DOCKETED

Docket Number:	99-AFC-08C
Project Title:	Blythe Energy Project Compliance & Blythe Transmission Line Modification
TN #:	203564
Document Title:	Petition to Amend for the Blythe Energy Project
Description:	N/A
Filer:	Sarah Madams
Organization:	Blythe Energy Inc.
Submitter Role:	Applicant
Submission Date:	1/26/2015 11:41:50 AM
Docketed Date:	1/26/2015

Blythe Energy Inc.

1411 Third Street, Suite A main (810) 887-4726
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January 26, 2014

Mary Dyas
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Blythe Energy Project (99-AFC-08C)
Petition to Amend

Dear Ms. Dyas:

Enclosed please find a Petition to Amend (PTA) for the Blythe Energy Project (99-AFC-08C). This PTA addresses proposed reductions to the project's allowable annual emissions of NOx, CO, and $PM_{10}/PM_{2.5}$. The application also proposes to add a new annual average NOx concentration and to reduce the hourly PM mass emission limit to provide additional assurance that compliance with the proposed new annual limits will be maintained.

The amendment proposed by this petition would modify three Conditions of Certification (COC) to make them consistent with the proposed changes to the Mojave Desert Air Quality Management District (MDAQMD) permits. However, the proposed amendment would not result in any environmental impacts or inconsistency with any Laws, Ordinances, Regulations, or Standards (LORS). In fact, approval of the amendment will ensure that emissions from the BEP project remain below those evaluated in the original licensing proceeding.

If you have any questions or require additional information regarding the proposed emission reductions, please do not hesitate to contact Gary Rubenstein of Sierra Research at (916) 273-5126.

Sincerely,

Christopher J. Doyle
Vice President
Blythe Energy Inc.

Attachment
cc: C. Doyle, Blythe Energy Inc.
M. Foster, Stoel Rives LLP
G. Rubenstein, Sierra Research

sierra research

Petition to Amend
Blythe Energy Project
(99-AFC-08C)

prepared for:

Blythe Energy Inc.

submitted to:

California Energy Commission

January 2015

prepared by:

Sierra Research, Inc.
1801 J Street
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(916) 444-6666

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Petition to Amend
Blythe Energy Project

Table of Contents

List of Tables

Page

ACRONYMS AND ABBREVIATIONS

AFC	Application for Certification
BEP	Blythe Energy Project
CEC	California Energy Commission
CO	carbon monoxide
COC	Condition of Certification
LORS	Laws, Ordinances, Regulations, and Standards
MDAQMD	Mojave Desert Air Quality Management District
MW	megawatt
NOx	oxides of nitrogen
$PM_{2.5}$	fine particulate matter
PM_{10}	respirable particulate matter

1. INTRODUCTION

1.1 Background

Blythe Energy Project (BEP or Project) is a nominal 520-megawatt (MW) combined-cycle power plant located in the City of Blythe, north of Interstate 10 and approximately 7 miles west of the California/Arizona border. The California Energy Commission (CEC) issued a license for Blythe Energy Inc.'s (Blythe Energy) BEP on March 21, 2001. Commercial operations for the plant began in July 2003.

The purpose of this proposed amendment is to reduce facility-wide annual emission limits for oxides of nitrogen (NOx), carbon monoxide (CO) and particulate matter (PM_{10})[1] from currently licensed limits to reflect the actual, lower emissions from the facility compared to the originally permitted emissions. The petition also proposes to add a new annual average emission concentration limit for NOx and to reduce the hourly PM_{10} mass emission limit applicable to the gas turbines, making the short-term NOx and PM_{10} limits more consistent with the new annual limits as well as making the new annual limits more enforceable. With the reductions in annual emissions limits, the site will no longer be considered a major stationary source under federal Prevention of Significant Deterioration (PSD) regulations. The proposed reductions in annual NOx and PM_{10} emissions will also allow for the use of a portion of the emission reduction credits (ERCs) previously surrendered for BEP to offset emissions from future projects at this stationary source. With the exception of the short-term CO limits, the emissions limits in the current BEP license were approved based on conservative emissions guarantees provided by Siemens, the gas turbine manufacturer.[2] Additionally, in 2010, BEP installed oxidation catalysts on the gas turbines.[3] Based on over ten years of operating experience and source test data, including four years with the oxidation catalysts installed, BEP has determined that the annual mass emission limits for NOx, CO and PM_{10} in the original license were overly conservative and that actual emissions are significantly below the annual limits. No change in annual fuel consumption will result from this amendment, and therefore there would be no change in greenhouse gas emissions as a result of the proposed amendment.

The amendment proposed by this petition would modify three Conditions of Certification (COC) to make them consistent with the proposed changes to the

[1] All PM_{10} from the gas turbines is assumed to be in the $PM_{2.5}$ size range, so all references to PM_{10} include $PM_{2.5}$ as well.

[2] The District and U.S. Environmental Protection Agency (EPA) approved an increase in the permitted CO startup emission rates and a reduction in the CO BACT limit during normal operation for the gas turbines in late 2004. Conforming changes were approved by the CEC in March 2005.

[3] Installation of the oxidation catalysts was approved as an administrative action by the MDAQMD and the California Energy Commission (CEC) staff. See CEC docket 990-AFC-08, TN # 56226, dated April 13, 2010.

Mojave Desert Air Quality Management District (MDAQMD) permits. However, the proposed amendment would not result in any environmental impacts or inconsistency with any Laws, Ordinances, Regulations, or Standards (LORS). In fact, approval of the amendment will ensure that emissions from the BEP project remain below those evaluated in the original licensing proceeding.

An application for changes to the facility air permits has been submitted to the MDAQMD. A copy of the application is provided as Appendix A.

1.2 Description of Proposed Amendment

Consistent with Sections 1769(a)(1)(A) and (B) of the Siting Regulations, this section includes a complete description of the proposed change as well as the necessity for the change.

BEP is composed of two Siemens F Class V84.3A (2) gas turbines with duct-fired heat recovery steam generators, a single condensing steam turbine, two wet cooling towers, and associated plant equipment. Since BEP commenced commercial operation in 2003, the facility has collected substantial continuous emissions monitoring data (for NOx and CO) and source test data (for PM_{10}). In addition, oxidation catalysts have been installed on both gas turbines. Further, there have been major advances in PM_{10} emissions testing procedures, significantly improving the accuracy of PM_{10} testing in reflecting the extremely low PM_{10} emission rates from natural gas fired gas turbines.

The purpose of this proposed amendment is to reduce allowable annual NOx, CO, and PM_{10} emissions from BEP so that the potentials to emit for all criteria pollutants from the facility are below 100 tons per year, consistent with actual facility performance. In addition, a new annual average NOx emission concentration limit and a reduction in the hourly PM_{10} limits are being proposed for the gas turbines. While no changes to the gas turbines will be required to comply with the proposed new long-term limits for CO and PM_{10}, BEP may need to increase ammonia injection slightly under some ambient conditions (the plant would still remain in compliance with the ammonia slip limit specified in Condition AQ-5) and, if necessary, add additional catalyst material to the selective catalytic reduction systems to ensure compliance with the new, lower NOx limits.

The proposed amendment will have no additional impacts beyond those identified in the Commission Decision for the BEP. No increases in emissions or other environmental impacts will result from the proposed changes. In fact, implementation of the amendment will ensure that NOx, CO, and PM_{10} emissions from the plant are maintained at levels lower than originally licensed and will require the plant to continuously comply with the new lower limits. Emissions from the BEP project will remain well below those evaluated in the original licensing proceeding.

1.3 Necessity of Proposed Changes

Sections 1769 (a)(1)(B) and (C) of the CEC Siting Regulations (20 Cal. Code Reg. §§ 1701 et seq.) require a discussion of the necessity for the proposed changes to the

Project and a discussion of whether this amendment is based on information that was known by the petitioner during the certification proceeding.

Blythe Energy is requesting this change because the emission limits in the BEP license were based on conservative emission limit guarantees provided by the turbine manufacturer, Siemens—Blythe Energy did not have actual emission test results information during the certification proceeding. It has since been determined that the turbine manufacturer's emissions guarantees were overly conservative. In addition, BEP installed oxidation catalysts on both gas turbines in 2010. Although the addition of the oxidation catalyst was expected to reduce CO emissions from the gas turbines, no emissions limits were changed at that time.[4] Blythe Energy now has sufficient operating experience and source test data to propose the new, lower NOx, CO, and PM_{10} limits. These proposed new, lower limits are based on actual operating experience and source test results and will limit facility potential to emit below major source thresholds to more accurately reflect the actual emissions from the gas turbines.

1.4 Summary of Environmental Impacts

Section 1769 (a)(1)(E) of the CEC Siting Regulations requires that an analysis be conducted to address impacts that the proposed revision may have on the environment and proposed measures to mitigate significant adverse impacts. Section 1769 (a)(1)(F) requires a discussion of the impacts of proposed revisions on the facility's ability to comply with applicable LORS.

The proposed changes referenced in this Petition will not result in any additional impacts beyond those already analyzed in the Commission Decision or the Final Determination of Compliance. Section 2.0 discusses the potential impacts of the proposed changes on the environment, as well as the consistency of the proposed revision with LORS.

