MOJAVE DESERT
AIR QUALITY MANAGEMENT DISTRICT

Preliminary Determination/Decision - Statement of Basis

for

Modification to

FOP Number:3101437

For:

Southern California Gas Company

Facility:

Blythe Compressor Station

Facility Address:

13-100 West 14th Avenue
Blythe, CA 92225

Document Date: November 29, 2018
Submittal date to EPA/CARB for review: November 29, 2018
EPA/CARB 45-day Commenting Period ends: January 14, 2019
Public Notice Posted: December 5, 2018
Public Commenting Period ends: January 4, 2019
Permit Issue date: On or about January 14, 2019

Permitting Engineer:
Samuel J Oktay, PE

14306 PARK AVENUE, VICTORVILLE, CALIFORNIA 92392
PHONE: (760) 245-1661 • FAX: (760) 245-2022 • EMAIL: PERMITTING@MDAQMD.CA.GOV

A. Introduction

1. Application and Setting

Southern California Gas Company (SoCalGas) owns and operates a utility scale natural gas compressor station located in the city of Blythe, CA and within the Mojave Desert Air Quality Management District (MDAQMD). SoCalGas is proposing to replace and refurbish the majority of the compression and electrical generation equipment at this site. The Blythe Compressor Station (BCS) is an existing major source and an existing Title V facility.

The Mojave Desert Air Quality Management District (MDAQMD or District) received an application from SoCalGas in September 2017 to modify their facility and to bank the net emission reductions associated with the Blythe Compressor Replacement (BCR) Project.

Emission Reduction Banking will not occur until the entire project is completed and emissions of new and modified equipment have been thoroughly verified through the use of source test data.

2. Description of Project

The BCS consists of three main compressor Plants: 1, 2, and 3, as well as some auxiliary equipment. Currently permitted equipment at the station consists of ten compressors driven by reciprocating engines fueled by natural gas, five electric generators driven by reciprocating engines fueled by natural gas, an air compressor, waste oil storage tanks and gasoline dispensing equipment.

Due to the age of some of the equipment, SoCalGas evaluated potential projects to improve the Reliability of the BCS, and is proposing to upgrade and/or replace most of the existing engine driven compressors and generators. The BCR Project is planned to be staged and occur in two phases over the next several years, project Phase I and Phase II.

The BCR Project consists of the following primary components:

▪ The installation of a new Plant 4 consisting of four new Siemens-Dresser SGT-300 Gas Turbine Driven Compressors at 7,954 brake-horsepower (bhp) each; two will be installed during Phase I and the remaining two will be installed during Phase II.

▪ A new generator building with five new 1,088 bhp natural gas-fired engine generators will be installed in Phase I.

▪ A new 237 bhp emergency diesel fire water pump (FWP) will be installed in Phase I.

▪ Refurbishment/modification of four of the existing five 1,760 bhp Clark compressors, located in Plant 2, is planned during Phase I to reduce emissions, and generate Simultaneous Emissions Reductions (SER's) for use in permitting new Phase I & Phase II equipment. A fifth existing Clark compressor in Plant 2 will be modified during Phase II. The associated permit, B004154 will be cancelled during project Phase II. Modified Clark engines will be assigned new District

Permit Numbers. Engine modifications will include installing turbochargers and may include one or both of pre-combustion chamber (PCC) and High Pressure Fuel Injection (HPFI), and Oxidation Catalytic Systems. EPA refers to PCC as Low Emission Combustion (LEC) and refers to HPFI as Enhanced Mixing (EM). Pre and post modification emissions will be quantified through source testing. Table 1 below summarizes the affected equipment.

Table 1 Equipment Summary:

