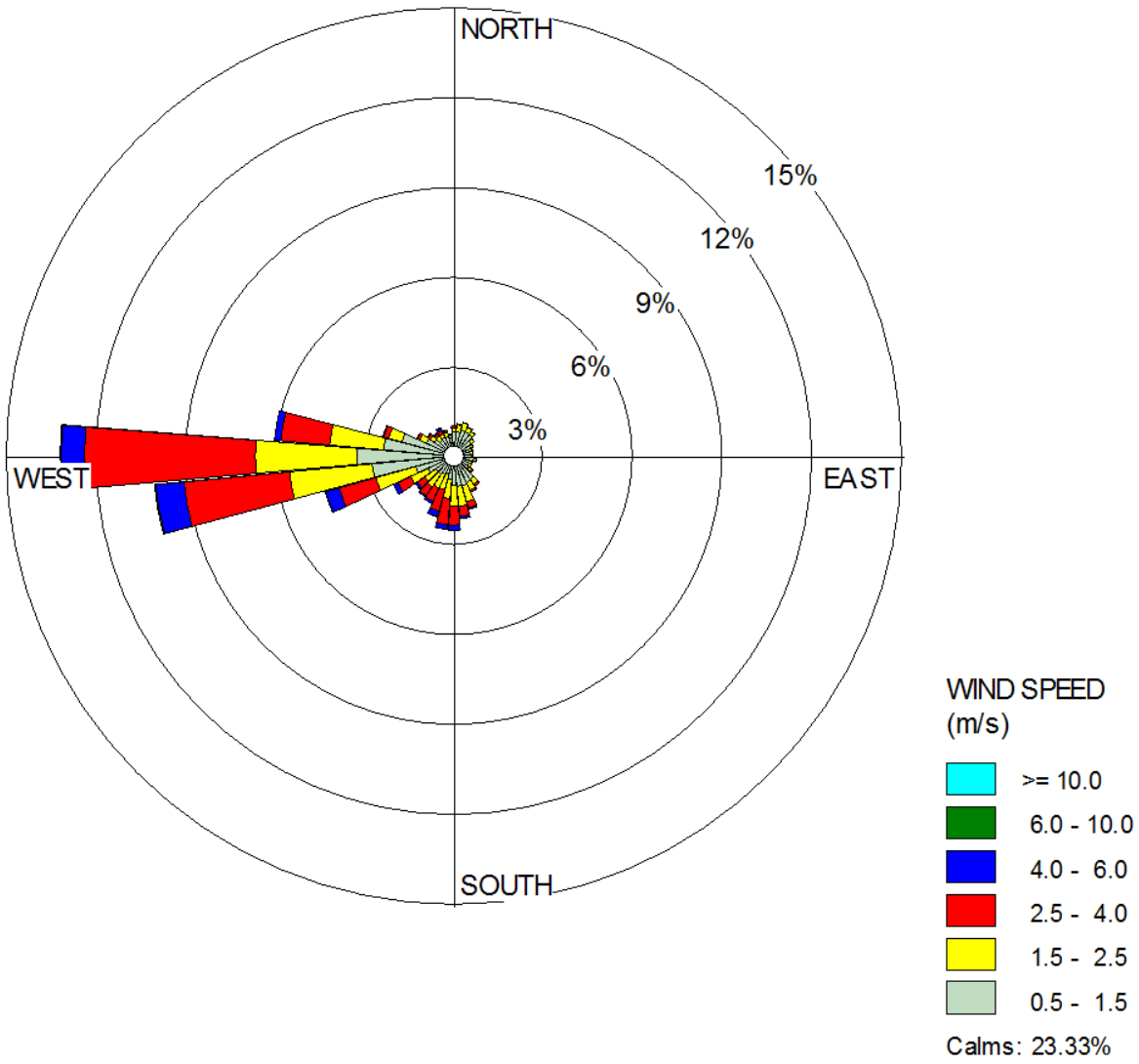


FIGURE 2
1ST QUARTER (JANUARY-MARCH) WIND ROSE OF
20012 & 2015-2016 COMPTON METEOROLOGICAL DATA
PROCESSED BY SCAQMD FOR AERMOD

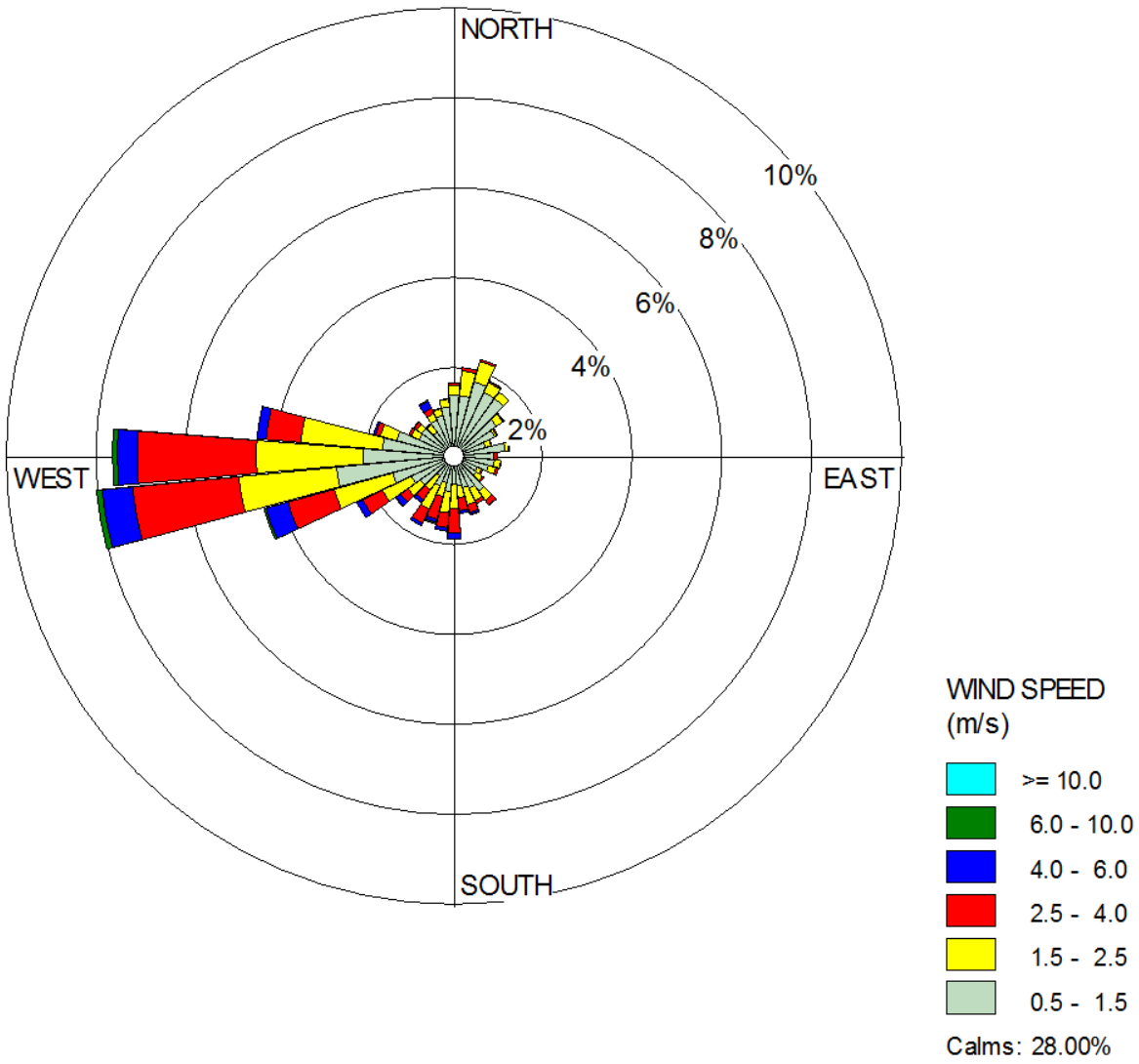


FIGURE 3
2ND QUARTER (APRIL-JUNE) WIND ROSE OF
20012 & 2015-2016 COMPTON METEOROLOGICAL DATA
PROCESSED BY SCAQMD FOR AERMOD