1.5 Consistency of Amendment with License

Section 1769 (a)(1)(D) of the CEC Siting Regulations requires a discussion of the consistency of each proposed project revision with the assumptions, rationale, findings, or other basis of the Commission Decision and whether the revision is based on new information that changes or undermines the bases of the Commission Decision. Also required is an explanation of why the change should be permitted.

The proposed amendment does not undermine the assumptions, rationale, findings, or other basis of the Commission Decision for the Project. The proposed amendment will ensure that BEP maintains its emissions at levels well below the limits in the original license, thereby keeping air quality impacts below those analyzed in the original licensing proceeding. The proposed amendment will have no additional impacts beyond those analyzed in the Commission Decision for the BEP.

[4] From the recitation of permit revisions in the August 14, 2014, MDAQMD Federal Operating Permit: "April 8, 2010 Administrative Modification described as follows:…Addition of oxidation catalyst to each Combustion Turbine Generator/Heat Recovery Steam Generator unit...An emission decrease is anticipated but current permit limits will remain unchanged."

2. ENVIRONMENTAL ANALYSIS OF THE PROJECT CHANGES

Blythe Energy has reviewed the amendment proposed herein to determine whether the change will result in any environmental impacts that were not originally analyzed by the CEC when it previously approved the Project.

The following disciplines will not be affected by the proposed change in this amendment and are not addressed below: Facility Design, Efficiency, Reliability, Transmission System Engineering, Transmission Line Safety and Nuisance, Biological Resources, Cultural Resources, Geologic Hazards and Resources, Hazardous Materials Handling, Land Use, Noise, Paleontological Resource, Socioeconomics, Soils, Traffic and Transportation, Visual Resources, Waste Management, Water Resources, Worker Safety and Fire Protection. In addition, although Air Quality-related amendments typically have the potential to affect Public Health impacts, the proposed revised emission limits are reduced from those originally licensed and impacts will be reduced from those previously analyzed; therefore, Public Health is not addressed further. The only discipline that could be affected by the proposed amendment is Air Quality, which is discussed in detail below.

As discussed below, the proposed amendment does not cause significant impacts in any disciplines beyond those analyzed in the Commission Decision.

2.1 Air Quality

Blythe Energy proposes to reduce the existing facility-wide annual mass emissions limits for NOx, CO, and PM_{10}; to add a new annual average NOx emission concentration limit; and to reduce the hourly PM_{10} limit for the gas turbines. Since BEP commenced commercial operation in 2003, the facility has collected substantial continuous emissions monitoring data (for NOx and CO) and source test data (for PM_{10}) and has installed oxidation catalysts on both gas turbines.

The proposed changes in emissions limits will not involve any physical changes to or changes in the method of operation of the gas turbines, since the turbines are already achieving these lower emission rates. However, BEP may need to increase ammonia injection slightly under some ambient conditions (the plant would still remain in compliance with the ammonia slip limit specified in Condition AQ-5) and, if necessary, add additional catalyst material to the selective catalytic reduction systems to ensure compliance with the new, lower NOx limits. Since the proposed amendment will reduce the annual NOx, CO, and PM mass emission limits, as well as add a new annual average NOx emission concentration limit and reduce the hourly PM_{10} limit for the gas turbines, minor edits to COCs AQ-5, AQ-6, and AQ-7 are necessary.

The permit amendment application to the Mojave Desert Air Quality Management District is provided as Appendix A.

2.1.1 Annual Average NOx Emission Concentration Limit

Short-term NOx emissions from the gas turbines are currently limited to 2.5 ppmvd @ 15% O_2 on a one-hour average basis. This limit reflects a best available control technology (BACT) determination.

Blythe Energy is proposing to add an annual average NOx concentration limit of 2.0 ppmvd @ 15% O_2 to the permitted emission limits. Lower one-hour average emissions will reduce overall annual emissions, so this proposed lower annual average limit will help to ensure that the project will meet the proposed new annual NOx limit on a continuous basis.

2.1.2 Hourly PM_{10} Limit

When the turbines were originally permitted in 2000, gas turbine manufacturers had limited PM emissions test data from in-use gas turbines. The test data available showed significant variation in PM emission rates due to variability in source test conditions and procedures. Therefore, PM emissions guarantees provided by gas turbine manufacturers were relatively high. Since that time, refinements in PM test methods and improved quality control procedures have significantly reduced the variability in PM test results, and have improved the accuracy of PM testing at low concentrations.[5] The PM_{10} source tests on the BEP gas turbines demonstrate that PM_{10} emissions are consistently well below the permitted emission rate of 11.5 pounds per hour (lb/hr). As an example, PM_{10} test results from the 2014 annual source testing of the BEP gas turbines are summarized in Table 1 below.

Table 1
2014 PM_{10} Test Results

Unit	PM_{10} Emission Rate, lb/hr			
	Run 1	Run 2	Run 3	Average
Unit 1	4.6	1.6	1.5	2.5
Unit 2	2.4	2.7	0.8	1.9

Based on these test results, Blythe Energy is proposing to reduce the hourly PM_{10} limit for each gas turbine from the current level of 11.5 lb/hr to 5.0 lb/hr. PM_{10} emissions changes for the gas turbines are summarized in Table 2.

2.1.3 Facilitywide Annual Emissions Limits

A review of emissions data for the gas turbines, including CEMS data and annual emission reports, confirms that actual emissions of NOx, CO and PM are well below

[5] Matis, Craig, Glenn England et al, "Evaluation of CTM-039 Dilution Method for Measuring PM10/PM2.5 Emissions from Gas-Fired Combustion Turbines," August 20, 2009.

permitted limits. Annual NOx, CO and PM emissions as reported by the facility for calendar years 2012, 2013 and 2014 are summarized in Table 3 below.

Table 2
Emissions Changes: PM_{10} from the Gas Turbines

	Period	
	lb/hr	lb/day
Proposed permit limit – Per unit – Total, both units	 5.0 –	 – 240
Current permit limit – Per unit – Total, both units	 11.5 –	 – 565
Net change – Per unit – Total, both units	 (6.5) (13.0)	 – (325)

Table 3
Historical Annual Emissions from the BEP Gas Turbines

Pollutant	Unit	Reported Emissions, tpy[a]			
		2012	2013	2014	Maximum
NOx	Total	60.6	61.8	57.5	61.8
CO	Total	40.2	44.3	28.8	44.3
PM	Total including cooling towers	45.9	46.2	42.2	46.2

Note:
a. Totals may not add directly due to rounding.

Blythe Energy is proposing to reduce the annual limits for NOx, CO, and PM_{10} to 97 tons, 97 tons, and 50 tons, respectively, with compliance to be determined on a 12-month rolling total basis. The reductions in annual permitted emissions are summarized in Table 4.

Table 4
Proposed Reductions in Permitted Annual Emissions

	Permit Limit, tons per year		
	NOx	CO	PM_{10}[a]
Proposed permit limit	97	97	50
Current permit limit	202	621	103
Net change	(105)	(524)	(53)

Note:
a. PM_{10} limit includes the emissions from the cooling towers.

The proposed reductions in permitted annual emissions will reduce emissions of all criteria pollutants from BEP below PSD major stationary source thresholds (40 CFR 52.21 (b)(1)(i)(*a*)), as shown in Table 5.

Table 5
Comparison of Permitted Annual Emissions with PSD Thresholds

	Permit Limit, tons per year				
	NOx	SOx	CO	VOC	PM_{10}
Permit limit after proposed amendment	97	24	97	24	50
Major stationary source threshold	100	100	100	100	100

2.1.4 Emission Reduction Credits

Blythe Energy was required to surrender emission reduction credits (ERCs) to offset the original permitted emissions of NOx and PM from the project. Because the permitted emissions are being reduced, the offset obligation is also reduced. In accordance with District Rule 1305 (B)(2)(b):

> *[Actual Emissions Reductions] generated from Federally Enforceable reductions in a Facility's Potential to Emit may be used as Offsets if the [Historic Actual Emissions] for the Facility or Emissions Unit which is proposed for a Federally Enforceable reduction in its Potential to Emit was completely offset in a prior permitting action pursuant to this Regulation.*

Blythe Energy completely offset the facility's NOx and PM_{10} Potentials to Emit by providing 202 tons of NOx ERCs and 103 tons of PM_{10} ERCs prior to commencing construction of the facility. The facility Potentials to Emit are proposed to be reduced by 105 tons of NOx and 53 tons of PM_{10}, and under Rule 1305(B)(2)(b), these ERCs will be available for use in offsetting emissions from future projects.

2.1.5 Mitigation

No significant impacts beyond those previously described in the Commission Decision for the BEP would result from the approval of this amendment. Therefore, additional mitigation measures beyond those found in the Commission Decision are not necessary; however, minor edits to COC AQ-5, AQ-6 and AQ-7 are necessary.

2.1.6 Consistency with Laws, Ordinances, Regulations, and Standards

The Commission Decision for BEP found the facility to be in compliance with all applicable LORS. As amended, the BEP will continue to comply with all applicable LORS and does not alter the conclusions or assumptions in the Commission Decision.

2.1.7 Conditions of Certification

Consistent with the requirements of the CEC Siting Regulations Section 1769 (a)(1)(A), this section addresses the proposed amendments to the Project's Conditions of Certification.