Equipment Description	**District Permit Number**	**Comments**
NATURAL GAS IC ENGINE, COMPRESSORS, PLANT 1, Clark 8	B004154	Shut Down- Cancelled During Phase II, Emission Reductions used for SERs
NATURAL GAS IC ENGINE, COMPRESSORS, PLANT 1, Clark 9	B004154	Shut Down- Cancelled During Phase II, Emission Reductions used for SERs
NATURAL GAS IC ENGINE, COMPRESSORS, PLANT 1, Clark 10	B004154	Shut Down- Cancelled During Phase II, Emission Reductions used for SERs
NATURAL GAS IC ENGINE, COMPRESSOR, PLANT 2, CLARK 11, PRE-PHASE I AND PHASE I	B013092	Previously Permitted as B004154; Will be modified Pre-Phase I and during Phase I; Emission Reductions used for SERs
NATURAL GAS IC ENGINE, COMPRESSOR, PLANT 2, CLARK 12, PHASE I	B013093	Previously Permitted as B004154; Will be modified during Phase I; Emission Reductions used for SERs
NATURAL GAS IC ENGINE, COMPRESSOR, PLANT 2, CLARK 13, PHASE II	B013094	Previously Permitted as B004154; Will be modified during Phase II; Emission Reductions used for SERs
NATURAL GAS IC ENGINE, COMPRESSOR, PLANT 2, CLARK 14, PHASE I	B013095	Previously Permitted as B004154; Will be modified during Phase I; Emissions reductions used for SERs
NATURAL GAS IC ENGINE, COMPRESSOR, PLANT 2, CLARK 15, PHASE I	B013096	Previously Permitted as B004154; Will be modified during Phase I; Emissions reductions used for SERs

NATURAL GAS IC ENGINE, GENERATOR 5, AUXILIARY BUILDING	B004158	Shut Down- Cancelled During Phase II; Emissions reductions used for SERs
NATURAL GAS IC ENGINE, COMPRESSOR, AUXILIARY BUILDING	B004159	Shut Down- Cancelled During Phase II; Emissions reductions used for SERs
NATURAL GAS IC ENGINE, COMPRESSOR 1, PLANT 3	B008079	Shut Down- Cancelled During Phase II, Emissions reductions used for SERs
NATURAL GAS IC ENGINE, COMPRESSOR 2, PLANT 3	B008080	Shut Down- Cancelled During Phase II; Emissions reductions used for SERs
NATURAL GAS IC ENGINE, GENERATOR 1, CENTRAL SUPPORTING	B008081	Shut Down- Cancelled During Phase II; Emissions reductions used for SERs
NATURAL GAS IC ENGINE, GENERATOR 2, CENTRAL SUPPORTING	B008082	Shut Down- Cancelled During Phase II; Emissions reductions used for SERs
NATURAL GAS IC ENGINE, GENERATOR 3, CENTRAL SUPPORTING	B008083	Shut Down- Cancelled During Phase II; Emissions reductions used for SERs
NATURAL GAS IC ENGINE, GENERATOR 4, CENTRAL SUPPORTING	B008084	Shut Down- Cancelled During Phase II; Emissions reductions used for SERs
COMBUSTION TURBINE COMPRESSOR 1, PLANT 4, PHASE I	B012852	New Equipment scheduled for installation during Phase I
COMBUSTION TURBINE COMPRESSOR 2, PLANT 4, PHASE I	B012853	New Equipment scheduled for installation during Phase I
COMBUSTION TURBINE COMPRESSOR 3,	B012854	New Equipment scheduled

PLANT 4, PHASE II		for installation during Phase II
COMBUSTION TURBINE COMPRESSOR 4, PLANT 4, PHASE II, BACK-UP	B012855	New Equipment scheduled for installation during Phase II
GENERATOR BUILDING, NATURAL GAS IC ENGINE, PRIME GENERATOR 1, PHASE I	B012864	New Equipment scheduled for installation during Phase I
GENERATOR BUILDING, NATURAL GAS IC ENGINE, PRIME GENERATOR 2, PHASE I	B012865	New Equipment scheduled for installation during Phase I
GENERATOR BUILDING, NATURAL GAS IC ENGINE, PRIME GENERATOR 3, PHASE I	B012866	New Equipment scheduled for installation during Phase I
GENERATOR BUILDING, NATURAL GAS IC ENGINE, PRIME GENERATOR 4, PHASE I	B012867	New Equipment scheduled for installation during Phase I
GENERATOR BUILDING, NATURAL GAS IC ENGINE, PRIME GENERATOR 5, PHASE I	B012868	New Equipment scheduled for installation during Phase I
DIESEL IC ENGINE, EMERGENCY DIRECT-DRIVE WATER PUMP, PHASE I	E013097	New Equipment scheduled for installation during Phase I
AQUEOUS AMMONIA STORAGE TANK, PHASE I	T013121	New Equipment scheduled for installation during Phase I

The shutdown of the three existing 1,760 bhp Clark compressors in Plant 1 will occur in Phase II, and District Permit, B004154, will be cancelled accordingly; these Engines are known as Clark 8, Clark 9, and Clark 10; are presently permitted under aggregated District permit B004154.