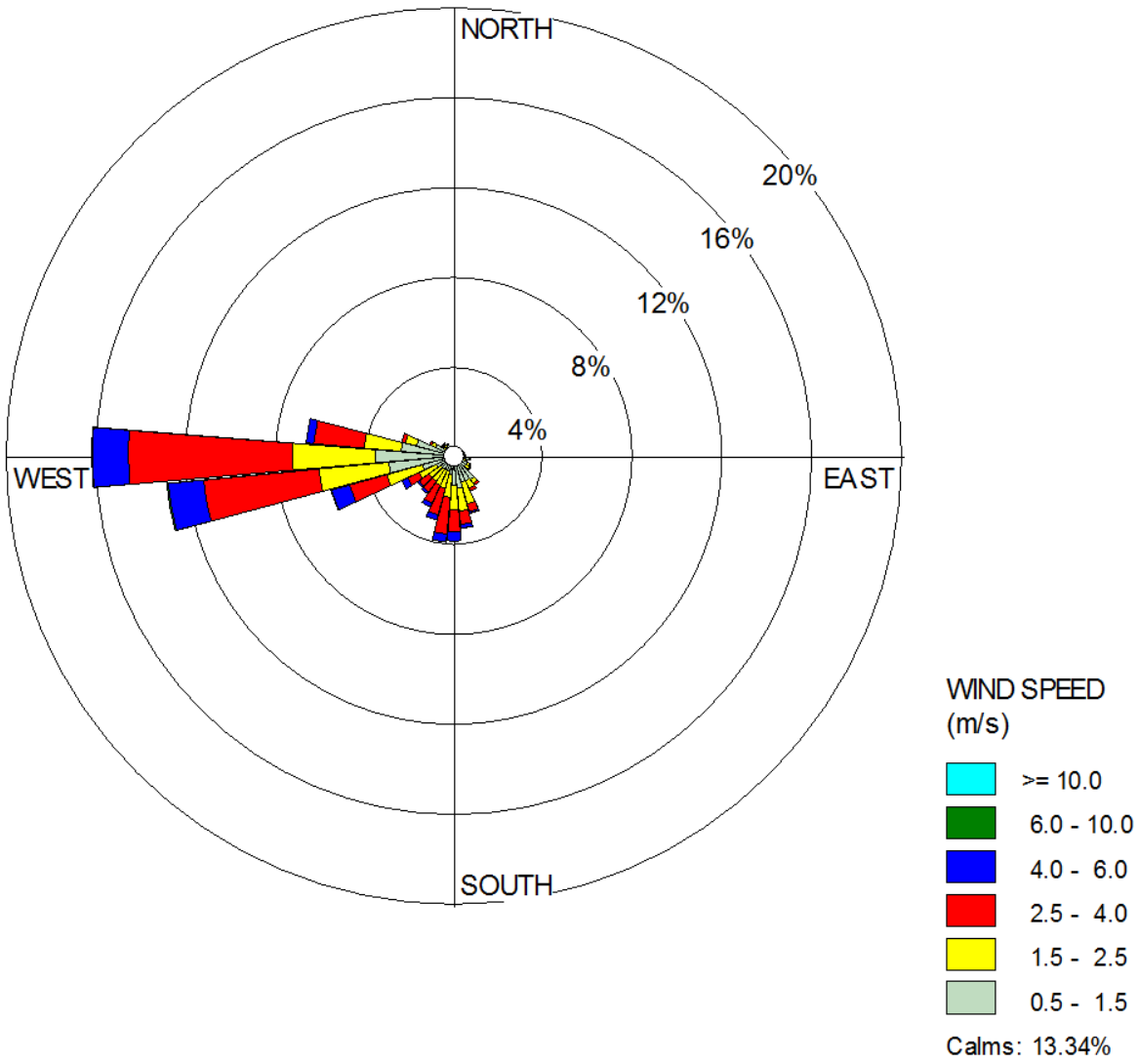


FIGURE 4

3RD QUARTER (JULY-SEPTEMBER) WIND ROSE OF
20012 & 2015-2016 COMPTON METEOROLOGICAL DATA
PROCESSED BY SCAQMD FOR AERMOD

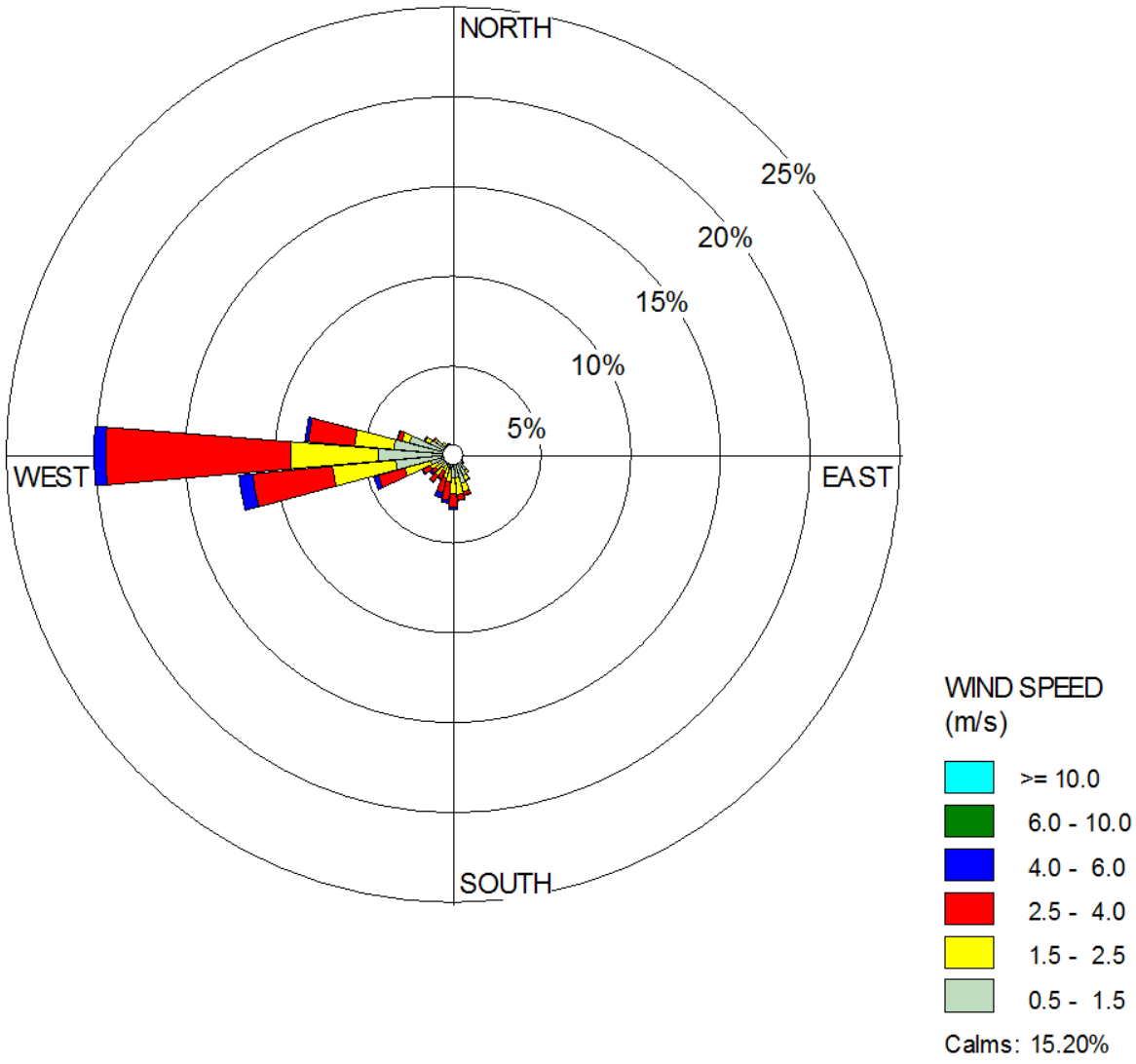
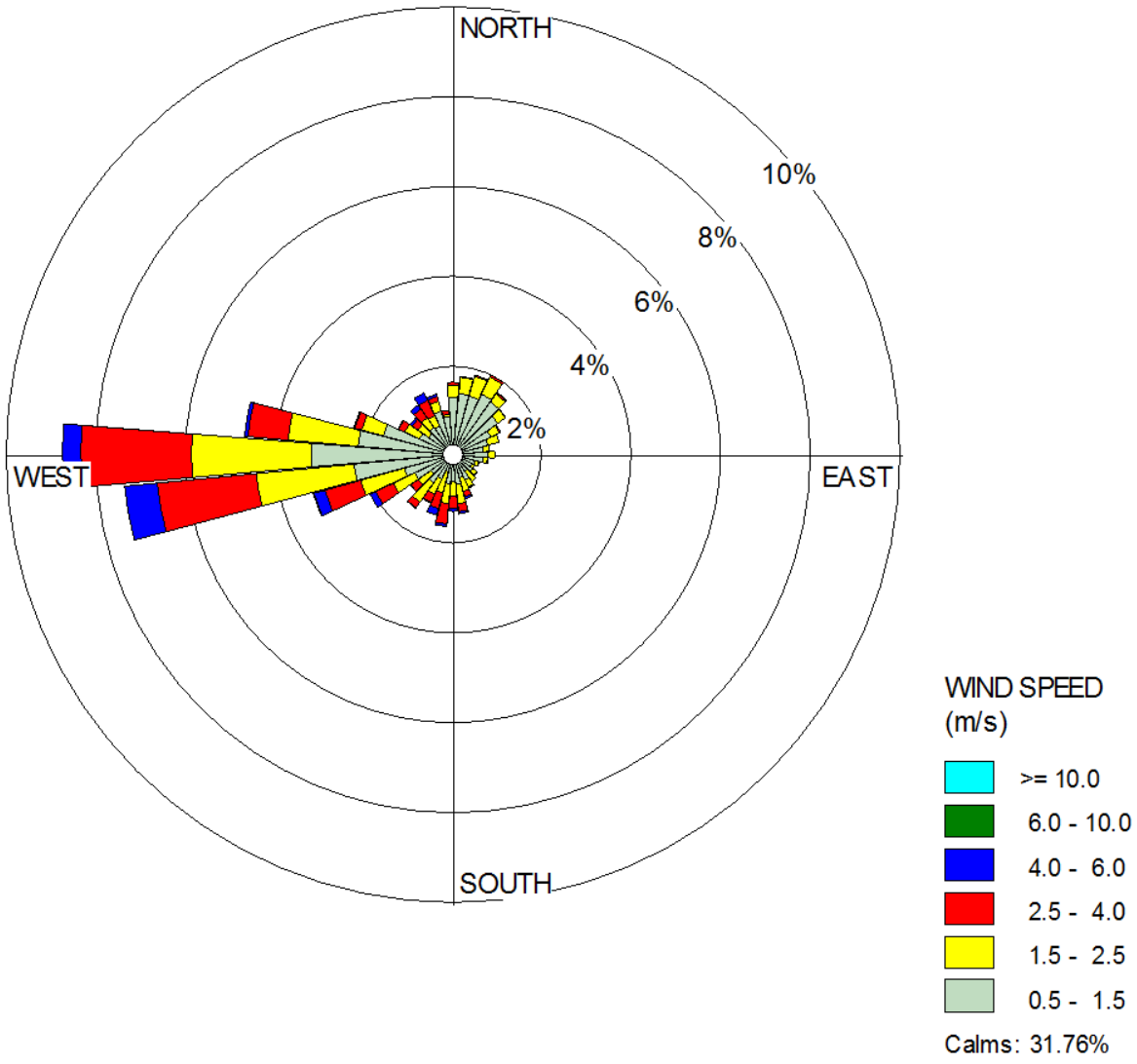


FIGURE 5

4TH QUARTER (OCTOBER-DECEMBER) WIND ROSE OF
20012 & 2015-2016 COMPTON METEOROLOGICAL DATA
PROCESSED BY SCAQMD FOR AERMOD



Air Quality Modeling Protocol

Malburg Generating Station

Vernon, California

Submitted to

South Coast Air Quality Management District

California Energy Commission

Submitted by

Bicent (California) Malburg, LLC

Prepared by

Atmospheric Dynamics, Inc.

ATMOSPHERIC DYNAMICS, INC
Meteorological & Air Quality Modeling

October 2017

INTRODUCTION AND PROJECT DESCRIPTION

The Malburg Generating Station (MGS) is proposing to modify the existing nominal 134-MW combined-cycle plant, located at 4963 South Soto Street, in the City of Vernon, California. MGS will upgrade the existing turbines with the Siemens SGT-800 A-Plus Upgrade package. The upgrade package improves efficiency through increasing the turbine firing temperature. The existing blades and vanes would be replaced and the replacement components are considered to be functionally equivalent.

The existing MGS consists of two (2) Alstom GTX 100 combustion turbine generators (CTGs), rated at 454.05 MMBtu/hr (HHV) which are equipped with dry low-NO_x (DLN) combustors and selective catalyst reduction (SCR) and oxidizing catalysts; two heat recovery steam generators (HRSG) with supplemental duct firing at 81.2 MMBtu/hr (HHV); a single condensing steam turbine-generator (STG); a three (3) cell cooling tower and various support equipment. There is an emergency diesel-fired firewater pump at the site. The MGS currently operates under the existing SCAQMD Title V operating permit (November 2015).

The existing MGS turbines were previously designated as Alstom Power Model GTX 100. When the Siemens Power Corporation purchased Alstom Power, the Alstom GTX 100 turbines had their model number re-designated to the SGT-800 to conform to Siemens' naming convention. The upgrade will change the nominal turbine rating from 445 to 480 MMBtu/hr and will raise the turbines output from 44 to 48 MW. The increase in efficiency will result in a two (2) percent decrease in fuel consumption per kWh. There are no proposed changes to the existing HRSG or the cooling tower design. The upgrade package will replace or modify the following existing components with functionally equivalent design:

- Replace Row 1 Compressor Blading
- Redesigned Row 1 Turbine Vanes and Blading
- Redesigned Row 2 Vanes
- Optimized Cooling Air System

Based on the Upgrade Package, there may be a slight increase in the short-term (hourly) emissions of oxides of nitrogen (NO_x) and sulfur dioxide (SO_2). But based on the turbine performance data from Siemens, there may be a slight decrease in the emissions of particulate matter (PM10/2.5), carbon monoxide (CO), and volatile organic compounds (VOCs). MGS is not proposing to modify the existing monthly or annual emissions and will retain the existing permitted limits.

The project operates as a base loaded power plant and has emission levels less than Prevention of Significant Deterioration (PSD) thresholds of 100 tons per year. The MGS is not expected to have emission increases which would exceed the Rule 1304(d) Table A-offset threshold values. Thus, no new offsets are proposed for the project. The MGS design will continue to incorporate the air pollution emission controls designed to meet current SCAQMD BACT/LAER determinations at the following levels (15% O_2):

- NOx 2 ppm
- CO 2 ppm
- VOC 2 ppm

PROJECT LOCATION

The MGS is located in Los Angeles County within the South Coast Air Basin. The MGS site is located at 4963 South Soto Street, in the City of Vernon, CA. The project is situated on 3.4 acres on the northwest corner of East 50th Street and South Soto Street and is surrounded by industrial land uses in the western portion of the City of Vernon, near the geographical center of Los Angeles County, about three miles southeast of downtown Los Angeles and 15 miles north of the major harbor and port facilities in San Pedro and Long Beach. Figure 1 shows the MGS site and immediate vicinity.

PROPOSED AIR QUALITY DISPERSION MODELS

The primary United States Environmental Protection Agency (USEPA) dispersion model proposed for use is the AERMOD modeling system (AERMOD) with the associated receptor processing program AERMAP. AERMOD will be used to quantify pollutant impacts on the surrounding environment based on the emission sources operating parameters and their locations, and will be used for modeling MGS facility impacts in both simple and complex terrain. In addition, the Building Profile Input Program for PRIME (BPIP-PRIME) will be used for determining building dimensions for downwash calculations in AERMOD and the USEPA-model AERSCREEN is proposed for use to determine inversion-breakup fumigation impacts. The California Health Risk Assessment models/protocols, which include the HARP Version 2 (HARP 2) program, will be used for determining toxic impacts and is discussed separately below. These models and their versions are listed in Table 1.

Table 1 USEPA Models and Versions

USEPA Model	Version
AERMOD	16216r
AERMET	16216
AERMAP	11103
AERSCREEN	16216
BPIP-PRIME	04274
HARP 2 (ADMRT)	17052

These models will be used for the following:

- Comparison of MGS impacts to significant impact levels (SILs), California and National Ambient Air Quality Standards (AAQS, also referred to separately as CAAQS and NAAQS);
- Cumulative impacts analyses in accordance with SCAQMD/CEC requirements (to be completed at a later date after consultation with the appropriate agencies); and

- Health Risk analyses using ARB algorithms as incorporated into CAPCOA and SCAQMD requirements.

Regulatory agencies have traditionally applied "significant impact levels" ("SILs") as a *de minimis* value, which represents the offsite concentration predicted to result from a source's emissions that does not warrant additional analysis or mitigation. If a source's modeled impact at any offsite location exceeds the relevant SIL, the source owner may need to assess multi-source or cumulative air quality analysis to determine whether or not the source's emissions will cause or contribute to a violation of the relevant NAAQS or CAAQS.