Blythe Energy proposes to add a new, lower, annual average emission concentration limit for NOx; reduce the hourly PM_{10} limit; and reduce the allowable annual NOx, CO, and PM_{10} emissions from those identified in the Final Commission Decision. The proposed revisions to the Conditions of Certification AQ-5 and AQ-7 are shown in ~~strikeout~~ and **bold underline** font. Only the modified conditions are shown.

AQ-5 Emissions from the turbines (including its associated duct burner) shall not exceed the following emission limits at any firing rate, except for CO, NOx and VOC during periods of startup, shutdown and malfunction:

a. Hourly rates, computed every 15 minutes, verified by CEMS and annual compliance tests:

   i. NOx as NO2 — 19.80 lb/hr (based on 2.5 ppmvd corrected to 15% O2 and averaged over one hour).

   ii. **NOx as NO2 – 2.0 ppmvd corrected to 15% oxygen and averaged over a rolling 12 month period.**

   iii. CO — 17.5 lb/hr (based on 4.0 ppmvd) corrected to 15% O2 and averaged over 3 hours).

   iv. Ammonia Slip — 10 ppmvd (corrected to 15% O2 and averaged over three hours).

b. Hourly rates, verified by annual compliance tests or other compliance methods in the case of SOx:

   i. VOC as CH4 — 2.9 lb/hr (based on 1 ppmvd corrected to 15% O2).

   ii. SOx as SO2 — 2.7 lb/hr (based on 0.5 grains/100 dscf fuel sulfur).

   iii. PM10 — ~~11.5~~ **5.0** lb/hr.

Verification: The project owner shall submit the following in each Quarterly Operations Report: All continuous emissions data reduced and reported in accordance with the District approved CEMS protocol; a list of maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NOx, CO, PM10, VOC and SOx (including calculation protocol); a log of all excess emissions, including the information regarding malfunctions/ breakdowns required by District Rule 430; operating parameters of emission control equipment, including but not limited to ammonia injection rate, NOx emission rate and ammonia slip; any maintenance to any air pollutant control system (recorded on an as-performed basis); and any permanent changes made in the plant process or production that could affect air pollutant emissions, and when the changes were made.

AQ-6 Emissions from the turbines, including the duct burner, shall not exceed the following emission limits, based on a calendar day summary:

a. NOx — 5762 lb/day, verified by CEMS.

b. CO — 8004 lb/day, verified by CEMS.

c. VOC as CH4 — 239 lb/day, verified by compliance tests and hours of operation in mode.

d. SOx as SO2 — 130 lb/day, verified by fuel sulfur content and fuel use data.

e. PM10 — ~~565~~ **240** lb/day, verified by compliance tests and hours of operation.

Verification: The project owner shall submit the following in each Quarterly Operations Report: All continuous emissions data reduced and reported in accordance with the District approved CEMS protocol; a list of maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NOx, CO, PM10, VOC and SOx (including calculation protocol); a log of all excess emissions, including the information regarding malfunctions/ breakdowns required by District Rule 430; operating parameters of emission control equipment, including but not limited to ammonia injection rate, NOx emission rate and ammonia slip; any maintenance to any air pollutant control system (recorded on an as-performed basis); and any permanent changes made in the plant process or production that could affect air pollutant emissions, and when the changes were made.

AQ-7 Emissions from this facility, including the cooling towers, shall not exceed the following emission limits, based on a rolling 12 month summary:

a. NOx — ~~202~~ **97** tons/year, verified by CEMS.

b. CO — ~~621~~ **97** tons/year, verified by CEMS.

c. VOC as CH4 — 24 tons/year, verified by compliance tests and hours of operation in mode.

d. SOx as SO2 — 24 tons/year, verified by fuel sulfur content and fuel use data.

e. PM10 — ~~103~~ **50** tons/year, verified by compliance tests and hours of operation.

Verification: The project owner shall submit the following in each Quarterly Operations Report: All continuous emissions data reduced and reported in accordance with the District approved CEMS protocol; a list of maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NOx, CO, PM10, VOC and SOx (including calculation protocol); a log of all excess emissions, including the information regarding malfunctions/ breakdowns required by District Rule 430; operating parameters of emission control equipment, including but not limited to ammonia injection rate, NOx emission rate and ammonia slip; any maintenance to any air pollutant control system (recorded on an as-performed basis); and any permanent changes made in the plant process or production that could affect air pollutant emissions, and when the changes were made.

3. POTENTIAL EFFECTS ON THE PUBLIC AND PROPERTY OWNERS

This section addresses potential effects of the proposed project amendment on nearby property owners, the public, and parties in the application proceeding, pursuant to CEC Siting Regulations (Title 20, CCR, Section 1769 [a][1][I]).

The proposed amendment will not differ significantly in potential effects on nearby property owners, the Public, and Parties to the proceeding beyond those previously analyzed. In fact, the proposed amendment will result in decreased impacts to the surrounding area, and ensure that these impacts do not change over time.

4. LIST OF PROPERTY OWNERS

As required by CEC Siting Regulations Section 1769(a)(1)(H), a list of property owners potentially affected by this amendment is to be provided with this Petition. The list of property owners within 1,000 feet of the project site is provided as Appendix B.

APPENDIX A

Application for a Permit Amendment for the Blythe Energy Project
Provided to the Mojave Desert Air Quality Management District

Blythe Energy Inc.

1411 Third Street, Suite A
Port Huron, MI 48060

main (810) 887-4726
fax (810) 887-4756

January 26, 2015

Eldon Heaston, Executive Officer
Mojave Desert Air Quality Management District
14306 Park Avenue
Victorville, CA 92392-2310

Subject: Blythe Energy Project
MDAQMD Federal Operating Permit 130202262

Dear Mr. Heaston:

Blythe Energy Inc. (Blythe Energy) is pleased to submit the attached application for modification to the Permits to Operate and the Federal Operating Permit for the Blythe Energy Project (BEP). The required application forms are included as Appendix A, and a check for the $253 filing fee is enclosed. The proposed modifications are intended to impose federally enforceable limits on facility emissions that will reduce potential annual emissions of NOx, CO, and $PM_{10}/PM_{2.5}$ from BEP to below the 100 ton per year federal major source threshold. The application also proposes to reduce the permitted annual average NOx concentration and hourly PM mass emission limits to provide additional assurance that compliance with the proposed new annual limits will be maintained. While we understand that the existing Prevention of Significant Deterioration permit will remain in effect after the modifications, the facility will no longer be a major stationary source under the definition in 40 CFR 52.21(b). We also plan to use the reductions in the facility's potential to emit as offsets for future projects at this stationary source, pursuant to District Rule 1305 (B)(2)(b).

The District determined in the FDOC that BEP as permitted would be in compliance with District regulations, including prohibitory rules. BEP is not proposing any changes to the project that would change this determination. Therefore, continued compliance with all applicable District rules and regulations is expected.

We appreciate your consideration of our request. If you have any questions or require additional information regarding the proposed emission reductions, please do not hesitate to contact Gary Rubenstein of Sierra Research at (916) 273-5126.

Sincerely,

Christopher J. Doyle
Vice President
Blythe Energy Inc.

Attachments

cc: Mary Dyas, California Energy Commission
Gerardo Rios, EPA Region IX
Kyle Banbury, AltaGas Ltd.
Tom Wood, Stoel Rives LLP
Gary Rubenstein, Sierra Research

sierra research

Application for a Permit Amendment for the Blythe Energy Project

prepared for:

Blythe Energy Inc.

submitted to:

Mojave Desert Air Quality Management District

January 2015

prepared by:

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Application for a Permit Amendment for the Blythe Energy Project

Table of Contents

List of Tables

Application for a Permit Amendment for the Blythe Energy Project

1. Introduction

Blythe Energy Project (BEP or Project) is a nominal 520-megawatt (MW) combined-cycle power plant, composed of two Siemens F Class V84.3A(2) gas turbines with duct-fired heat recovery steam generators (HRSG), a single condensing steam turbine, two wet cooling towers, and associated plant equipment. BEP is located in the City of Blythe, north of Interstate 10 and approximately 7 miles west of the California/Arizona border.

A Final Determination of Compliance for BEP was issued by the Mojave Desert Air Quality Management District (District) on October 26, 2000. The California Energy Commission (CEC) issued a license to Blythe Energy Inc. (Blythe Energy) for the project on March 21, 2001. Commercial operations for the plant began in July 2003. The District approved the installation of oxidation catalysts on the gas turbines as an administrative modification on April 8, 2010.[1]

The purpose of this proposed amendment is to reduce allowable annual emissions of oxides of nitrogen (NOx), carbon monoxide (CO), and particulate matter (PM_{10})[2] from BEP so that the potentials to emit for all criteria pollutants from the facility are below 100 tons per year. After approval of the proposed amendment, BEP will no longer be a major stationary source under federal Prevention of Significant Deterioration (PSD) regulations. The proposed reductions in permitted annual NOx and PM_{10} emissions will also allow for the use of a portion of the emission reduction credits (ERCs) previously surrendered for BEP to offset emissions from future projects at this stationary source.