Phase II will also include the shutdown and termination of two Caterpillar high speed reciprocating compressors in Plant 3, four Caterpillar generators in the Central Supporting area, and two engines in the Auxiliary Building.

A copy of the air permit application and addendum can be viewed in Appendix B & C, respectively.

Pursuant to District Rule 1301 – *New Source Review Definitions*, BCS is an existing Major Facility for CO, NO_x, and ROC. The MDAQMD is classified as 'attainment/unclassified' by

EPA and CARB for CO and SO_2; therefore, pursuant to District Rule 1303 – *New Source Review Requirements*, the proposed equipment is subject to both the BACT and Offset requirements for the Nonattainment Air Pollutant/Precursors of NO_x and ROC (ozone Precursors), as well as PM_{10}.

The proposed modification requires the use of SER's to permit new equipment. Additionally, and since the facility is an existing Major source, all new equipment shall meet BACT requirements.

This document provides the required NSR analysis as BACT and emission SER's are thoroughly addressed.

BCS is defined as a federal Major Facility pursuant to District Rule 1201 – *Federal Operating Permit Definitions.* The proposed modifications classifies as a Significant Modification to BCS Federal Operating Permit (FOP) since it is adding and modifying equipment that involves changes to the facility criteria and toxic emissions.

Pursuant to District Rule 1205 – *Modifications of Federal Operating Permits*, section (B)(2), this document serves as the preliminary determination to issue BCS the modified FOP, inclusive of the proposed changes. This preliminary determination will be submitted to EPA, CARB, and the public for review and comment on November 29, 2018. The public notice for this preliminary determination will be published on December 5, 2018 allowing for public comment until January 4, 2019.

B. Analysis

1. Determination of Emissions

[District Rule 1302(C)(1)]

The proposed new turbine driven compressors and electric generators will emit CO, NOx, ROC, PM10, and SOx, as well as TACs, due to combustion of natural gas. The associated emissions of NOx, PM10, and ROC will be offset with Simultaneous Emissions Reductions (SERs) through the modification of a number of existing sources, during Phase I, and the modification, shutdown and termination of a portion of existing sources during the Phase II portion of the project.

Phase I equipment modifications will occur to existing Natural Gas Engine Compressors, presently permitted with District Permit B004154, Plant 2, Phase I. Engine modifications will include installing turbochargers, Oxidation Catalytic Systems and may include one or both of pre-combustion chamber (PCC) and High Pressure Fuel Injection (HPFI). EPA refers to PCC as Low Emission Combustion (LEC) and refers to HPFI as Enhanced Mixing (EM). Pre and post modification emissions will be quantified through source testing. Table 2 below summarizes the affected equipment and disposition time frame:

Table 2 Phase I Modification and New Equipment Summary:

Equipment Description	District Permit Number	Previous Permit Number
Natural Gas IC Engine, Compressor, Clark 11 Will Be Modified During Phase I to produce SER's	B013092	B004154
Natural Gas IC Engine, Compressor, Clark 12 Will Be Modified During Phase I to produce SER's	B013093	B004154
Natural Gas IC Engine, Compressor, Clark 14 Will Be Modified During Phase I to produce SER's	B013095	B004154
Natural Gas IC Engine, Compressor, Clark 15 Will Be Modified During Phase I to produce SER's	B013096	B004154
COMBUSTION TURBINE COMPRESSOR 1, PLANT 4, PHASE I New Device; Emissions Offset with SER's during Phase I	B012852	NA
COMBUSTION TURBINE COMPRESSOR 2, PLANT 4, PHASE I New Device; Emissions Offset with SER's during Phase I	B012853	NA
Equipment Description (Continued)	**District Permit Number**	**Previous Permit Number**
GENERATOR BUILDING, NATURAL GAS IC ENGINE, PRIME GENERATOR, GEN 1, PHASE I New Device; Emissions Offset with SER's during Phase I	B012864	NA
GENERATOR BUILDING, NATURAL GAS IC ENGINE, PRIME GENERATOR, GEN 2, PHASE I New Device; Emissions Offset with SER's during Phase I	B012865	NA
GENERATOR BUILDING, NATURAL GAS IC ENGINE, PRIME GENERATOR, GEN 3, PHASE I New Device; Emissions Offset with SER's during Phase I	B012866	NA
GENERATOR BUILDING, NATURAL GAS IC ENGINE, PRIME GENERATOR, GEN 4, PHASE I New Device; Emissions Offset with SER's during Phase I	B012867	NA
GENERATOR BUILDING, NATURAL GAS IC ENGINE, PRIME GENERATOR, GEN 5, PHASE I New Device; Emissions Offset with SER's during Phase I	B012868	NA
DIESEL IC ENGINE, EMERGENCY DIRECT-DRIVE WATER PUMP, PHASE I New Device; Emissions Offset with SER's during Phase I	E013097	NA
AQUEOUS AMMONIA STORAGE TANK, PHASE I	T013121	NA