The MGS impacts will be analyzed pursuant to SCAQMD and CEC modeling requirements. The SCAQMD modeling requirements in *"SCAQMD Modeling Guidance for AERMOD"*[1] will be followed, which include:

- Default (DFAULT) model option with the u-star adjustment (ADJ_U*) and URBAN options using Los Angeles County population of 9,862,049 for all sources;
- Use of AERMOD meteorological data for the nearest representative site on the SCAQMD website; 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 (NED) files.

These and other modeling requirements are discussed in more detail below.

EXISTING METEOROLOGICAL AND AIR QUALITY DATA

Available Meteorological Data: Hourly observations of certain meteorological parameters are used to define the area's dispersion characteristics. These data are used in approved air dispersion models for defining a project's impact on air quality. These data must meet certain criteria established by the USEPA and the following discussion details the proposed data and its applicability to this project.

The climate of the South Coast Air Basin (basin) is strongly influenced by the local terrain and geography. The basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean on the west, and relatively high mountains forming the north, south, and east perimeters. The climate is mild, tempered by cool sea breezes and is dominated by the semi-permanent high pressure of the eastern Pacific. The MGS is located on the coastal plain about 21.5 km from the Pacific Ocean, and can be generally characterized as a Mediterranean type climate. Terrain surrounding the MGS location is mostly flat or rolling and gradually increases toward the north and northeast. There is no large significant terrain between the ocean and the project site. Land use characteristics along with terrain considerations were considered in order to determine which SCAQMD meteorological and air quality data sets would be considered representative of the project area.

[1]http://www.aqmd.gov/home/library/air-quality-data-studies/meteorological-data/modeling-guidance

The SCAQMD currently provides 27 AERMOD meteorological data sets, which are located throughout the SCAQMD air basin, on their website. For the meteorological data, the SCAQMD developed these data bases by using site specific surface characteristics (i.e., surface albedo, roughness lengths, and Bowen ratios) obtained from AERSURFACE, modified as appropriate for urban conditions by the SCAQMD. The data were recently reprocessed by the SCAQMD with the latest version of AERMET and the latest default USEPA ADJ_U* option.

The Central LA meteorological data are measured 7.3 kilometers (km) north from the project site, but the location in downtown Los Angeles and adjacent to the nearby terrain make these data unrepresentative of the project site as demonstrated below. The next two nearest SCAQMD AERMOD data sets are Lynwood (8.0 km to the south) and Compton (10.9 km to the south, and also the site of the selected background air quality data), are located in areas of land use and terrain more representative of the MGS site.

The original 2002 permit analyses used ISCST with 1981 meteorological data from a nearby meteorological monitoring site in Vernon. The Vernon data are not available in the format needed for AERMOD, so a comparison of the 1981 wind roses for the ISCST Vernon data[2] and the nearest AERMET SCAQMD processed meteorological data[3] from Lynwood (2006-2007 and 2009), Compton (2009-2010 and 2012), and Central Los Angeles (2006-2007 and 2009-2011) was made and is included as Figure 2. The terrain surrounding the Central Los Angeles site severely affects the meteorological data as shown in Figure 2, so the Central Los Angeles site would not be considered to be representative for MGS modeling purposes. Of the two remaining sites, the Compton AERMET meteorological data appears to most closely represent the MGS site as shown by the 1981 Vernon ISCST meteorological data.

AERSURFACE was used to determine the surface characteristics at the MGS site and Lynwood and Compton SCAQMD AERMOD meteorological monitoring stations used to generate the AERMOD meteorological data. Annual AERSURFACE values were calculated for the following options: surface roughness calculated for an area circumscribed by a one (1) kilometer radius; airport = NO; continuous snow cover = NO; average moisture conditions; arid region = YES; one single 360° sector; and default monthly seasonal assignments to calculate annual average values. SCAQMD meteorological station coordinates (in latitude and longitude) were taken from the SCAQMD Table 3 website.[4] The AERSURFACE results are shown in Table 2 below.

Table 2 Surface Characteristics for MGS Site and SCQMD AERMOD Met Stations

Standardized Land Use Category	MGS Site Location	Lynwood	Compton

[2](www.aqmd.gov/home/library/air-quality-data-studies/meteorological-data/iscst3-table-1).
[3](www.aqmd.gov/home/library/air-quality-data-studies/meteorological-data/aermod-table-1).
[4](www.aqmd.gov/home/library/air-quality-data-studies/meteorological-data/aermod-table-3).

(for area within a 1km radius)			
Open Water:	0.0%	0.0%	0.0%
Perennial Ice/Snow:	0.0%	0.0%	0.0%
Low Intensity Residential:	23.9%	43.6%	42.3%
High Intensity Residential:	3.6%	17.3%	18.3%
Commercial/Industrial/Transp:	66.2%	23.2%	32.6%
Bare Rock/Sand/Clay:	4.8%	4.7%	0.6%
Quarries/Strip Mines/Gravel:	0.0%	0.0%	0.0%
Transitional:	0.0%	0.0%	0.0%
Deciduous Forest:	0.0%	0.0%	0.0%
Evergreen Forest:	0.0%	0.3%	0.3%
Mixed Forest:	0.1%	0.9%	1.3%
Shrubland:	1.3%	7.1%	3.5%
Orchards/Vineyard/Other:	0.0%	0.0%	0.0%
Grasslands/Herbaceous:	0.1%	2.2%	0.9%
Pasture/Hay:	0.0%	0.0%	0.0%
Row Crops:	0.0%	0.1%	0.0%
Small Grains:	0.0%	0.0%	0.0%
Fallow:	0.0%	0.0%	0.0%
Urban/Recreational Grasses:	0.0%	0.7%	0.3%
Woody Wetlands:	0.0%	0.0%	0.0%
Emergent Herbaceous Wetlands:	0.0%	0.0%	0.0%
Surface Roughness (meters)	0.543	0.428	0.542
Noontime Albedo	0.18	0.18	0.18
Bowen Ratio (Average Moisture)	1.37	1.25	1.27

Surface roughness for the Compton meteorological monitoring station is more similar to the MGS site location than Lynwood. Both SCAQMD meteorological monitoring stations have more low-intensity and high-intensity residential areas while the MGS site location has relatively more and commercial/industrial/transportation areas. The combined percentage of high-intensity residential plus commercial/industrial areas is closer for Compton (51%) than Lynwood (41%) to the MGS site location (70%).

For these reasons, the Compton meteorological monitoring site is proposed as the most representative meteorological data set due to its proximity and similar wind rose to the original 1981 ISCST Vernon meteorological data, and because of the lack of significant terrain and similar urban characteristics of the land use at the Compton meteorological and MGS project sites. The SCAQMD has recently reprocessed these meteorological data with the latest version of AERMET using the latest default USEPA ADJ_U* option and has provided three years of recent data (2012, 2015, and 2016).

The AERMOD data provided by the SCAQMD consist of hourly-averaged measurements of wind speed and wind direction, temperature, and other meteorological variables required by AERMOD that meet the minimum USEPA requirements for data recovery rates of 90 percent by quarter. Wind roses of the meteorological data set selected will be included in the modeling report.

Existing Baseline Air Quality Data: The closest monitoring site is the Los Angeles North Main Street station, located 7.3 km north of the project site near the heart of downtown Los Angeles.

Due to the larger buildings and higher concentrations of businesses and people, this monitoring site was not deemed representative of pollutant concentrations at the MGS site. The next nearest monitoring site is the Compton monitoring site, located 10.9 km south of the project site. Due to the similar land use characteristics of the Compton monitoring and MGS project sites (as described above), these Compton monitoring data were used when available for background air quality. The Pico Rivera #2 monitoring site is located 14.1 km east of the project site. Due to differences in land use, further distance from MGS, and the presence of nearby significant terrain (both the Compton and MGS sites are relatively flat), the Pico Rivera #2 data was deemed less representative of MGS baseline air quality. Nevertheless, these data are included below for comparison to the other two sites. Neither the Compton nor Pico Rivera #2 monitoring sites measure PM10 or SO_2, data for which were taken from the Los Angeles monitoring site.

Ambient monitoring data for these sites for the most recent three-year period (2014-2016) are listed on Table 3. Data from these sites are expected to present a reasonable representation of background air quality for the project site and impact area.

Table 3 Measured Ambient Air Quality Concentrations by Year

Pollutant	Units	AvgTime	Basis	Site	2014	2015	2016
Ozone	ppm	1-Hr	CAAQS-1st Highs	Compton	0.094	0.091	0.098
				LA-N. Main St.	0.113	0.104	0.103
				Pico Rivera #2	0.121	0.107	0.111
Ozone	ppm	8-Hr	CAAQS-1st Highs	Compton	0.081	0.072	0.071
				LA-N. Main St.	0.094	0.074	0.078
				Pico Rivera #2	0.092	0.081	0.081
Ozone	ppm	8-Hr	NAAQS-4th Highs	Compton	0.073	0.065	0.064
				LA-N. Main St.	0.072	0.072	0.071
				Pico Rivera #2	0.079	0.075	0.074
NO_2	ppb	1-Hr	CAAQS-1st Highs	Compton	68.2	73.6	63.7
				LA-N. Main St.	82.1	79.1	64.7
				Pico Rivera #2	86.7	70.4	63.2
NO_2	ppb	1-Hr	NAAQS-98th percentiles	Compton	59.2	58.7	58.4
				LA-N. Main St.	67.4	62.4	61.0
				Pico Rivera #2	61.9	61.6	60.1
NO_2	ppb	Annual	CAAQS/NAAQS-AAM	Compton	15.6	16.9	15.6
				LA-N. Main St.	22.2	22.2	20.8
				Pico Rivera #2	19.5	20.5	20.0
CO	ppm	1-Hr	CAAQS/NAAQS-1st Highs	Compton	6	4.4	4.4
				LA-N. Main St.	3	3.2	1.9
				Pico Rivera #2	4	2.8	2.8
CO	ppm	8-Hr	CAAQS/NAAQS-1st Highs	Compton	3.8	3.3	3.9
				LA-N. Main St.	2.0	1.8	1.4
				Pico Rivera #2	2.5	1.7	1.7
SO_2	ppm	1-Hr	CAAQS-1st Highs	LA-N. Main St.	5.4	12.6	13.4

		1-Hr	NAAQS-99th percentiles	LA-N. Main St.	4.4	6.3	2.5
		24-Hr	CAAQS/NAAQS-1st Highs	LA-N. Main St.	1.4	1.1	1.3
		Annual	CAAQS/NAAQS-AAM	LA-N. Main St.	0.29	0.17	0.30
PM10	ug/m3	24-Hr	CAAQS-1st Highs	LA-N. Main St.	87	88	67
		24-Hr	NAAQS-2nd Highs	LA-N. Main St.	61	63	57
		Annual	CAAQS-AAM	LA-N. Main St.	35.4	33.0	32.4
PM2.5	ug/m3	24-Hr	NAAQS-98th percentiles	Compton	30.9	37.2	26.35
				LA-N. Main St.	34.5	38.0	27.30
				Pico Rivera #2	30.1	27.6	25.13
		Annual	CAAQS/NAAQS-AAM	Compton	12.64	11.78	11.13
				LA-N. Main St.	12.36	12.38	11.83
				Pico Rivera #2	12.08	11.14	11.75
Notes: Data sources: SCAQMD website 8/8/17 and USEPA AIRS website 6/13/17							

Based on the data presented in Table 3, background values will be selected as appropriate for the standard as shown in Table 4. As noted above, the Compton ambient air quality data were used where available. Generally the highest baseline concentration for any of the most recent three years is used for comparison to any of the CAAQS and many of the NAAQS. The maximum second-highest 24-hour PM10 concentrations are used for the NAAQS and some of the other NAAQS will be based on 3-year averages appropriate for the NAAQS.

Table 4 Background Air Quality Data

Pollutant and Averaging Time	Background Value (ug/m3)
Ozone – 1-hour Maximum CAAQS	**192**
Ozone – 8-hour Maximum CAAQS/ 3-year average 4th High NAAQS	**159/143**
PM10 – 24-hour Maximum CAAQS/ 24-hour High, 2nd High NAAQS	**88/63**
PM10 – Annual Maximum CAAQS	**35.4**
PM2.5 – 3-Year Average of Annual 24-hour 98th Percentiles NAAQS	**31.5**
PM2.5 – Annual Maximum CAAQS/ 3-Year Average of Annual Values NAAQS	**12.6/11.9**
CO – 1-hour Maximum CAAQS/NAAQS	**6,871**
CO – 8-hour Maximum CAAQS/NAAQS	**4,466**
NO_2 – 1-hour Maximum CAAQS/ 3-Year Average of Annual 98th Percentile 1-hour Daily Maxima NAAQS	**138.5/110.6**
NO_2 – Annual Maximum CAAQS/NAAQS	**31.8**
SO_2 – 1-hour Maximum CAAQS/ 3-Year Average of Annual 99th Percentile 1-hour Daily Maxima NAAQS	**35.1/11.5**

SO_2 – 3-hour Maximum NAAQS (Not Available - Used 1-hour Maxima)	**35.1**
SO_2 – 24-hour Maximum CAAQS/NAAQS	**3.7**
SO_2 – Annual Maximum NAAQS	**0.8**

As noted in text, Compton measurements used for representative background concentrations when available (Los Angeles North Main Street measurements required for SO_2 and PM10)
Conversion of ppm/ppb measurements to $\mu g/m^3$ concentrations based on:
$\mu g/m^3$ = ppm x 40.9 x MW, where MW = 48, 28, 46, and 64 for ozone, CO, NO_2, and SO_2, respectively.