With the exception of the short-term CO limits, the emissions limits in the current BEP license were approved based on expected gas turbine performance when there was not extensive operating experience for the units.[3] In addition, Blythe Energy installed oxidation catalysts on the gas turbines in 2010. Now that BEP has over ten years of operating experience and source test data (including four years with the oxidation catalysts installed), it is clear that the annual mass emission limits for NOx, CO, and PM_{10} in the original license were overly conservative.

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[1] Installation of the oxidation catalysts was also approved as an administrative action by the California Energy Commission (CEC) staff. See CEC docket 990-AFC-08, TN # 56226, dated April 13, 2010.

[2] All particulate matter emitted from the gas turbines is assumed to be in the $PM_{2.5}$ size fraction, so all PM_{10} is assumed to be $PM_{2.5}$.

[3] The District and U.S. Environmental Protection Agency (EPA) approved an increase in the permitted CO startup emission rates and a reduction in the CO BACT limit during normal operation for the gas turbines in late 2004.

2. Permit Changes

Blythe Energy is proposing to add a new annual average emission concentration limit for NOx, to reduce the hourly PM_{10} mass emission limit, and to reduce the annual mass emissions limits for all three pollutants in the current Permit to Operate (PTO) and Title V operating permit for the two existing gas turbines at BEP. Permit application forms are included as Appendix A.

Since BEP commenced commercial operation in 2003, the facility has collected substantial continuous emissions monitoring data (for NOx and CO) and source test data (for PM_{10}). In addition, oxidation catalysts have been installed on both gas turbines. Furthermore, there have been major advances in PM_{10} emissions testing procedures, significantly improving the accuracy of PM testing in reflecting the extremely low PM emission rates from natural gas-fired gas turbines.

No changes to other short-term limits or to annual SOx or VOC limits are proposed.

The proposed changes in emissions limits will not involve any physical changes to or changes in the method of operation of the gas turbines, since the turbines are already achieving these lower emission rates. However, BEP may need to increase ammonia injection slightly under some ambient conditions and, if necessary, add additional catalyst material to the selective catalytic reduction systems to ensure compliance with the new, lower NOx limits. The proposed amendment will reduce the annual NOx, CO, and PM_{10} mass emission limits to levels that are more consistent with actual facility performance and will ensure that NOx, CO, and PM_{10} emissions from the plant are maintained at levels lower than originally licensed by requiring the plant to continuously comply with the new lower limits.

2.1 Add New Annual Average Emission Concentration Limit for NOx

Short-term NOx emissions from the gas turbines are currently limited to 2.5 ppmvd @ 15% O_2 on a one-hour average basis. This limit reflects a best available control technology (BACT) determination.

Blythe Energy is proposing to add an annual average NOx concentration limit of 2.0 ppmvd @ 15% O_2 to the permitted emission limits. This new, lower annual average limit will provide additional assurance that the proposed new annual NOx limit will be achieved on a continuous basis.

2.2 Reduce Hourly PM_{10} Limit for the Gas Turbines

When these turbines were originally permitted in 2000, gas turbine manufacturers had limited PM emissions test data from in-use gas turbines. The test data they did have showed significant variation in PM emission rates because of variability in source test conditions and procedures. Therefore, PM emissions guarantees provided by gas turbine manufacturers were relatively high. However, refinements in PM test methods and improved quality control procedures have significantly reduced the variability in PM test results, and have improved the accuracy of PM testing at low concentrations.[4] The PM_{10} source tests on the BEP gas turbines demonstrate that PM_{10} emissions are consistently well below the permitted emission rate of

[4] Matis, Craig, Glenn England et al, "Evaluation of CTM-039 Dilution Method for Measuring PM10/PM2.5 Emissions from Gas-Fired Combustion Turbines," August 20, 2009.

11.5 pounds per hour (lb/hr). As an example, PM_{10} test results from the 2014 annual source testing of the BEP gas turbines are summarized in Table 1 below.

Based on these test results, Blythe Energy is proposing to reduce the hourly PM_{10} limit for each gas turbine from the current level of 11.5 lb/hr to 5.0 lb/hr. PM_{10} emissions changes for the gas turbines are summarized in Table 2.

Table 1
2014 PM_{10} Test Results

Unit	PM_{10} Emission Rate, lb/hr			
	Run 1	Run 2	Run 3	Average
Unit 1	4.6	1.6	1.5	2.5
Unit 2	2.4	2.7	0.8	1.9

Table 2
Emissions Changes: PM_{10} from the Gas Turbines

	Period	
	lb/hr	lb/day
Proposed permit limit – per unit – total, both units	 5.0 –	 – 240
Current permit limit – per unit – total, both units	 11.5 –	 – 565
Net change – per unit – total, both units	 (6.5) (13.0)	 – (325)

2.3 Reduce Annual NOx, CO and PM Limits for the Facility

A review of emissions data for the gas turbines, including CEMS data and annual emission reports, confirms that actual emissions of NOx, CO, and PM are well below permitted limits. Furthermore, since the oxidation catalysts were installed on the gas turbines in 2010, emissions of all criteria pollutants from the facility have been below 100 tons per year. Therefore, Blythe Energy is proposing to reduce the annual NOx, CO, and PM limits in the gas turbine Permits to Operate to more closely reflect actual gas turbine performance. Table 3 summarizes the annual NOx, CO, and PM emissions as reported by the facility for calendar years 2012, 2013, and 2014.

Based on these historical emissions, Blythe Energy is confident that annual emissions of NOx, CO, and PM can be maintained below 100 tpy under all future operating conditions. Blythe Energy is proposing to reduce the annual limits for NOx, CO, and PM_{10} to 97 tons, 97 tons, and 50 tons, respectively, with compliance to be determined on a 12-month rolling total basis. Table 4 summarizes the reductions in annual permitted emissions.

The proposed reductions in permitted annual emissions will reduce emissions of all criteria pollutants from BEP below PSD major stationary source thresholds (40 CFR 52.21 (b)(1)(i)(*a*)), as shown in Table 5.

Table 3
Historical Annual Emissions from the BEP Gas Turbines

Pollutant	Unit	Reported Emissions, tpy[a]			
		2012	2013	2014	Maximum
NOx	Total	60.6	61.8	57.5	61.8
CO	Total	40.2	44.3	28.8	44.3
PM	Total including cooling towers	45.9	46.2	42.2	46.2

Note:
a. Totals may not add directly due to rounding.

Table 4
Proposed Reductions in Permitted Annual Emissions

	Permit Limit, tons per year		
	NOx	CO	PM_{10}[a]
Proposed permit limit	97	97	50
Current permit limit	202	621	103
Net change	(105)	(524)	(53)

Note:
a. PM_{10} limits include emissions from the cooling towers.

Table 5
Comparison of Permitted Annual Emissions with PSD Thresholds

	Permit Limit, tons per year				
	NOx	SOx	CO	VOC	PM_{10}[a]
Permit limit after proposed amendment	97	24	97	24	50
Major stationary source threshold	100	100	100	100	100

3. Best Available Control Technology (BACT) and Air Quality Impacts

Because the proposed changes in permitted emission limits reflect emission rates the gas turbines are already achieving, the proposed changes will not result in any real changes in air quality impacts from the facility. Long-term NOx and all PM_{10} and $PM_{2.5}$ impacts will remain significantly lower than those assessed during the original permit evaluation.

The requirements of Rule 1302 (C)(2)(b) (modeling) and 1303(A) (BACT) for new or modified sources do not apply to the proposed change in permitted emission limits because the proposed change will not result in a net emissions increase of any regulated air pollutant, and therefore does not meet the definition of "modification."

4. Proposed Permit Conditions

This section presents the proposed changes to conditions of the BEP Permits to Operate for the gas turbines (B007953 and B007954, dated January 29, 2014) and Federal Operating Permit (#130202262, dated August 14, 2014). Proposed changes are shown in ~~strikeout~~ and **bold** **underline** font. Only the modified conditions are shown.

4.1 Changes to Conditions: Permits to Operate

DESCRIPTION:

COMBUSTION TURBINE GENERATOR POWER BLOCK (CT1) consisting of: Natural gas fueled Siemens F Class Model V84.3A(2) Serial No. 800436 combustion turbine generator power block producing approximately 260 MW(e) with a connected heat recovery steam generator and a steam condensing turbine (shared with B007954), maximum turbine heat input of 1776 MMBtu/hr.

AND

COMBUSTION TURBINE GENERATOR POWER BLOCK (CT2) consisting of: Natural gas fueled Siemens F Class Model V84.3A(2) Serial No. 800436 combustion turbine generator power block producing approximately 260 MW(e) with a connected heat recovery steam generator and a steam condensing turbine (shared with B007953), maximum turbine heat input of 1776 MMBtu/hr.