New Device; Emissions Offset with SER's during Phase I		

Table 3 below summarizes the post Phase I emissions. The summary includes emission reductions form Clark Engines 11, 12, 14 & 15, the emissions from two new Turbine Compressors, one new Fire Water Pump, and five new Natural Gas Fired generators.

The applicant has proposed to offset net emission increases of PM10 and ROC's with NOx SERs using a 2:1 interpollutant offset ratio. The MDAQMD has agreed to allow that use of NOx SER's for interpollutant offsets. The pollutant CO will not be offset, since it is an attainment air pollutant and the emission increase does NOT trigger the 100 tpy PSD threshold for a major modification.

Regarding SOx, the project is in a PM10 nonattainment area (State) and SOx is a PM10 precursor and therefore regulated, however the project is minor for SOx and remains minor after the proposed modification, so there is no SOx offset requirement; actual historical SOx emissions, averaged for 2015 & 2016, are 0.90 tpy. Additionally, the facilities post project SOx increase will be 0.60 tpy, far below the 40 tpy SOx PSD threshold for a major modification.

Table 3 Summary of Phase I Netting Analysis

Summary of Phase I Netting Analysis						
Equipment	**Permit Numbers**	**Pollutant Emissions (tpy)**				
		CO	**NO_x**	**PM_{10}**	**SO_x**	**VOC**
Historic Actual Emissions (HAE), 2015-2016 (24 months)						
Plant 2 (HAE for Clarks 11, 12, 14, 15)	B004154	**41.42**	**227.62**	**4.51**	**0.07**	**14.08**
SUM of HAE		**41.42**	**227.62**	**4.51**	**0.07**	**14.08**
Proposed Emissions: Post Phase I -Full Operation (tpy)						
Plant 2 (4 Clarks Refurbished)	B013092, B013093, B013095, B013096	**30.92**	**135.84**	**11.21**	**0.18**	**14.02**
Plant 4 (PTE for 2 Turbines)	B012852, B012853	**11.28**	**20.85**	**4.15**	**0.37**	**3.46**
Generator Bldg. (PTE for 5 Generators)	B012864, B012865, B012866, B012867, B012868	**31.49**	**7.87**	**4.03**	**0.12**	**6.30**
Fire Water Pump	E013097	**0.012**	**0.035**	**0.001**	**0.0001**	**0.002**
SUM of New/Modified Sources		**73.71**	**164.60**	**19.39**	**0.67**	**23.78**
Difference PTE-HAE		**32.29**	**-63.03**	**14.89**	**0.60**	**9.70**
Results of PM10 and VOC offsets using NOX Reductions at a 2:1 Ratio		**32.29**	**-13.85**	**0.00**	**0.60**	**0.00**

The emissions and SERs are quantified in the following sections, and the detailed spreadsheets are provided in Appendix E through Appendix J.

District Rule 1304 – *Emissions Calculations*, provides the procedures and formulas to calculate emission increases and decreases for new or modified Facilities. Section (A)(1)(a)(iii), of this rule, states that District Rule 1304 shall determine the Potential to Emit of new or modified Facilities and Emission Unit(s). Pursuant to District Rule 1304, the emission change for a new or modified Facility or Emissions Unit(s) shall be calculated, in pounds per day, by subtracting Historic Actual Emission from Proposed Emissions (section (B)(1)(a)):

Emissions Change = (Proposed Emissions) – (Historic Actual Emissions)

For a modified Facility, such as in the case of BCS, Proposed Emissions shall be equal to the Potential to Emit as defined in District Rule 1301 – NSR Definitions, section (UU). Section (UU) of District Rule 1301 specifically states that Potential to Emit is the maximum capacity of a Facility or Emissions Unit(s) to emit any Regulated Air Pollutant under its physical and operational design. It also states that any physical or operational limitation on the capacity of the Facility or Emissions Unit(s) to emit an Air Pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processes, shall be treated as part of its design only if the limitation or the effect it would have on emissions is Federally Enforceable.