The attainment designations of the SCAQMD air basin for the NAAQS and CAAQS are summarized in Table 5.

Table 5 SCAQMD Attainment Status

Pollutant	Averaging Time	Federal Status	State Status
Ozone	1-hour	Nonattainment (Extreme)	Nonattainment
Ozone	8-hour	Nonattainment (Extreme)	Nonattainment
CO	All	Attainment (Maintenance)	Attainment
NO_2	All	Unclassified/Attainment	Attainment
SO_2	All	Unclassified/Attainment	Attainment
PM10	All	Attainment (Maintenance)	Nonattainment
PM2.5	All	Nonattainment (Moderate)	Nonattainment
Sulfates	24-hour	No NAAQS	Attainment
Lead	All	Unclassified/Attainment	Attainment
H_2S	1-hour	No NAAQS	Unclassified
Visibility Reducing Particles	8-hour	No NAAQS	Unclassified/Attainment

Source: 2016 AQMP-SCAQMD and 40 CFR 81.305 (2015 version).

AIR QUALITY MODELING PROCEDURES WITH AERMOD/AERSCREEN

Several dispersion models are proposed for use to quantify pollutant impacts on the surrounding environment based on the emission sources and operating parameters. AERMOD will be used to determine facility impacts on Class II areas in the immediate Project vicinity in all simple, intermediate, and complex terrain areas. The AERMOD model will be used for comparison of impacts to SILs and compliance with NAAQS and CAAQS.

Screening/Refined Modeling: A variety of facility operating conditions (e.g., minimum, maximum, and average ambient temperatures) and a range of source loads (e.g., minimum, maximum, and intermediate loads) will be analyzed to identify which operating condition causes worst-case ambient air impacts. The screening modeling will be performed for stack characteristics and emissions for all applicable short-term averaging times (pollutants and averaging times with AAQS) using the entire meteorological dataset (described above).

Annual emissions and stack parameters will be analyzed in the refined modeling analyses based on annual operating conditions (temperatures and source load) for the MGS permitted emission levels which account for hours of operation for both normal and startup and shutdown conditions (which may vary by pollutant). The firewater pump will be included in the refined analyses, along with the cooling tower particulate emissions (for PM10/PM2.5 impacts).

Again, the purpose of the modeling analysis will be to demonstrate that air emissions from the Project will not cause or contribute to any NAAQS/CAAQS exceedances and will not cause a significant health risk impact. For modeling the project's operational impacts under normal and start-up/shutdown conditions due to emissions from the MGS sources on nearby simple and complex terrain, the AERMOD model will be used with the entire hourly meteorological data (described above).

AERMOD Model/Options: AERMOD is a steady-state plume dispersion model that simulates transport and dispersion from multiple point, area, or volume sources based on updated characterizations of the atmospheric boundary layer. AERMOD uses Gaussian distributions in the vertical and horizontal for stable conditions, and in the horizontal for convective conditions; the vertical distribution for convective conditions is based on a bi-Gaussian probability density function of the vertical velocity. For elevated terrain AERMOD incorporates the concept of the critical dividing streamline height, in which flow below this height remains horizontal, and flow above this height tends to rise up and over terrain. AERMOD also uses the advanced PRIME algorithm to account for building wake effects. AERMOD input data options are listed below based on the use of the default (DFAULT) setting, the recent USEPA-default ADJ-U* option, along with the SCAQMD-recommended URBAN option for all sources, which includes the following USEPA modeling techniques.

- Stack tip downwash
- Calm and missing meteorological data processing
- Elevated terrain effects
- No exponential decay, no gas/particle deposition, and no dry/wet depletion.

All project-only NO_2 impacts will be assessed using a conservative Tier 2 modeling analysis based on the Ambient Ratio Method (ARM), with a nationwide default conversion rate of 0.75 (75 percent) for annual NO_2/NO_x ratios and 0.80 (80 percent) for 1-hour NO_2/NO_x ratios (not to be confused with the ARM2 methodology), or a Tier 3 modeling analysis based on the Ozone Limiting Method (OLM). The default in-stack NO_2/NO_x ratio of 0.5 will be used for the turbines while the fire pump will utilize the EPA ISR data base for the in-stack ratio. Also noted is that the fire pump is limited to 50 hours per year of operational testing and as such, will not be assessed for the Federal 1-hour NO_2 standard since the operation of the fire pump is not statistically significant with regards to the probabilistic nature of the standard. Concurrent hourly ozone data for the Compton monitoring site were provided by SCAQMD and will be used in accordance with SCAQMD modeling guidelines and as summarized in this modeling protocol.

Receptor Selection: Receptor and source base elevations will be determined from United States Geological Survey (USGS) National Elevation Dataset (NED) The NED data will be processed with the USEPA-model AERMAP for the receptor locations selected. All coordinates (both sources and receptors) will be referenced to UTM North American Datum 1983 (NAD83, Zone 11) in accordance with SCAQMD guidance.

Receptor grids with 100-meter spacing or less between adjacent receptors will use 1/3-arcsecond (~10 meter) NED data. Receptor grids with spacing between adjacent receptors of greater than 100-meters may utilize 1-arcsecond (~30 meter) NED data. The NED files will extend beyond the receptor grid boundaries being evaluated as appropriate for the hill slope factors.

Cartesian coordinate receptor grids will be used to provide adequate spatial coverage surrounding the project area for assessing ground-level pollution concentrations, to identify the extent of significant impacts, and to identify maximum impact locations. For the full impact analyses, a nested grid will be developed to fully represent the initial location and extent of significance area(s) and maximum impact area(s). The nested grid will be comprised of the following and are presented in Figures 3 and 4:

- Receptors will be placed along the MGS project fenceline with a spacing of about 10 meters or less between adjacent receptors.
- The downwash receptor grid with a receptor spacing of 20 meters will extend from the project fence line out to 500 meters from the project.
- An intermediate receptor grid with 100-meter receptor spacing will extend from the downwash receptor grid out to 1000 meters from the project.
- The first coarse receptor grid with 200 meter receptor spacing will extend from the intermediate receptor grid outwards to five (5) kilometers (km) from the project in all directions.
- The second coarse grid with 500 meter receptor spacing will extend out ten (10) km from the project in all directions.
- When maximum impacts occur in areas outside the 20 meter spaced receptor grid, additional refined receptor grids with 20 meter resolution will be placed around the maximum impacts and extended as necessary to determine maximum impacts.

Ambient concentrations within the facility fence line will not be calculated.

Flagpole receptors are not proposed to be used (ground level concentrations will be calculated). Since the immediate project area in the area of expected maximum impacts is generally flat to gently rolling, separate model runs using the FLAT option in AERMOD will not be assessed.

GEP Stack Height and Downwash: Stack locations and heights and building locations and dimensions will be input to BPIP-PRIME. The first part of BPIP-PRIME determines and reports on whether a stack is being subjected to wake effects from a structure or structures. The second part calculates direction-dependent "equivalent building dimensions" if a stack is being influenced by structure wake effects. The BPIP-PRIME output is formatted for use in AERMOD

input files. Figures 5 and 6 show the onsite and existing offsite structures to be considered in the BPIP-PRIME analysis.

Fumigation Modeling: The AERSCREEN model will be used to evaluate inversion breakup fumigation impacts for all short-term averaging periods (24 hours or less). The methodology outlined in EPA-454/R-92-019 (Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised) will generally be followed for this analysis.

Impacts due to inversion breakup fumigation will be determined using AERSCREEN with all meteorological conditions and ignoring terrain at the distance of the maximum fumigation concentration. The fumigation concentration will be compared to the maximum AERSCREEN concentration under normal dispersion (using the URBAN option) for all meteorological conditions for flat terrain for all short-term averaging times. If fumigation impacts are less than the flat terrain AERSCREEN maxima under normal dispersion, no further analysis is required based on Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised (EPA-454/R-92-019).

If fumigation impacts exceed AERSCREEN maxima under normal dispersion conditions, fumigation impacts will be evaluated for comparison to the SILs and the NAAQS/CAAQS.

Ambient Air Quality Impact Analyses: In evaluating the impacts of the MGS project on ambient air quality, ADI will model the ambient impacts of the project, add those impacts to background concentrations, and compare the results to the state and national ambient standards for SO_2, NO_2, PM10, PM2.5, and CO. The project impacts will also be compared to the USEPA modeling significance levels.

In accordance with USEPA guidance (40 CFR part 51, Appendix W, Sections 11.2.3.2 and 11.2.3.3), the highest modeled concentration will be used for comparison with the SILs and includes short-term CO and PM10 NAAQS and most annual NAAQS. Comparison of the 1-hour NO_2, 1-hour SO_2, 24-hour PM2.5, and annual PM2.5 to the NAAQS SIL will be based on the five-year average of the maximum short-term or the average annual impacts. Similarly, the highest modeled concentration will be used to demonstrate compliance with all short-term and annual CAAQS and also conservatively applied to most NAAQS. Compliance with the 1-hour NO_2, 1-hour SO_2, 24-hour PM2.5, and annual PM2.5 NAAQS will be based on the five-year average of the annual 98^{th} percentiles (99^{th} percentiles for 1-hour SO_2) or average annual impacts consistent with the statistical nature of these NAAQS (see 40 CFR 50).

Cumulative Impact Assessment: To demonstrate that the emissions from the MGS project will not cause or contribute to a violation of any AAQS, a multi-source cumulative modeling analysis will be conducted in accordance with SCAQMD and CEC requirements for all applicable pollutants and averaging times. This analysis will consider both the existing background concentrations, as established by the ambient monitoring data, and the contribution from additional sources which have recently been permitted and which might not be reflected by the existing monitoring data.

The cumulative modeling analysis will be performed at a later date after consultation with the applicable agencies to determine the sources to be modeled and the modeling methodologies to be employed.

Screening Health Risk Assessment: A screening health risk assessment (HRA) will be conducted to evaluate air toxics. The latest version of the HARP 2 program and Air Dispersion Modeling and Risk Tool (ADMRT) will be used to characterize risks from the MGS facility. These models, along with options for their use and how they are used, are discussed below. The screening health risk assessment will be conducted in accordance with the procedures developed by the California Air Resources Board and the Office of Environmental Health Hazard Analysis. For the HRA analyses, the annual average operating condition (100% load at 59°F) will be assessed.

The ADMRT program is a tool within HARP 2 that assists with the programmatic requirements of the Air Toxics Hot Spots Program, and it can be used for preparing health risk assessments for other related programs such as air toxic control measure development or facility permitting applications. HARP 2 is a computer based risk assessment program, which combines the tools of emission inventory database, facility prioritization, air dispersion modeling, and risk assessment analysis. Use of HARP 2 promotes statewide consistency in the area of risk assessment, increases the efficiency of evaluating potential health impacts, and provides a cost-effective tool for developing facility health risk assessments. HARP 2 may be used on single sources, facilities with multiple sources, or multiple facilities in close proximity to each other.

The ADMRT program will be used to convert the AERMOD output plot files into a form that can be used by HARP 2. The ADMRT program is basically a post-processor that will take ASCII post files from AERMOD and process these files to calculate acute, chronic, and cancer impacts, identical to the methods used in the current version of HARP 2.

The screening health risk assessment will be carried out in three steps. First, emissions of toxic air pollutants from the project will be calculated. Next, the ADMRT subroutine will be used to convert the maximum AERMOD concentration at each receptor due to the operation of the MGS project. The high-resolution receptor grids as derived from the facility AERMOD modeling will then be used in HARP 2. Finally, HARP 2 will be used to evaluate acute, chronic and cancer risks through inhalation and non-inhalation pathways based upon the maximum predicted concentration at each receptor. Some of the assumptions used in running the HARP program will be set as follows:

- Emission rates for non-criteria pollutants will be based upon the expected fuel use of the sources.
- Number of residents affected will be based upon the updated 2010 population data for those census tracts or portions of census tracts, which lie within the maximum impact receptor radius of the MGS facility.
- Number of workers affected will be based upon the county average percentage of non-farm workers as compared to the total county population in 2010. This average will be applied to all affected census tracts.