CONDITIONS:

4. Emissions from this equipment (including its associated duct burner) shall not exceed the following emission limits at any firing rate, except for CO, NOx, and VOC during periods of startup, shutdown and malfunction:

a. Hourly rate, computed every 15 minutes, verified by CEMS and annual compliance tests:

i. NOx as NO2 the more stringent of 19.80 lb/hr or 2.5 ppmvd corrected to 15% oxygen and averaged over one hour

ii. **NOx as NO2 – 2.0 ppmvd corrected to 15% oxygen and averaged over a rolling 12 month period.**

iii. CO - 1 the more stringent of 17.5 lb/hr or 4.0 ppmvd corrected to 15% oxygen and averaged over three hours

b. Hourly rates, verified by annual compliance tests or other compliance methods in the case of SOx:

i. VOC as CH4 - 2.9 lb/hr (based on 1 ppmvd corrected to 15% oxygen)

ii. SOx as SO2 - 2.7 lb/hr (based on 0.5 grains/100 dscf fuel sulfur)

iii. PM 10 - ~~11.5~~ **5.0** lb/hr

6. Emissions from this equipment, including the duct burner, shall not exceed the following emission limits, based on a calendar day summary:

a. NOx - 5762 lb/day, verified by CEMS

b. CO - 8004 lb/day, verified by CEMS

c. VOC as CH4 - 239 lb/day, verified by compliance tests and hours of operation in steady-state, pre-mix mode.

d. SOx as SO2 - 130 lb/day, verified by fuel sulfur content and fuel use data

e. PM10 - ~~565~~ **240** lb/day, verified by compliance tests and hours of operation

7. Emissions from this facility, including the cooling towers, shall not exceed the following emission limits, based on a rolling 12 month summary:

a. NOx - ~~202~~ **97** tons/year, verified by CEMS

b. CO - ~~621~~ **97** tons/year, verified by CEMS

c. VOC as CH4 - 24 tons/year, verified by compliance tests and hours of operation in steady-state, pre-mix mode

d. SOx as SO2 - 24 tons/year, verified by fuel sulfur content and fuel use data

e. PM10 - ~~103~~ **50** tons/year, verified by compliance tests and hours of operation

4.2 Changes to Conditions: Federal Operating Permit

PART III: EQUIPMENT SPECIFIC APPLICABLE REQUIREMENTS; EMISSIONS LIMITATIONS; MONITORING, RECORDKEEPING, REPORTING AND TESTING REQUIREMENTS; COMPLIANCE CONDITIONS; COMPLIANCE PLANS
EQUIPMENT DESCRIPTIONS:

A. Permit #B007953 COMBUSTION TURBINE GENERATOR POWER BLOCK (CT1) consisting of: Natural gas fueled Siemens F Class Model V84.3A(2) Serial No. 800436 combustion turbine generator power block producing approximately 260 MW(e) with a connected heat recovery steam generator and a steam condensing turbine (shared with B007954), maximum turbine heat input of 1776 MMBtu/hr. Manufacturer, model and serial numbers will be specified when available.

B. Permit #B007954 COMBUSTION TURBINE GENERATOR POWER BLOCK (CT2) consisting of: Natural gas fueled Siemens F Class Model V84.3A(2) Serial No. 800437 combustion turbine generator power block producing approximately 260 MW(e) with a connected heat recovery steam generator and a steam condensing turbine (shared with B007953), maximum turbine heat input of 1776 MMBtu/hr. Manufacturer, model and serial numbers will be specified when available.

PERMIT CONDITIONS:

4. Emissions from this equipment (including its associated duct burner) shall not exceed the following emission limits at any firing rate, except for CO, NOx, and VOC during periods of startup, shutdown and malfunction:
   a. Hourly rate, computed every 15 minutes, verified by CEMS and annual compliance tests:
      i. NOx as NO2 the more stringent of 19.80 lb/hr or 2.5 ppmvd corrected to 15% oxygen and averaged over one hour
      ii. **NOx as NO2 – 2.0 ppmvd corrected to 15% oxygen and averaged over a rolling 12 month period**
      iii. CO - 1 the more stringent of 17.5 lb/hr or 4.0 ppmvd corrected to 15% oxygen and averaged over three hours
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      i. VOC as CH4 - 2.9 lb/hr (based on 1 ppmvd corrected to 15% oxygen)
      ii. SOx as SO2 - 2.7 lb/hr (based on 0.5 grains/100 dscf fuel sulfur)
      iii. PM 10 - ~~11.5~~ **5.0** lb/hr

6. Emissions from this equipment, including the duct burner, shall not exceed the following emission limits, based on a calendar day summary:
   a. NOx - 5762 lb/day, verified by CEMS
   b. CO - 8004 lb/day, verified by CEMS
   c. VOC as CH4 - 239 lb/day, verified by compliance tests and hours of operation in steady-state, pre-mix mode.
   d. SOx as SO2 - 130 lb/day, verified by fuel sulfur content and fuel use data
   e. PM10 - ~~565~~ **240** lb/day, verified by compliance tests and hours of operation

7. Emissions from this facility, including the cooling towers, shall not exceed the following emission limits, based on a rolling 12 month summary:
   a. NOx - ~~202~~ **97** tons/year, verified by CEMS
   b. CO - ~~621~~ **97** tons/year, verified by CEMS
   c. VOC as CH4 - 24 tons/year, verified by compliance tests and hours of operation in steady-state, pre-mix mode
   d. SOx as SO2 - 24 tons/year, verified by fuel sulfur content and fuel use data
   e. PM10 - ~~103~~ **50** tons/year, verified by compliance tests and hours of operation

5. Emission Reduction Credits

Blythe Energy was required to surrender emission reduction credits (ERCs) to offset the original permitted emissions of NOx and PM from the project. Because the permitted emissions are being reduced, the offset obligation is also reduced. In accordance with District Rule 1305 (B)(2)(b):

> *[Actual Emissions Reductions] generated from Federally Enforceable reductions in a Facility's Potential to Emit may be used as Offsets if the [Historic Actual Emissions] for the Facility or Emissions Unit which is proposed for a Federally Enforceable reduction in its Potential to Emit was completely offset in a prior permitting action pursuant to this Regulation.*

Blythe Energy completely offset the facility's NOx and PM_{10} Potentials to Emit by providing 202 tons of NOx ERCs and 103 tons of PM_{10} ERCs prior to commencing construction on the facility. The facility Potentials to Emit are proposed to be reduced by 105 tons of NOx and 53 tons of PM_{10}, and under Rule 1305(B)(2)(b), these ERCs will be available for use in offsetting emissions from future projects at this stationary source.

Appendix A

Permit Application Forms

sierra research

Application for a Permit Amendment for the Blythe Energy Project

prepared for:

Blythe Energy Inc.

submitted to:

Mojave Desert Air Quality Management District

January 2015

prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95811
(916) 444-6666

Application for a Permit Amendment for the Blythe Energy Project

Prepared for:

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Application for a Permit Amendment for the Blythe Energy Project

Table of Contents

List of Tables

Application for a Permit Amendment for the Blythe Energy Project

1. Introduction

Blythe Energy Project (BEP or Project) is a nominal 520-megawatt (MW) combined-cycle power plant, composed of two Siemens F Class V84.3A(2) gas turbines with duct-fired heat recovery steam generators (HRSG), a single condensing steam turbine, two wet cooling towers, and associated plant equipment. BEP is located in the City of Blythe, north of Interstate 10 and approximately 7 miles west of the California/Arizona border.

A Final Determination of Compliance for BEP was issued by the Mojave Desert Air Quality Management District (District) on October 26, 2000. The California Energy Commission (CEC) issued a license to Blythe Energy Inc. (Blythe Energy) for the project on March 21, 2001. Commercial operations for the plant began in July 2003. The District approved the installation of oxidation catalysts on the gas turbines as an administrative modification on April 8, 2010.[1]

The purpose of this proposed amendment is to reduce allowable annual emissions of oxides of nitrogen (NOx), carbon monoxide (CO), and particulate matter (PM_{10})[2] from BEP so that the potentials to emit for all criteria pollutants from the facility are below 100 tons per year. After approval of the proposed amendment, BEP will no longer be a major stationary source under federal Prevention of Significant Deterioration (PSD) regulations. The proposed reductions in permitted annual NOx and PM_{10} emissions will also allow for the use of a portion of the emission reduction credits (ERCs) previously surrendered for BEP to offset emissions from future projects at this stationary source.

With the exception of the short-term CO limits, the emissions limits in the current BEP license were approved based on expected gas turbine performance when there was not extensive operating experience for the units.[3] In addition, Blythe Energy installed oxidation catalysts on the gas turbines in 2010. Now that BEP has over ten years of operating experience and source test data (including four years with the oxidation catalysts installed), it is clear that the annual mass emission limits for NOx, CO, and PM_{10} in the original license were overly conservative.

---

[1] Installation of the oxidation catalysts was also approved as an administrative action by the California Energy Commission (CEC) staff. See CEC docket 990-AFC-08, TN # 56226, dated April 13, 2010.

[2] All particulate matter emitted from the gas turbines is assumed to be in the $PM_{2.5}$ size fraction, so all PM_{10} is assumed to be $PM_{2.5}$.

[3] The District and U.S. Environmental Protection Agency (EPA) approved an increase in the permitted CO startup emission rates and a reduction in the CO BACT limit during normal operation for the gas turbines in late 2004.

2. Permit Changes

Blythe Energy is proposing to add a new annual average emission concentration limit for NOx, to reduce the hourly PM_{10} mass emission limit, and to reduce the annual mass emissions limits for all three pollutants in the current Permit to Operate (PTO) and Title V operating permit for the two existing gas turbines at BEP. Permit application forms are included as Appendix A.