BCS is proposing to modify four of its existing 1,760 bhp Clark compressors, in Plant 2, to reduce NOx emissions. The SERs will be utilized to offset emissions from the proposed new equipment.

Net emission increases of regulated nonattainment pollutants and their precursors for which the facility is major will be completely offset using NOx simultaneous emission reductions at an interpollutant offset ratio of 2 to 1.

Clark engine refurbishments/modifications will include a turbocharger, Oxidation Catalytic System, and may include one or both of pre-combustion chamber (PCC) and High Pressure Fuel Injection (HPFI). EPA refers to PCC as Low Emission Combustion (LEC) and refers to HPFI as Enhanced Mixing (EM). Note that one of these Clark Engines, Clark 11, is currently permitted under a research permit related to these retrofits; the modification and evaluation of that engine's modifications will become the template to modify the permits for Clark Engines; 11, 12, 13, 14, and 15.

Phase I NSR analysis indicates that after offsetting all applicable criteria pollutant increases, PM10 and ROCs using NOx reductions at a 2:1, there will be a net NOx reduction of 13.85 tpy, as summarized in Table 3 above.

The applicant has requested that Emissions Reduction Credits be issued for the net reduction of NOx. The MDAQMD will process that request in a separate action in accordance with Regulation XIV after the project is complete.

District Rule 1304, section (D)(2)(a)(iv), allows Historic Actual Emissions, to be equal to the verified Actual Emissions of an Emissions Unit, or combination of Emissions Units, averaged from the two year period which immediately precedes the date of application and which is representative of Facility operations. BCS provided Actual Emissions data for years 2015 and 2016 which are representative of their operations (see Appendix A & B for a copy of their package for further details).

Emission changes from the 4 Modified Clark Engines is quantified here based on manufacturer's guaranteed NOx emission factors for modified Clark Engines at maximum emission factor of 2.0 gm/bhp-hr.

2. Determination of Nonattainment NSR Requirements

[District Rule 1302(C)(2)]

a. BACT Evaluation

[District Rule 1302(C)(2)(a)]

Best Available Control Technology (BACT) is required for each new or Modified Permit Unit at a Modified Facility that emits, or has the Potential to Emit, twenty-five (25) tons per year or more of any Nonattainment Air Pollutant or its Precursors (District Rule 1303(A)(3)). BCS has a facility PTE in excess of twenty five (25) tons per year for the Nonattainment Air Pollutant and Precursors of NO_x, and ROC; it is an area source for SOx. Since the facility is a major source for NOx, and ROC, BACT must be applied to all new equipment.

BACT analysis for the four proposed Turbine Compressors (two Turbine Compressors to be installed during Phase I and two during Phase II)

Identify All Control Technologies:

The following websites were researched in an effort to determine the Best Available Control Technology for this emissions type. The search included EPA's Reasonably Available Control Technology (RACT)/BACT/Lowest Achievable Emission Rate (LAER) Clearinghouse (RBLC); California air agency BACT Guidelines, including those from the California Air Resources Board (CARB), San Joaquin Valley Air Pollution Control District (SJVAPCD), South Coast Air Quality Management District (SCAQMD), and Bay Area Air Quality Management District (BAAQMD). The research included review of currently permitted equipment (achieved in practice), and the review of the associated BACT analyses from New Source Review (NSR) permitting for similar facilities.

The results of the EPA RBLC database search for natural gas fired turbines, less than 25 MW, from January 1, 2007 to May 26, 2017 are summarized in the applicants Table 3-1, with a more detailed listing in the Appendix C of the Application (see Appendix B).

Based on this research, it has been determined that BACT for this class and category of Turbines for use in powering natural gas compressors is Natural gas-fired Turbine equipped with Dry Low NOx (DLN) Combustion Technology, along with a selective catalytic NOx reduction system (SCR), a ROC and CO oxidation catalyst system, and the use of utility grade Natural Gas as fuel.