- Deposition velocity is taken to be 0.02 m/s, as recommended by ARB for controlled sources.

The receptor grids used for the HARP 2 risk analyses will be identical to those used for the refined modeling, with the addition of sensitive receptors such as schools, day care centers, hospitals, and care facilities. In addition, the point of maximum impact (PMI), maximally exposed individual resident (MEIR), and the maximally exposed individual worker (MEIW) will be shown. A complete list of the discrete sensitive receptors within one (1) mile of the facility will be included in the application as well as census tract population data, census tract maps and affected tracts within six (6) miles of the facility.

The HARP 2 program results for acute and chronic inhalation and chronic non-inhalation exposures, cancer burden and individual cancer risk (workplace and residential) for the combustion sources will be summarized. Separate calculations will be shown for each type of exposure and risk.

FINAL MODELING SUBMITTAL

As part of the final modeling analyses, the SCAQMD and CEC will be supplied with the following materials:

- Figure of the local site area taken from nearby US Geological Survey (USGS) 7½' (1:24,000) map(s) or aerial photos showing the facility, property fenceline, and nearby receptors;
- Figure of the regional area taken from USGS maps showing the outline of receptor grids modeled;
- All modeling outputs (including BPIP and meteorological files) on CD-ROM disc;
- Figure showing the building identifiers in the BPIP PRIME run(s); and
- Figure showing the location of all regulatory-significant maximum impacts for facility operations

FIGURE 1

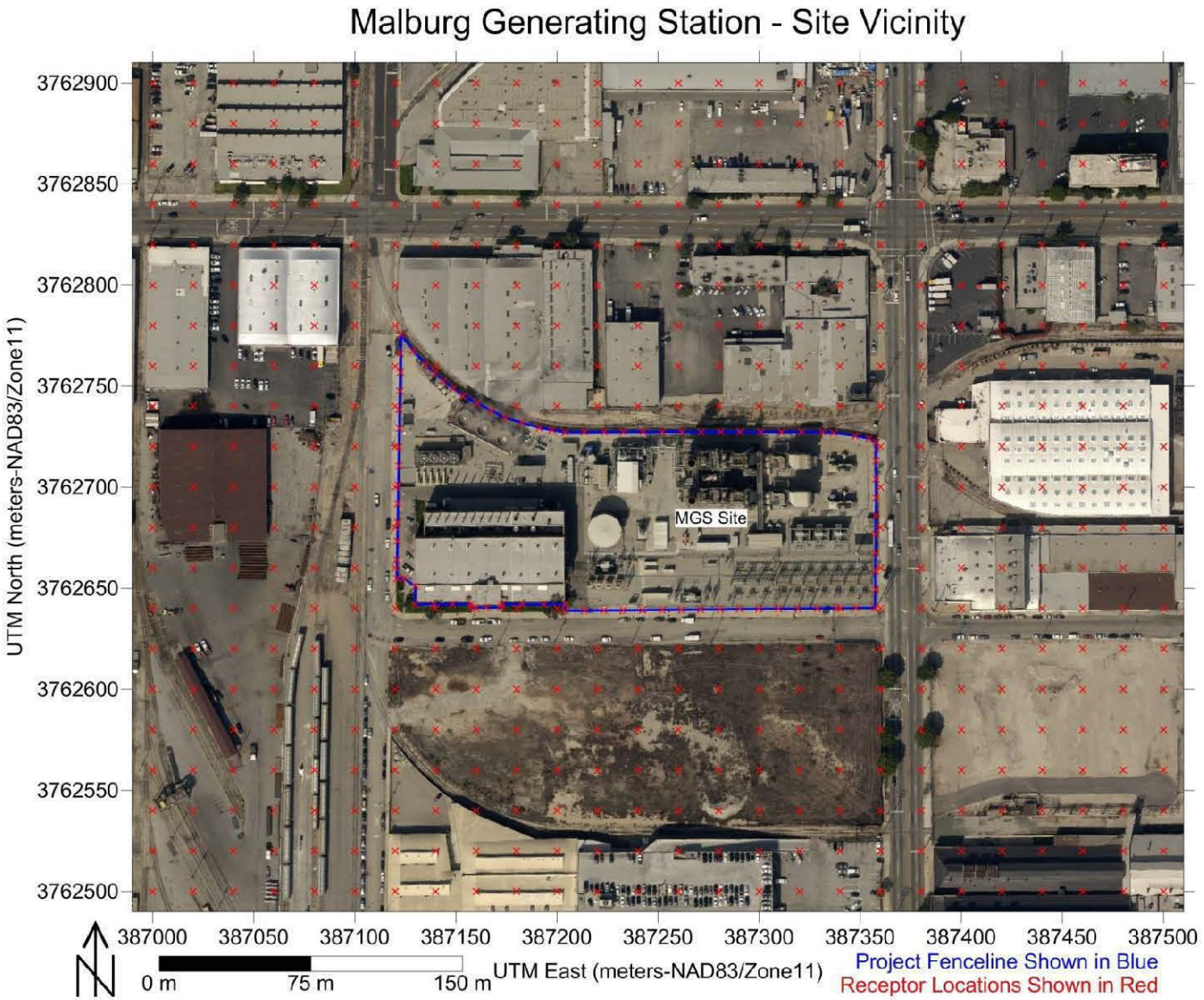

Malburg Generating Station - Site Vicinity
UTM North (meters-NAD83/Zone11)
3762900
3762850
3762800
3762750
3762700
3762650
3762600
3762550
3762500
MGS Site
387000
387050
387100
387150
387200
387250
387300
387350
387400
387450
387500
0 m
75 m
150 m
UTM East (meters-NAD83/Zone11)
Project Fenceline Shown in Blue
Receptor Locations Shown in Red

FIGURE 2

Wind Roses for Nearby SCAQMD Meteorological Datasets

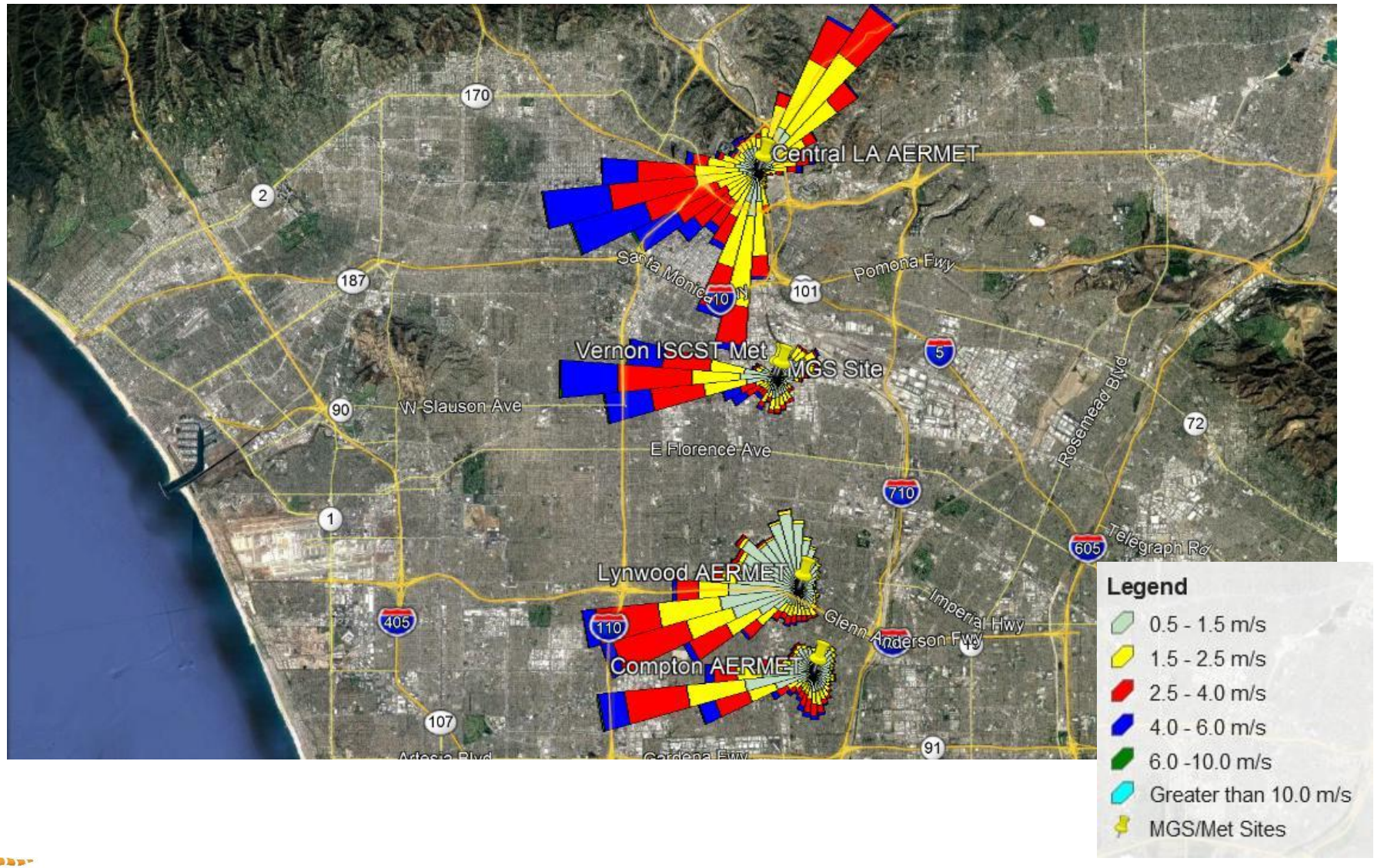


FIGURE 3

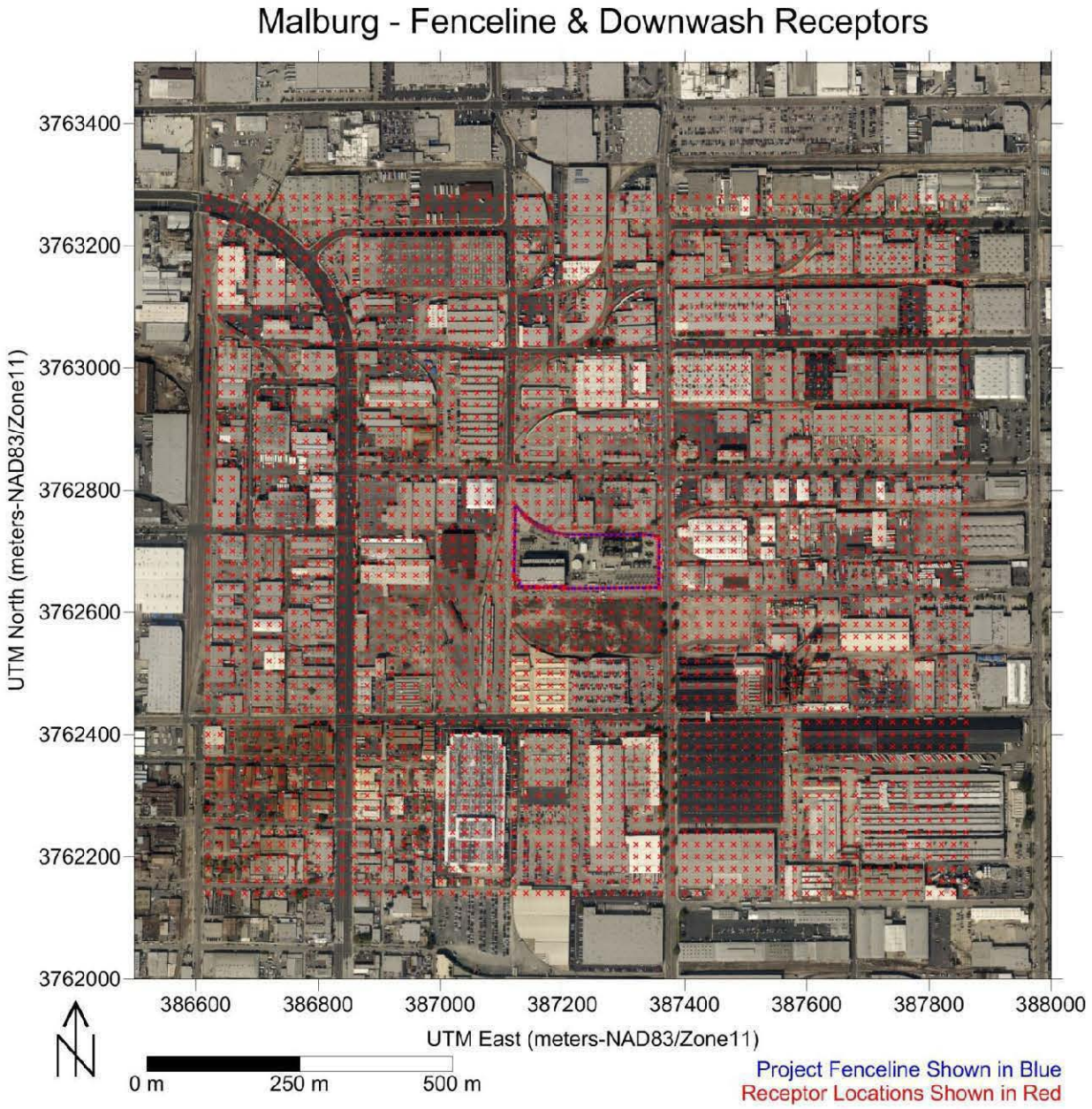

Malburg - Fenceline & Downwash Receptors
3763400
3763200
3763000
3762800
3762600
3762400
3762200
3762000
UTM North (meters-NAD83/Zone11)
386600
386800
387000
387200
387400
387600
387800
388000
UTM East (meters-NAD83/Zone11)
N
0 m
250 m
500 m
Project Fenceline Shown in Blue
Receptor Locations Shown in Red