Since BEP commenced commercial operation in 2003, the facility has collected substantial continuous emissions monitoring data (for NOx and CO) and source test data (for PM_{10}). In addition, oxidation catalysts have been installed on both gas turbines. Furthermore, there have been major advances in PM_{10} emissions testing procedures, significantly improving the accuracy of PM testing in reflecting the extremely low PM emission rates from natural gas-fired gas turbines.

No changes to other short-term limits or to annual SOx or VOC limits are proposed.

The proposed changes in emissions limits will not involve any physical changes to or changes in the method of operation of the gas turbines, since the turbines are already achieving these lower emission rates. However, BEP may need to increase ammonia injection slightly under some ambient conditions and, if necessary, add additional catalyst material to the selective catalytic reduction systems to ensure compliance with the new, lower NOx limits. The proposed amendment will reduce the annual NOx, CO, and PM_{10} mass emission limits to levels that are more consistent with actual facility performance and will ensure that NOx, CO, and PM_{10} emissions from the plant are maintained at levels lower than originally licensed by requiring the plant to continuously comply with the new lower limits.

2.1 Add New Annual Average Emission Concentration Limit for NOx

Short-term NOx emissions from the gas turbines are currently limited to 2.5 ppmvd @ 15% O_2 on a one-hour average basis. This limit reflects a best available control technology (BACT) determination.

Blythe Energy is proposing to add an annual average NOx concentration limit of 2.0 ppmvd @ 15% O_2 to the permitted emission limits. This new, lower annual average limit will provide additional assurance that the proposed new annual NOx limit will be achieved on a continuous basis.

2.2 Reduce Hourly PM_{10} Limit for the Gas Turbines

When these turbines were originally permitted in 2000, gas turbine manufacturers had limited PM emissions test data from in-use gas turbines. The test data they did have showed significant variation in PM emission rates because of variability in source test conditions and procedures. Therefore, PM emissions guarantees provided by gas turbine manufacturers were relatively high. However, refinements in PM test methods and improved quality control procedures have significantly reduced the variability in PM test results, and have improved the accuracy of PM testing at low concentrations.[4] The PM_{10} source tests on the BEP gas turbines demonstrate that PM_{10} emissions are consistently well below the permitted emission rate of

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11.5 pounds per hour (lb/hr). As an example, PM_{10} test results from the 2014 annual source testing of the BEP gas turbines are summarized in Table 1 below.

Based on these test results, Blythe Energy is proposing to reduce the hourly PM_{10} limit for each gas turbine from the current level of 11.5 lb/hr to 5.0 lb/hr. PM_{10} emissions changes for the gas turbines are summarized in Table 2.

Table 1
2014 PM_{10} Test Results

Unit	PM_{10} Emission Rate, lb/hr			
	Run 1	Run 2	Run 3	Average
Unit 1	4.6	1.6	1.5	2.5
Unit 2	2.4	2.7	0.8	1.9

Table 2
Emissions Changes: PM_{10} from the Gas Turbines

	Period	
	lb/hr	lb/day
Proposed permit limit – per unit – total, both units	 5.0 –	 – 240
Current permit limit – per unit – total, both units	 11.5 –	 – 565
Net change – per unit – total, both units	 (6.5) (13.0)	 – (325)

2.3 Reduce Annual NOx, CO and PM Limits for the Facility

A review of emissions data for the gas turbines, including CEMS data and annual emission reports, confirms that actual emissions of NOx, CO, and PM are well below permitted limits. Furthermore, since the oxidation catalysts were installed on the gas turbines in 2010, emissions of all criteria pollutants from the facility have been below 100 tons per year. Therefore, Blythe Energy is proposing to reduce the annual NOx, CO, and PM limits in the gas turbine Permits to Operate to more closely reflect actual gas turbine performance. Table 3 summarizes the annual NOx, CO, and PM emissions as reported by the facility for calendar years 2012, 2013, and 2014.

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The proposed reductions in permitted annual emissions will reduce emissions of all criteria pollutants from BEP below PSD major stationary source thresholds (40 CFR 52.21 (b)(1)(i)(*a*)), as shown in Table 5.

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Historical Annual Emissions from the BEP Gas Turbines

Pollutant	Unit	Reported Emissions, tpy[a]			
		2012	2013	2014	Maximum
NOx	Total	60.6	61.8	57.5	61.8
CO	Total	40.2	44.3	28.8	44.3
PM	Total including cooling towers	45.9	46.2	42.2	46.2

Note:
a. Totals may not add directly due to rounding.

Table 4
Proposed Reductions in Permitted Annual Emissions

	Permit Limit, tons per year		
	NOx	CO	PM_{10}[a]
Proposed permit limit	97	97	50
Current permit limit	202	621	103
Net change	(105)	(524)	(53)

Note:
a. PM_{10} limits include emissions from the cooling towers.

Table 5
Comparison of Permitted Annual Emissions with PSD Thresholds

	Permit Limit, tons per year				
	NOx	SOx	CO	VOC	PM_{10}[a]
Permit limit after proposed amendment	97	24	97	24	50
Major stationary source threshold	100	100	100	100	100

3. Best Available Control Technology (BACT) and Air Quality Impacts

Because the proposed changes in permitted emission limits reflect emission rates the gas turbines are already achieving, the proposed changes will not result in any real changes in air quality impacts from the facility. Long-term NOx and all PM_{10} and $PM_{2.5}$ impacts will remain significantly lower than those assessed during the original permit evaluation.

The requirements of Rule 1302 (C)(2)(b) (modeling) and 1303(A) (BACT) for new or modified sources do not apply to the proposed change in permitted emission limits because the proposed change will not result in a net emissions increase of any regulated air pollutant, and therefore does not meet the definition of "modification."

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This section presents the proposed changes to conditions of the BEP Permits to Operate for the gas turbines (B007953 and B007954, dated January 29, 2014) and Federal Operating Permit (#130202262, dated August 14, 2014). Proposed changes are shown in ~~strikeout~~ and **bold** **underline** font. Only the modified conditions are shown.

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AND

COMBUSTION TURBINE GENERATOR POWER BLOCK (CT2) consisting of: Natural gas fueled Siemens F Class Model V84.3A(2) Serial No. 800436 combustion turbine generator power block producing approximately 260 MW(e) with a connected heat recovery steam generator and a steam condensing turbine (shared with B007953), maximum turbine heat input of 1776 MMBtu/hr.

CONDITIONS:

4. Emissions from this equipment (including its associated duct burner) shall not exceed the following emission limits at any firing rate, except for CO, NOx, and VOC during periods of startup, shutdown and malfunction:

a. Hourly rate, computed every 15 minutes, verified by CEMS and annual compliance tests:

i. NOx as NO2 the more stringent of 19.80 lb/hr or 2.5 ppmvd corrected to 15% oxygen and averaged over one hour

ii. **NOx as NO2 – 2.0 ppmvd corrected to 15% oxygen and averaged over a rolling 12 month period.**

iii. CO - 1 the more stringent of 17.5 lb/hr or 4.0 ppmvd corrected to 15% oxygen and averaged over three hours

b. Hourly rates, verified by annual compliance tests or other compliance methods in the case of SOx:

i. VOC as CH4 - 2.9 lb/hr (based on 1 ppmvd corrected to 15% oxygen)

ii. SOx as SO2 - 2.7 lb/hr (based on 0.5 grains/100 dscf fuel sulfur)

iii. PM 10 - ~~11.5~~ **5.0** lb/hr

6. Emissions from this equipment, including the duct burner, shall not exceed the following emission limits, based on a calendar day summary:

a. NOx - 5762 lb/day, verified by CEMS

b. CO - 8004 lb/day, verified by CEMS

c. VOC as CH4 - 239 lb/day, verified by compliance tests and hours of operation in steady-state, pre-mix mode.

d. SOx as SO2 - 130 lb/day, verified by fuel sulfur content and fuel use data

e. PM10 - ~~565~~ **240** lb/day, verified by compliance tests and hours of operation

7. Emissions from this facility, including the cooling towers, shall not exceed the following emission limits, based on a rolling 12 month summary:

a. NOx - ~~202~~ **97** tons/year, verified by CEMS

b. CO - ~~621~~ **97** tons/year, verified by CEMS

c. VOC as CH4 - 24 tons/year, verified by compliance tests and hours of operation in steady-state, pre-mix mode

d. SOx as SO2 - 24 tons/year, verified by fuel sulfur content and fuel use data

e. PM10 - ~~103~~ **50** tons/year, verified by compliance tests and hours of operation

4.2 Changes to Conditions: Federal Operating Permit

PART III: EQUIPMENT SPECIFIC APPLICABLE REQUIREMENTS; EMISSIONS LIMITATIONS; MONITORING, RECORDKEEPING, REPORTING AND TESTING REQUIREMENTS; COMPLIANCE CONDITIONS; COMPLIANCE PLANS
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5. Emission Reduction Credits

Blythe Energy was required to surrender emission reduction credits (ERCs) to offset the original permitted emissions of NOx and PM from the project. Because the permitted emissions are being reduced, the offset obligation is also reduced. In accordance with District Rule 1305 (B)(2)(b):

> *[Actual Emissions Reductions] generated from Federally Enforceable reductions in a Facility's Potential to Emit may be used as Offsets if the [Historic Actual Emissions] for the Facility or Emissions Unit which is proposed for a Federally Enforceable reduction in its Potential to Emit was completely offset in a prior permitting action pursuant to this Regulation.*

Blythe Energy completely offset the facility's NOx and PM_{10} Potentials to Emit by providing 202 tons of NOx ERCs and 103 tons of PM_{10} ERCs prior to commencing construction on the facility. The facility Potentials to Emit are proposed to be reduced by 105 tons of NOx and 53 tons of PM_{10}, and under Rule 1305(B)(2)(b), these ERCs will be available for use in offsetting emissions from future projects at this stationary source.