FIGURE 4

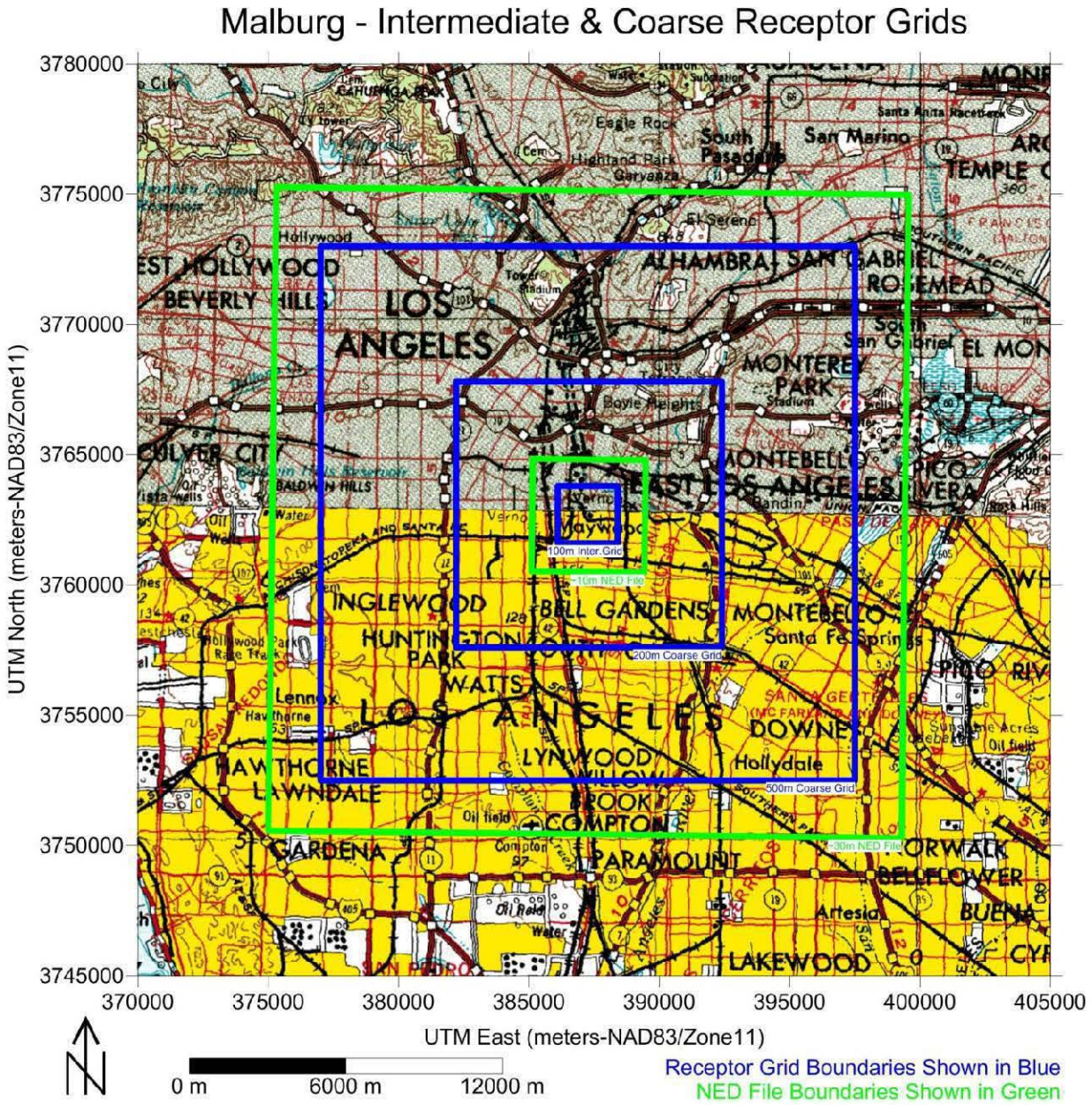

Malburg - Intermediate & Coarse Receptor Grids
UTM North (meters-NAD83/Zone11)
3780000
3775000
3770000
3765000
3760000
3755000
3750000
3745000
370000
375000
380000
385000
390000
395000
400000
405000
UTM East (meters-NAD83/Zone11)
100m Inter.Grid
1Um NED File
200m Coarse Grid
500m Coarse Grid
30m NED File
0 m
6000 m
12000 m
Receptor Grid Boundaries Shown in Blue
NED File Boundaries Shown in Green

FIGURE 5

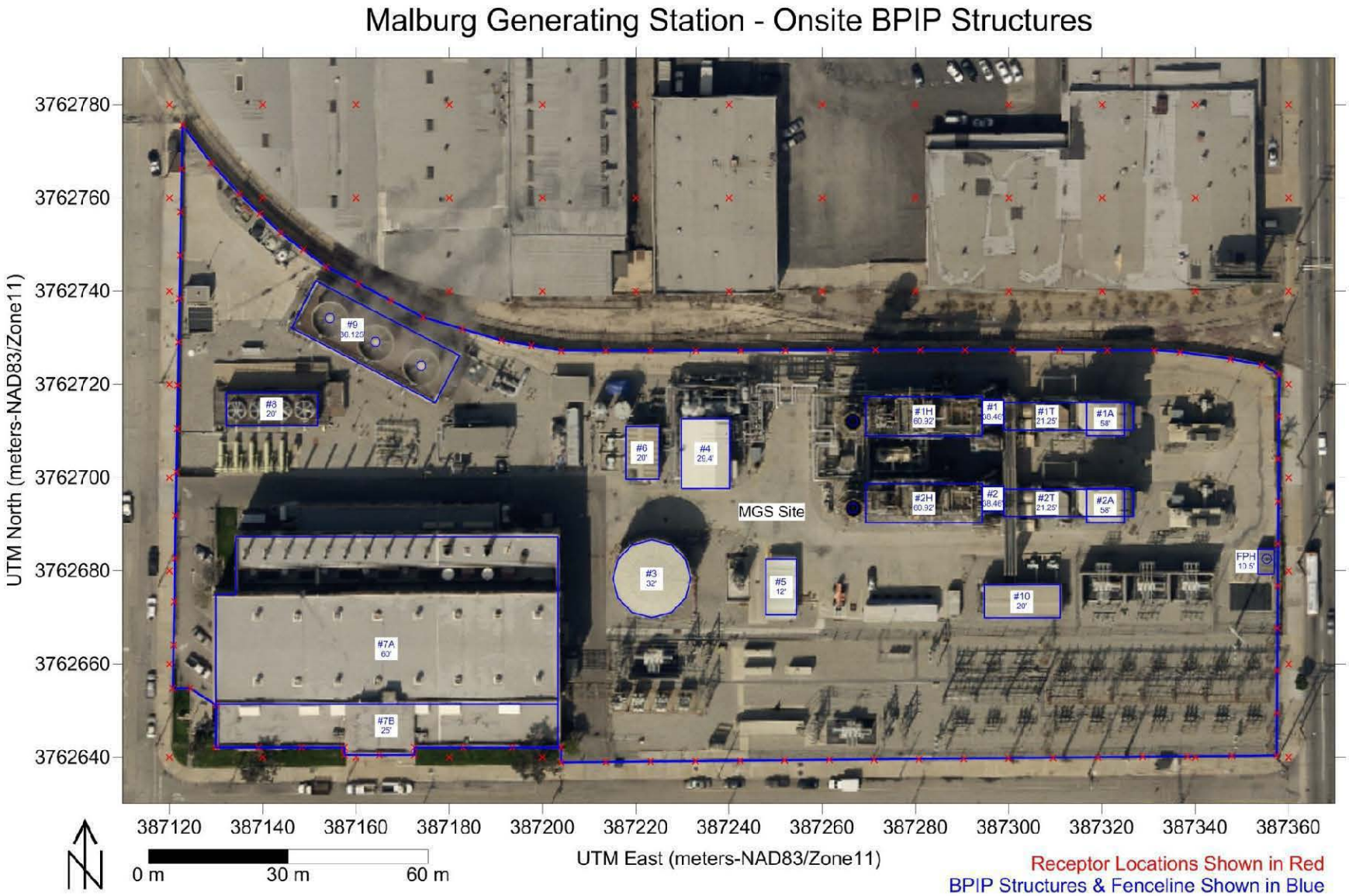
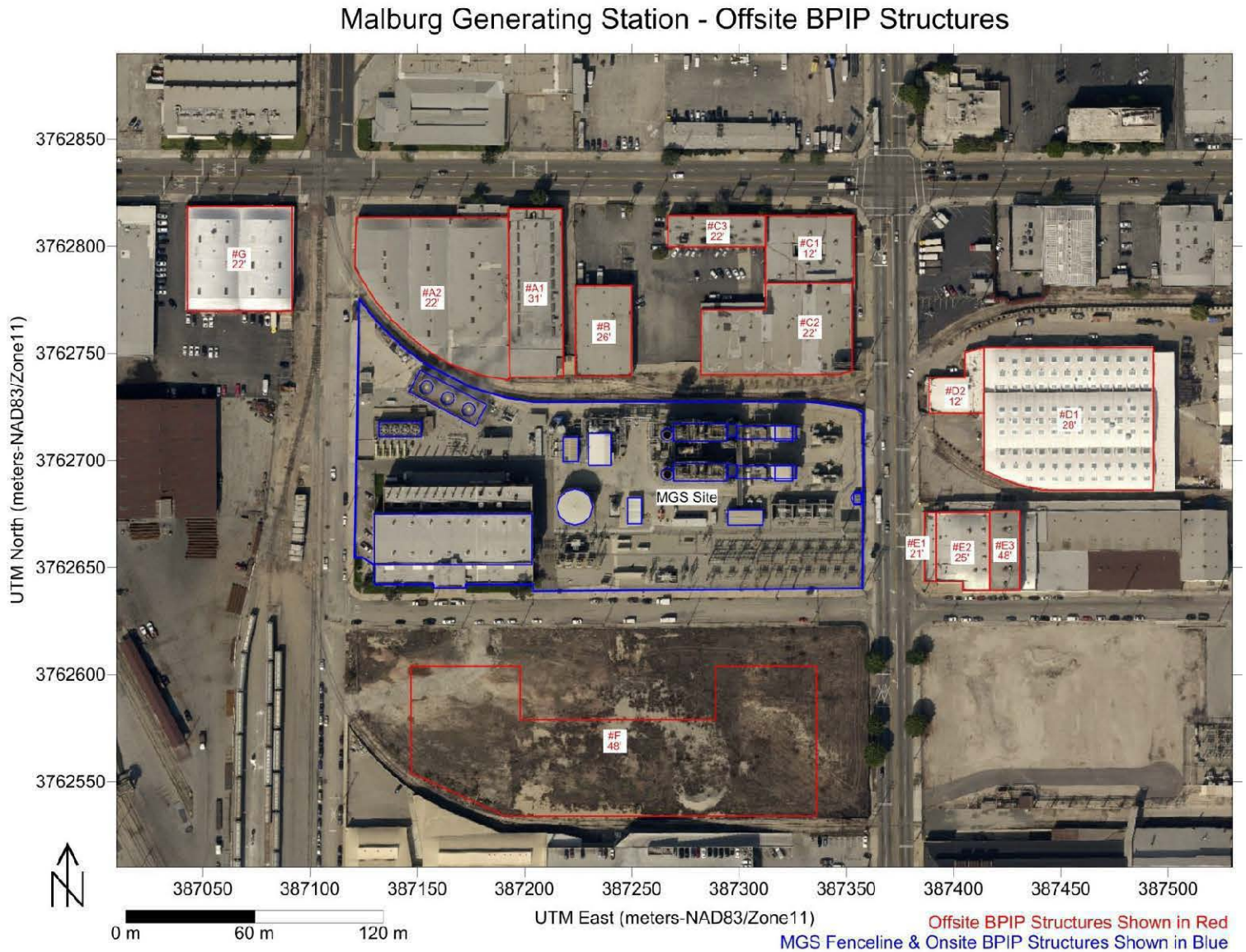

Malburg Generating Station - Onsite BPIP Structures
UTM North (meters-NAD83/Zone11)
3762780
3762760
3762740
3762720
3762700
3762680
3762660
3762640
387120
387140
387160
387180
387200
387220
387240
387260
387280
387300
387320
387340
387360
UTM East (meters-NAD83/Zone11)
0 m
30 m
60 m
MGS Site
#9
#3 20'
#6 20'
#4 29.4'
#1H 60.32'
#1 30.46'
#1T 21.25'
#1A 58'
#2H 60.32'
#2 38.46'
#2T 21.25'
#2A 58'
#3 32'
#5 12'
#10 20'
FPH 13.5'
#7A 60'
#7B 25'
Receptor Locations Shown in Red
BPIP Structures & Fenceline Shown in Blue

FIGURE 6


Malburg Generating Station - Offsite BPIP Structures
UTM North (meters-NAD83/Zone11)
3762850
3762800
3762750
3762700
3762650
3762600
3762550
#G 22'
#A2 22'
#A1 31'
#B 26'
#C3 22'
#C1 12'
#C2 22'
#D2 12'
#D1 20'
MGS Site
#E1 21'
#E2 25'
#E3 48'
#F 48
387050
387100
387150
387200
387250
387300
387350
387400
387450
387500
UTM East (meters-NAD83/Zone11)
0 m
60 m
120 m
Offsite BPIP Structures Shown in Red
MGS Fenceline & Onsite BPIP Structures Shown in Blue

Attachment 7

Health Risk Assessment Data

Attachment 7 Table 1 Sensitive Receptors and Distances from Site

(all sites and coordinates from Google Earth unless otherwise noted)

Colorado Energy-Malburg Vernon

Receptor ID		UTM Em	UTM Nm	Elev., ft.	Distance from Site meters	feet	miles	Modeling Receptor #
Site (approx middle point) *		**387252**	**3762708**	191	na	na		
Residences	SSW	386978	3762296	185	494.8	1623.4	0.31	1
	S	387287	3761876	179	832.7	2732.2	0.52	2
	ESE	388876	3762307	178	1672.8	5488.4	1.04	3
	NE	389666	3764656	183	3102.0	10177.5	1.93	4
	NNE	388529	3764919	201	2553.3	8377.3	1.59	5
	N	387488	3765632	262	2933.5	9624.8	1.82	6
	NW	385172	3763579	203	2255.0	7398.7	1.40	7
	W	385140	3762802	194	2114.1	6936.3	1.31	8
	SW	385135	3761385	176	2496.4	8190.7	1.55	9
Worker	N	387238	3762928	193	220.4	723.3	0.14	10
	E	387398	3762721	192	146.6	480.9	0.09	11
	S	387241	3762542	189	166.4	545.8	0.10	12
	W	387057	3762724	190	195.7	641.9	0.12	13
	NE	387416	3762878	195	236.2	775.0	0.15	14
	NW	387071	3762864	193	238.9	784.0	0.15	15
	SW	386943	3762469	187	390.6	1281.7	0.24	16
	SE	387556	3762556	190	339.9	1115.2	0.21	17
Hospitals		387329	3763619	206	914.2	2999.6	0.57	18
		382365	3765624	239	5690.9	18671.7	3.54	19
		383745	3766054	273	4847.1	15903.5	3.01	20
		383344	3766290	277	5301.2	17393.4	3.29	21
		383228	3766785	295	5728.4	18794.9	3.56	22
Daycare/Preschool/Headstart		385135	3762917	195	2127.3	6979.6	1.32	23
		385418	3762336	187	1871.3	6139.9	1.16	24
		385513	3762211	186	1808.6	5934.1	1.12	25
		385006	3762189	184	2305.2	7563.3	1.43	26
		392785	3761717	140	5621.0	18442.7	3.49	27
		390931	3758834	128	5342.6	17528.9	3.32	28
Schools (all types)		386964	3761833	182	921.2	3022.4	0.57	29
		386773	3761763	182	1059.5	3476.1	0.66	30
		387171	3761388	176	1322.5	4339.1	0.82	31
		386761	3761274	176	1515.7	4973.1	0.94	32
		387419	3761170	175	1547.0	5075.8	0.96	33
		387470	3761454	179	1272.8	4176.1	0.79	34
		388976	3762217	176	1792.6	5881.4	1.11	35
		386330	3763280	202	1085.0	3560.0	0.67	36
		385447	3762389	188	1833.0	6014.0	1.14	37
		385414	3761323	177	2301.4	7550.9	1.43	38
		387600	3760387	162	2346.9	7700.3	1.46	39
		389175	3760516	153	2916.0	9567.2	1.81	40
		389347	3760490	151	3051.0	10010.3	1.90	41
		389357	3760176	149	3292.7	10803.4	2.05	42
		388202	3759420	145	3422.5	11229.2	2.13	43
		388056	3758832	139	3958.5	12987.9	2.46	44
		389773	3759034	133	4455.8	14619.3	2.77	45
		390657	3759705	130	4540.0	14895.9	2.82	46
		392601	3759023	122	6495.5	21311.6	4.04	47
		393214	3759068	123	6985.3	22918.9	4.34	48
		393530	3759164	125	7209.2	23653.5	4.48	49

393322	3759804	131	6728.9	22077.5	4.18	50
393695	3759867	132	7041.6	23103.3	4.38	51
393359	3760161	135	6616.8	21709.9	4.11	52
394082	3759929	136	7373.7	24193.2	4.58	53
393039	3764989	226	6220.3	20408.9	3.87	54
392609	3764530	188	5658.4	18565.1	3.52	55
393282	3765019	231	6457.7	21187.6	4.01	56
393241	3765293	251	6523.1	21402.2	4.05	57
394555	3765098	249	7684.1	25211.6	4.77	58
393072	3765714	280	6550.5	21492.0	4.07	59
393002	3765917	294	6584.8	21604.9	4.09	60
393423	3765870	295	6933.9	22750.2	4.31	61
391832	3765022	221	5131.4	16836.0	3.19	62
390483	3765514	270	4279.4	14040.6	2.66	63
390437	3765961	303	4552.6	14937.1	2.83	64
389805	3765814	299	4020.6	13191.5	2.50	65
388928	3765580	281	3325.3	10910.2	2.07	66
388873	3765382	274	3127.0	10259.6	1.94	67
388942	3765580	282	3332.3	10933.4	2.07	68
388757	3765313	267	3008.5	9870.9	1.87	69
388378	3765186	245	2721.8	8930.3	1.69	70
388226	3765259	237	2730.6	8959.2	1.70	71
388242	3765335	242	2807.4	9210.9	1.74	72
388346	3766127	317	3589.8	11778.0	2.23	73
388543	3766256	326	3775.6	12387.7	2.35	74
388311	3766306	321	3750.6	12305.8	2.33	75
387685	3766472	245	3788.8	12431.1	2.35	76
387320	3765914	235	3206.7	10521.3	1.99	77
387515	3765581	229	2885.0	9465.7	1.79	78
386027	3766601	248	4081.2	13390.4	2.54	79
384768	3764544	212	3088.9	10134.6	1.92	80
384650	3765369	226	3721.7	12211.0	2.31	81
384660	3765923	236	4129.7	13549.7	2.57	82
384238	3766384	274	4753.6	15596.7	2.95	83
384070	3766314	280	4809.2	15779.0	2.99	84
383892	3766090	276	4767.3	15641.6	2.96	85
383555	3764947	227	4322.1	14181.0	2.69	86
383648	3764430	207	3994.3	13105.2	2.48	87
383842	3763944	202	3627.1	11900.5	2.25	88
383743	3763618	197	3625.1	11893.9	2.25	89
384399	3764293	209	3263.7	10708.2	2.03	90
384525	3764139	210	3079.7	10104.4	1.91	91
384715	3763227	198	2589.5	8496.3	1.61	92
383652	3763196	191	3632.9	11919.6	2.26	93
383957	3763563	198	3404.1	11168.9	2.12	94
383752	3763618	197	3616.4	11865.3	2.25	95
382881	3764045	195	4570.9	14997.2	2.84	96
382357	3764042	187	5073.5	16646.2	3.15	97
381529	3765843	178	6525.4	21409.9	4.05	98
380669	3763824	167	6676.9	21907.0	4.15	99
382660	3764626	203	4976.5	16327.8	3.09	100
382411	3764568	198	5186.0	17015.4	3.22	101

382057	3764468	189	5485.0	17996.4	3.41	102
382843	3765069	223	5001.4	16409.5	3.11	103
382207	3764940	210	5516.7	18100.3	3.43	104
381278	3764984	200	6392.9	20975.0	3.97	105
380943	3765201	204	6783.7	22257.3	4.22	106
381334	3765466	220	6529.1	21422.0	4.06	107
381599	3765624	229	6360.8	20869.7	3.95	108
382495	3765409	232	5470.3	17948.1	3.40	109
382757	3765397	235	5237.9	17185.6	3.25	110
382975	3765729	250	5236.3	17180.4	3.25	111
383288	3765989	265	5145.7	16883.1	3.20	112
383310	3766178	272	5251.7	17230.8	3.26	113
383165	3766725	292	5730.6	18802.1	3.56	114
382656	3766327	270	5849.8	19193.3	3.64	115
382276	3766332	266	6155.8	20197.2	3.83	116
381970	3766506	269	6505.7	21345.3	4.04	117
381465	3759217	139	6758.4	22174.4	4.20	118
380897	3759548	144	7097.3	23286.2	4.41	119
380413	3759302	152	7640.2	25067.5	4.75	120
379978	3759782	145	7840.4	25724.5	4.87	121
386963	3759293	147	3427.2	11244.7	2.13	122
386982	3758583	129	4133.8	13563.1	2.57	123
385653	3758485	129	4515.6	14815.6	2.81	124
384665	3758511	133	4930.3	16176.2	3.06	125
381978	3766751	279	6645.4	21803.5	4.13	126
381883	3765549	230	6074.3	19929.9	3.77	127
380690	3762627	155	6562.5	21531.6	4.08	128
381094	3762414	156	6165.0	20227.4	3.83	129
383577	3762898	187	3679.9	12073.8	2.29	130
383460	3762715	183	3792.0	12441.6	2.36	131
383898	3762307	181	3377.9	11082.8	2.10	132
384295	3762406	184	2972.4	9752.4	1.85	133
384370	3762258	181	2916.9	9570.4	1.81	134
385407	3761321	177	2308.2	7573.2	1.43	135
382224	3761488	157	5173.9	16975.5	3.22	136
381617	3761129	149	5852.0	19200.6	3.64	137
381145	3761154	146	6301.6	20675.6	3.92	138
380584	3761446	144	6786.4	22266.1	4.22	139
381350	3760401	145	6336.9	20791.3	3.94	140
382135	3760872	150	5436.4	17836.9	3.38	141
382106	3760463	148	5614.4	18420.8	3.49	142
382799	3760555	152	4946.2	16228.4	3.07	143
384438	3760696	158	3459.3	11350.0	2.15	144
384521	3760453	155	3541.7	11620.2	2.20	145
385993	3760331	160	2689.8	8825.3	1.67	146
386556	3760749	171	2079.0	6821.1	1.29	147
385613	3760004	155	3162.0	10374.4	1.96	148
386369	3759154	140	3662.0	12015.2	2.28	149
385171	3758764	136	4459.3	14631.1	2.77	150
383963	3758812	137	5098.7	16728.7	3.17	151
381465	3759217	139	6758.4	22174.4	4.20	152