Appendix A

Permit Application Forms

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
14306 Park Avenue, Victorville, CA 92392-2310
(760) 245-1661 Facsimile: (760) 245-2022
www.mdaqmd.ca.gov
Eldon Heaston
Executive Director

APPLICATION FOR AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE

Page 1 of 2: please type or print

REMIT $245.00 WITH THIS DOCUMENT ($140.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Blythe Energy Inc.		1a. Federal Tax ID No.:
2. Mailing/Billing Address (for above company name): P.O. Box 1210		
3. Facility or Business License Name (for equipment location): Blythe Energy Project		
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): 385 N. Buck Blvd.		Location UTM or Lat/Long: (m) 714609 (E) / 3721719 (N)
5. Contact Name/Title: Christopher J. Doyle, Vice President	Email Address: Chris.Doyle@altagas.ca	Phone/Fax Nos.: (604) 623-4797

6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment:
Reductions in permitted emissions limits for existing Siemens F Class V84.3A(2) gas turbine with duct-fired heat recovery steam generator

Air Pollution Control Equipment, if any (note that most APCE require a separate application):
Selective Catalytic Reduction (SCR) and Oxidation Catalyst

7. Application is for: ☐ New Construction ☒ Modification* ☐ Change of Owner*	For modification or change of owner: *Current Permit Number: B007953

8. Type of Organization (check one):
☐ Individual Owner ☐ Partnership ☒ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

9. General Nature of Business: Electric Power Generation	Principal Product: Electricity	SIC Code (if known): 4911

10. Distances (feet and direction to closest):
490 N Fenceline | 3,960 SW Residence | 5,280 W Business | 25,112 E School

11. Facility Annual Throughput by Quarters (percent):				12. Expected Facility Operating Hours:			
25 %	25 %	25 %	25 %	24	7	52	8,760
Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr

13. Do you claim Confidentiality of Data (if yes, state nature of data on reverse in Remarks)? ☐ Yes ☒ No

14. Signature of Responsible Official:	Official Title: Vice President	
Typed or Printed Name of Responsible Official: Christopher J. Doyle	Phone Number: (604) 623-4797	Date Signed: 1/26/15

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
GENERAL APPLICATION, continued

15. Stack Emissions Information:

Stack No.	Stack Height	Stack Diameter	Exhaust Temp	Exhaust Flow Rate	Exhaust Velocity
1	130 ft.	19 ft.	170 F	1,009,505 acfm	59.3 fps (estimate)
2					
3					

(list additional stacks on a separate sheet)

Stack Height is the distance above ground level to discharge point (feet)
Stack Diameter is the diameter (or equivalent circular diameter) of discharge point (nearest tenth foot)
If using cross-sectional area (A in square feet), equivalent diameter is D = (1.273A)^0.5
Exhaust Temp in degrees F, acutal or estimated to nearest 50 deg F
Exhaust Flow Rate at discharge point in actual cubic feet per minute (ACFM)
Exhaust Velocity in feet per second, design or measured

16. Remarks (basis for confidentiality of data, process description, modification description, etc.):

Blythe Energy proposes to add a new annual average emission concentration limit for NOx and reduce the hourly PM10 mass emission limit for the two existing Siemens F Class V84.3A(2) gas turbines, and to reduce the facilitywide annual mass emissions limits for NOx, CO, and PM10 in the current Permit to Operate (PTO).

If you wish to specify process information as proprietary or confidential, space is provided for this purpose.
The kinds and rates of emissions may not be held confidential; emissions are subject to public disclosure.

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
14306 Park Avenue, Victorville, CA 92392-2310
(760) 245-1661 Facsimile: (760) 245-2022
www.mdaqmd.ca.gov
Eldon Heaston
Executive Director

APPLICATION FOR AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE

Page 1 of 2: please type or print

REMIT $253.00 WITH THIS DOCUMENT ($145.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): **Blythe Energy Inc.**		1a. Federal Tax ID No.:
2. Mailing/Billing Address (for above company name): **P.O. Box 1210**		
3. Facility or Business License Name (for equipment location): **Blythe Energy Project**		
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): **385 N. Buck Blvd.**		Location UTM or Lat/Long: (m) 714609 (E) / 3721719 (N)
5. Contact Name/Title: **Christopher J. Doyle**	Email Address: Chris.Doyle@altagas.ca	Phone/Fax Nos.: (604) 623-4797

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For modification or change of owner: *Current Permit Number: B007954

8. Type of Organization (check one): ☐ Individual Owner ☐ Partnership ☒ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

9. General Nature of Business:	Principal Product:	SIC Code (if known):
Electric Power Generation	Electricity	4911

10. Distances (feet and direction to closest):

490 N	3,960 SW	5,280 W	25,112 E
Fenceline	Residence	Business	School

11. Facility Annual Throughput by Quarters (percent):				12. Expected Facility Operating Hours:			
25 %	25 %	25 %	25 %	24	7	52	8,760
Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr

13. Do you claim Confidentiality of Data (if yes, state nature of data on reverse in Remarks)? ☐ Yes ☒ No

14. Signature of Responsible Official:	Official Title:	
	Vice President	
Typed or Printed Name of Responsible Official:	Phone Number:	Date Signed:
Christopher J. Doyle	(604) 623-4797	1/26/15

- For District Use Only -

Application Number:	*Invoice Number:*	*Permit Number:*	*Company/Facility Number:*

MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT
GENERAL APPLICATION, continued

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Mojave Desert Air Quality Management District

TITLE V – PERMIT AMENDMENT / MODIFICATION

I. PERMIT ACTION (Check appropriate box)

☐ ADMINISTRATIVE AMENDMENT ☐ MINOR MODIFICATION ☒ SIGNIFICANT MODIFICATION

☐ OFF-PERMIT CHANGE

1. FACILITY NAME: Blythe Energy Project

2. FACILITY ID: 1000 0018 0181

3. TITLE V PERMIT NO: 130202262

4. TYPE OF ORGANIZATION: ☒ Corporation ☐ Sole Ownership ☐ Government ☐ Partnership ☐ Utility

5. COMPANY NAME: Blythe Energy Inc.

6. COMPANY MAILING/BILLING ADDRESS:
STREET/P.O. BOX: P.O. Box 1210

CITY: Blythe STATE: California 9-DIGIT ZIP CODE: 92226

7. FACILITY ADDRESS:
STREET: 385 N. Buck Blvd.

CITY: Blythe STATE: California 9-DIGIT ZIP CODE: 92225

PROPOSED DATE OF INSTALLATION: N/A

8. DISTANCES (FEET AND DIRECTION) TO CLOSEST:
FENCELINE: 490 N RESIDENCE: 3,960 SW BUSINESS: 5,280 W SCHOOL: 25,112 E

9. GENERAL NATURE OF BUSINESS: Electric Power Generation

10. DESCRIPTION OF EQUIPMENT OR MODIFICATION FOR WHICH APPLICATION IS MADE
(include Permit #'s if known, and use additional sheets if necessary)

Blythe Energy proposes to add a new annual average emission concentration limit for NOx and reduce the hourly PM10 mass emission limit for the two existing Siemens F Class V84.3A(2) gas turbines, and to reduce the facilitywide annual mass emissions limits for NOx, CO, and PM10 in the current Title V operating permit.

11. PERSON TO CONTACT FOR INFORMATION ON THIS APPLICATION:

NAME: Christopher J. Doyle PHONE NUMBER: 604-623-4797

TITLE: Vice President EMAIL: Chris.Doyle@altagas.ca

II. COMPLIANCE CERTIFICATION (Read each statement carefully and check all for confirmation):

[x] Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s).

[x] Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.