Receptor Count : 152

* approximate mid point between stacks

Attachment 7 Table 2 Potential Impact Area Census Tracts and Population Values

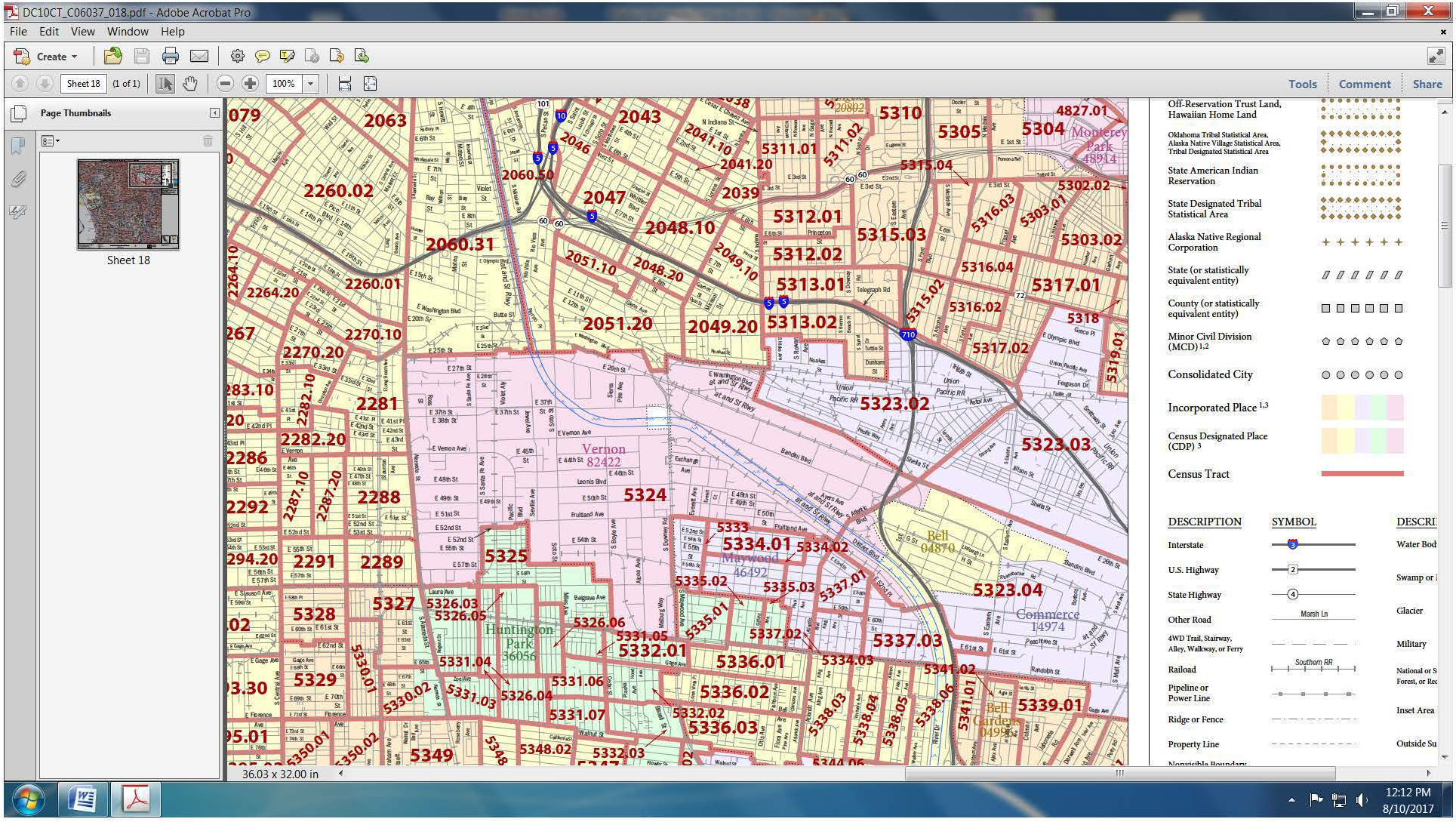
LA County Population increase 2010 to 2016: 3.25% 1.0325

	Tract #	2010 Population	2016 Population
Site	5324	112	116
	5323.02	4707	4860
	2049.2	2598	2682
	2051.2	3618	3736
	2260.01	2068	2135
	2270.01	4562	4710
	2281	4916	5076
	2288	5575	5756
	2289	3216	3321
	5327	2990	3087
	5326.03	3319	3427
	5326.05	3715	3836
	5325	4078	4211
	5326.04	2806	2897
	5326.06	4284	4423
	5331.05	2580	2664
	5332.01	2805	2896
	5335.01	3090	3190
	5335.02	2143	2213
	5335.03	1920	1982
	5333	3558	3674
	5334.01	5004	5167
	5334.02	4105	4238
	5337.01	3934	4062
	5337.03	4236	4374
	2060.5	2146	2216
	2060.31	2957	3053
	5334.03	2973	3070
	5323.03	4464	4609
	5323.04	3987	4117

Source: US Census Bureau, 8/2017

Attachment 7 Figure 1

Census Tracts Surrounding the Malburg Facility



(The Malburg facility is located approximately in the center region of Tract 5324, east side of S. Soto Ave., north of E. 50th St.)

Appendix B

Siemens A+ Turbine Upgrade Technical Memorandum

SGT-800 PERFORMANCE ENHANCEMENT

Table of contents

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1 GENERAL

1.1 Introduction

The purpose with this Product Information is to provide Siemens sales teams and customers with information about the SGT-800 Performance Enhancement and how it shall be implemented.

1.2 Background

As a planned step in the Siemens strategy for the SGT-800, a new rating was officially launched at the Power Gen conference in Madrid, June 2007. The new rating is 47 MW at 37,5 % efficiency. The combined cycle performance has also improved from 64 MW with an efficiency of 53% to 66 MW with an efficiency of 54% with dual-pressure heat recovery steam generator (HRSG).
For new sales only the 47 MW rating will be offered from now on.

1.3 Definition

A requirement for the development for the new rating was that it should be easy to implement on existing units as an enhancement . As a result the specific components in the gas turbine which are modified are fully interchangeable between the 45 MW and the 47 MW rating. This makes it possible to upgrade existing SGT-800 installations to the new rating. The absolute performance after such an upgrade depends on the status of the engine before.

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2 Technical description

The SIT scope of the product is the provision and insertion of enhancement components instead of original components at an engine overhaul. It includes also an engineering study and performance enhancement evaluation.

2.1 Components

The enhancement kit for existing units consists of a new version of

- Compressor blade 1
- Turbine vane 1
- Turbine blade 1
- Turbine vane 2

and minor modifications of the turbine air cooling systems

- Swirl generator dimension
- Orifice dimension in extraction from compressor stage #10

The compressor efficiency has been improved due to increase of the mass flow. Compressor blade 1 has got a slightly opened profile but there is no change of material.

Several improvements have been done on turbine blade #1, new thermal barrier coating (TBC) and optimization of number and positioning of the cooling holes which results in reduced metal temperature
For vane 1 & 2 cooling air consumption has been optimized.
Otherwise there have not been any changes of casting, material or coating.

The enhancement parts are 100% compatible with the old version. It is therefore possible to install the enhancement at, e.g. a C-inspection, by ordering enhancement blading instead of the original design blading. At site the components are swapped as usual. That means the only "extra" hardware for installing the enhancement is the first stage compressor blading.

2.2 Performance

The enhancement, based on the exchanged parts, is the result of

- Increased air mass flow
- Optimised cooling air consumptions of the turbine section

The turbine inlet temperature (TIT) is not increased, thus there is no impact on emission or lifing of combustor or turbine components.

The expected performance increase is 2 MW and the following can in general be expected regarding efficiency and turbine data:

- + 0,4% efficiency (1,4 to 2,8% less fuel consumption/kWh)
- + 7°C exhaust temperature
- + 1,5 kg/s exhaust mass flow

A performance evaluation is done before and after the enhancement to determine the engine performance improvement.

2.3 Limitations

A maximum gas pressure of 30 bar(a) at the terminal point (upstream gas fuel unit 1) at maximum fuel flow is required. As the fuel flow increases due to the enhancement, the recommendation is to use 4" dimension for gas fuel filters (Gas fuel unit 1) and the pipes between the filter unit and the turbine enclosure.
If an existing 3" system will be used the possibility to increase gas pressure from either one gas compressor or reducing station have to be evaluated. The main gas valve has to be checked regarding sufficient opening angle for reduced pressure and increased fuel flow.

The resulting effect on the HRSG and related steam cycle components have to be checked in connection to the enhancement.

The maximum electric power to be transmitted in the gear box is limited to 53,5 MW, this means a flat rating below -17 deg C for a nominal output of 47 MWel at ISO conditions.

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3 Installation & Commissioning

As the enhancement involves swapping compressor stage 1 blades it is done most convenient at a C-inspection, but it can also be done at a B-inspection.
If the enhancement will be performed at a B-inspection the downtime increase is 2 working days and additional 2x60 personal x hours.
The scope of work is according to chapter 2 regarding parts and related to the performance test the control system will be adjusted due to optimization of the cooling air to the turbine section.

4 Benefits

The customer benefits are basically twofold:

- Increased income due to higher electricity output:
- Savings due to lower heat rate

The final benefit varies obviously with the gas and electricity prices and currency exchange rates at any given time. One should also bear in mind that the price for electricity is strongly varying during the day and seasons and that there may also be local pricing mechanisms. Therefore it will be different for each customer depending on her/his business case.

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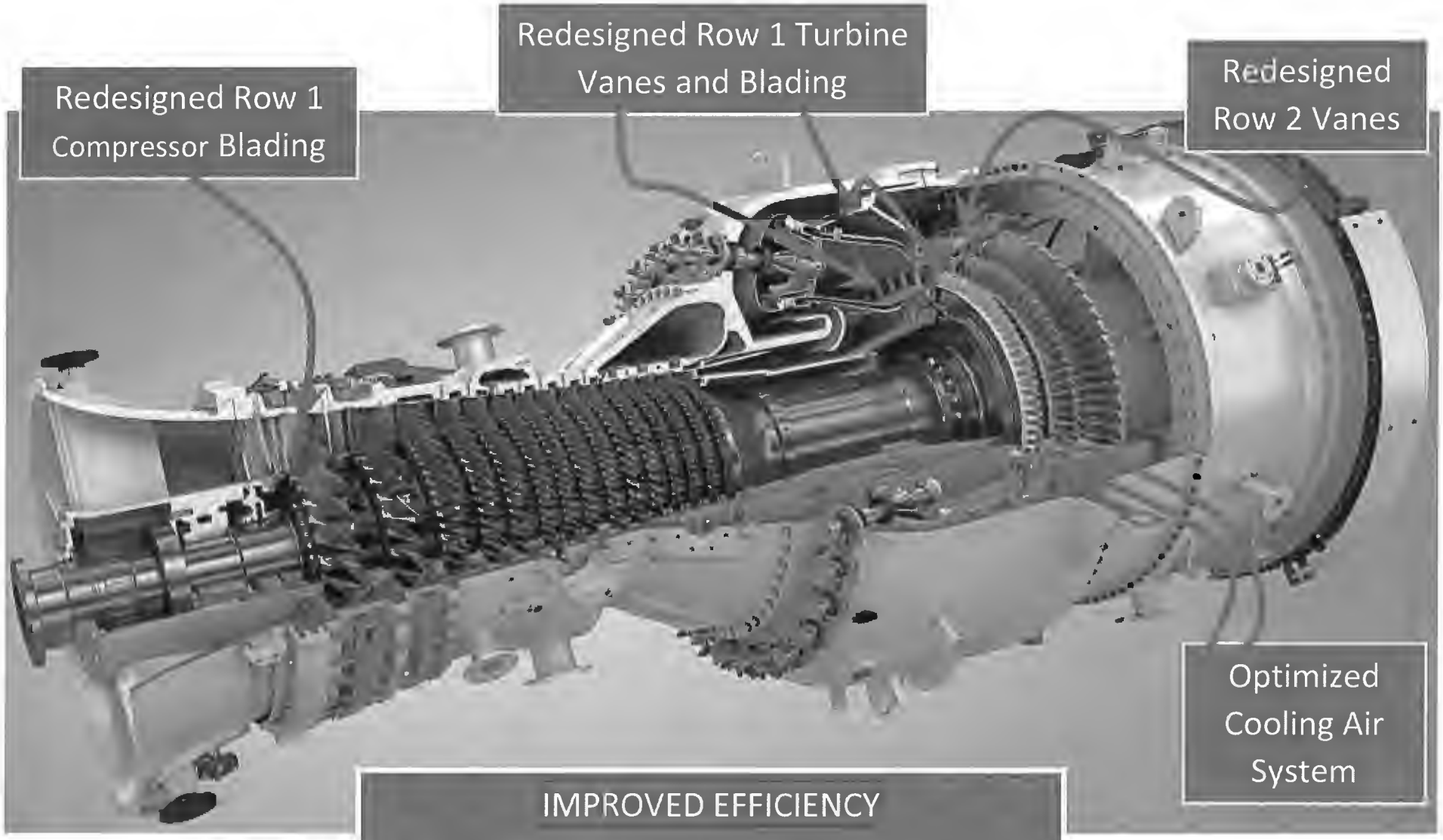
SIEMENS SGT-800 ~~~ A+ EFFICIENCY IMPROVEMENT



IMPROVED EFFICIENCY

- Compressor – improved pressure ratio
- Turbine - less cooling air needed
- **Overall 0.4% less fuel per MWh**

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