[x] Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

[x] Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

Signature of Responsible Official

1/26/15
Date

Christopher J. Doyle
Name of Responsible Official (please print)

Vice President
Title of Responsible Official (please print)

For AQMD Use Only:

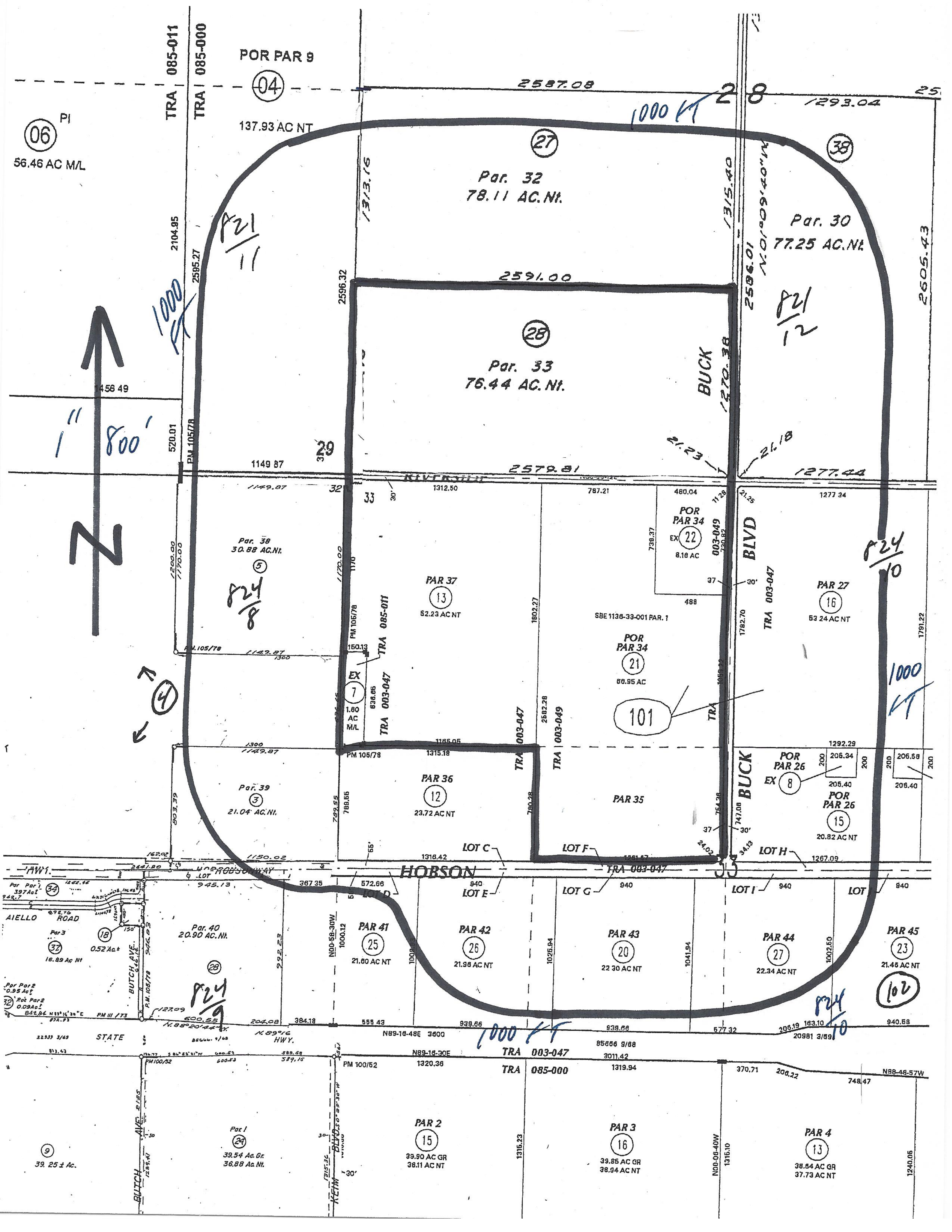
DATE STAMP	*DISTRICT PERMIT APPLICATION NO:* _____	*COMPANY /FACILITY ID:* _____

TITLE V APPLICATION CHECKLIST

Initial Title V application	
1202-A Submission Certification Form	☐ Completed
1202-B1 Facility Summary Form	☐ Completed
1202-B2 Facility Emissions Summary Form	☐ Completed
1202-C Combustion Emissions Unit Form	☐ Completed ☐ Not Applicable
1202-D Piston Engine Emissions Unit Form	☐ Completed ☐ Not Applicable
1202-E Coating/Solvent Emissions Unit Form	☐ Completed ☐ Not Applicable
1202-F Organic Liquid Storage Unit Form	☐ Completed ☐ Not Applicable
1202-G General Emissions Unit Form	☐ Completed ☐ Not Applicable
1202-H Emissions Control Unit Form	☐ Completed ☐ Not Applicable
1202-I Exempt Equipment listing Form	☐ Completed
1202-J Compliance Plan Form	☐ Completed
1202-K Compliance Certification Form	☐ Completed
1202-L Monitoring Report Form	☐ Completed
1202-M Alternative Operating Scenario(s) Form	☐ Completed ☐ Not Applicable
Title V Permit Modification	
1202-N Permit Application for Administrative Amendment or Minor/Significant Modification	☒ Completed
Title V Permit Renewal	
1202E2-A General Facility Information form	☐ Completed
1202E2-B Application Certification form	☐ Completed
1202E2-C Non-Compliant Operations Report	☐ Completed ☐ Not Applicable
1202E2-D List of Exempt Equipment	☐ Completed
1202E2-E Potential Emissions Report	☐ Completed
1202E2-F Compliance Assurance Monitoring	☐ Completed
1202E2-G Permit Shield Request	☐ Completed ☐ Not Applicable
1202E2-H Alternate Operating Scenarios form	☐ Completed ☐ Not Applicable
Title V Compliance Reports	
TV Form 19A – Annual Compliance Certification	☐ Completed
TV Form 19B – Semi-Annual Monitoring Report	☐ Completed
TV Form 19C – Deviation Report	☐ Completed

APPENDIX B

Property Owners Within 1,000 Feet of the Project Site


POR PAR 9
04
06
56.46 AC M/L
137.93 AC NT
TRA 085-011
TRA 085-000
2587.08
1000 FT
28
1293.04
27
38
Par. 32
78.11 AC. Nt.
Par. 30
77.25 AC. Nt.
821/11
821/12
28
Par. 33
76.44 AC. Nt.
2591.00
BUCK
1" 800'
29
2579.81
RIVERSIDE
Par. 38
30.88 AC. Nt.
824/8
PAR 37
13
52.23 AC NT
POR PAR 34
22
8.16 AC
BLVD
PAR 27
16
53.24 AC NT
824/10
SBE 1136-33-001 PAR. 1
POR PAR 34
21
66.95 AC
101
EX 7
1.60 AC M/L
TRA 003-047
TRA 003-049
Par. 39
21.04 AC. Nt.
PAR 36
12
23.72 AC NT
PAR 35
POR PAR 26
EX 8
POR PAR 26
15
20.82 AC NT
LOT C
LOT F
LOT H
HOBSON
HOBSON WAY
LOT D
LOT E
LOT G
LOT I
LOT J
AIELLO ROAD
BUTCH AVE.
Par 3
37
16.89 Ac Nt
18
0.52 Ac±
Par. 40
20.90 AC. Nt.
824/9
PAR 41
25
21.60 AC NT
PAR 42
26
21.98 AC NT
PAR 43
20
22.30 AC NT
PAR 44
27
22.34 AC NT
PAR 45
23
21.46 AC NT
102
STATE HWY.
N89-16-48E 3600
TRA 003-047
TRA 085-000
Par 1
24
39.54 Ac. Gr.
36.88 Ac. Nt.
PAR 2
15
39.90 AC GR
38.11 AC NT
PAR 3
16
39.85 AC GR
38.94 AC NT
PAR 4
13
38.64 AC GR
37.73 AC NT
9
39.25 ± Ac.
KEIM BLVD
BUTCH AVE.

APN_D	FIRSTNAME	LASTNAME	TITLE	ORG	ADDRESS	ADDRESS_2	CITY	STATE	ZIP
821-110-004				GILA FARM LAND LLC	113 S LA BREA AVE		LOS ANGELES	CA	90036
821-120-027				GILA FARM LAND LLC	113 S LA BREA AVE		LOS ANGELES	CA	90036
821-120-028				ALTAGAS POWER HOLDINGS US INC	1411 THIRD ST #A		PORT HURON	MI	48060
821-120-038				GILA FARM LAND LLC	113 S LA BREA AVE		LOS ANGELES	CA	90036
824-080-003				GILA FARM LAND LLC	113 S LA BREA AVE		LOS ANGELES	CA	90036
824-080-003				OCCUPANT	15550 W HOBSON WAY		BLYTHE	CA	92225
824-080-004				COUNTY OF RIVERSIDE	P.O. BOX 1180		RIVERSIDE	CA	92502
824-080-004				OCCUPANT	16870 W HOBSON WAY		BLYTHE	CA	92225
824-080-005				GILA FARM LAND LLC	113 S LA BREA AVE		LOS ANGELES	CA	90036
824-101-007				COUNTY OF RIVERSIDE	P.O. BOX 1180		RIVERSIDE	CA	92502
824-101-012				ALTAGAS SONORAN ENERGY Inc.	1411 THIRD ST #A		PORT HURON	MI	48060
824-101-013				ALTAGAS SONORAN ENERGY Inc.	1411 THIRD ST #A		PORT HURON	MI	48060
824-101-015				GILA FARM LAND LLC	113 S LA BREA AVE		LOS ANGELES	CA	90036
824-101-016				GILA FARM LAND LLC	113 S LA BREA AVE		LOS ANGELES	CA	90036
824-101-021				BLYTHE ENERGY	P.O. BOX 1210		BLYTHE	CA	92226
824-101-021				OCCUPANT	385 N BUCK BLVD		BLYTHE	CA	92225
824-101-022				USA	P.O. BOX 281213		LAKEWOOD	CO	80228
824-102-020				GILA FARM LAND LLC	113 S LA BREA AVE		LOS ANGELES	CA	90036
824-102-026				GILA FARM LAND LLC	113 S LA BREA AVE		LOS ANGELES	CA	90036
824-102-027				GILA FARM LAND LLC	113 S LA BREA AVE		LOS ANGELES	CA	90036