Eliminate Technically Infeasible Options:

A review of the various control technologies was conducted and it was determined that SCR and DLN along with oxidation catalyst system is technologically feasible for gas Turbines used in natural gas compression applications.

Rank Remaining Control Technologies by Control Effectiveness

Based on search results, SCR technology is considered the most effective of the options for control of NO emissions from gas turbines and oxidation catalyst is considered the most cost effective method for ROC, CO, and TAC reductions.

Evaluate Most Effective Controls and Document Results

The best example of NOx reduction for this Class and Category of equipment is the equipment and emissions from the Turbine Compressors and control devices used at the SoCalGas Wheeler Ridge Compressor Station (WRCS) located within the San Joaquin Valley Air Pollution Control District (SJVAPCD).

Although NOx limits of 7 ppmvd at 15% Oxygen have been achieved for gas Turbines in steady load electrical power applications, this level is not considered achieved in practice for natural gas compression due to inherent fluctuating loads associated with natural gas compression.

It has been determined that the emissions levels from the Turbines located at the SoCalGas WRCS is BACT for this class and category of equipment since it is similar equipment and the associated emissions have been achieved in practice. It is these emission levels, therefore, that are proposed for the BCS; NOx levels identified as BACT for variable load turbines is 8 ppmvd @ 15% O2 when in "steady state" operation and 12 ppmvd @ 15% O2 when in a "transitional state".

The MDAQMD has reviewed and agrees that these emission levels are BACT for the proposed Gas Turbine Compressors.

b. Six new 1,044 bhp natural gas-fired engine generators

BACT for these new generators is determined to be a three-way catalysts/non-selective catalytic reduction for NOx, CO and ROC emission reductions. These new electrical generators shall be BACT equipped as required by Regulation XIII.

c. Diesel Fire Pump

BACT for this device is considered to be compliance with CARB Diesel ATCM 17 CCR 93115 for an Emergency Fire Water Pump. The Engine associated with this device is a Certified Tier III engine and will meet the ATCM requirements, and is considered to BACT for this class and category of engine.

d. Ammonia Tank

The emissions from this Tank will be far less than 25 lbs/day and therefore BACT will not be triggered. Additionally, Ammonia is NOT a ROC and discussions regarding it being a PM10/2.5 precursor are complicated and dependent on the location of release.

The MDAQMD asked the applicant for clarification as to the effects of the 20 ppm Ammonia Slip, which is the Design emission rate for the Turbine Emission Control SCR System.

Per a letter dated June 5, 2018, and in response to MDAQMD's request for clarification of Ammonia as a PM10 precursor, the following Response was provided:

Response: *The ATC application for the BCR Project provided the ammonia PTE as well as the net emissions changes for the criteria pollutants associated with the BCR Project. The ATC application included a proposed emissions limit for ammonia slip. The ATC application included a PSD applicability analysis that showed that emissions would be below the Significant Emissions Rates (SERs) for all criteria pollutants as a result of the project, and that there would be a substantial reduction of NOx emissions. We believe that this information is sufficient to address secondary (e.g., precursor-related) impacts to the $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS). Ammonia emissions form ammonium (NH_4), which reacts in the ambient air to form ammonium sulfate ($(NH_4)_2SO_4$) and ammonium nitrate (NH_4NO_3). In this case, we believe that the reactions would be limited by the project-related reduction in NOx emissions and very small if any (less than 1 ton per year [tpy] on a historic actual to PTE basis) of SOx emissions. With less nitrate and sulfate in the area, ammonium-based aerosols would not be formed locally.*

On July 29, 2016, the Environmental Protection Agency (EPA) finalized requirements for implementing the $PM_{2.5}$ NAAQS in areas that are currently or expected to be designated non-attainment for existing standards[1]. According to Table II-1 EPA Recommended Assessment Cases that Define Needed Air Quality Analyses of Source Impacts Assessment in EPA's Memo on Guidance for $PM_{2.5}$ Permit Modeling (Page, 2014)[2], EPA indicates that in cases where the direct emissions of $PM_{2.5}$ are less than the SER of 10 tpy (see BCR Project PSD applicability analysis) and NOx and SOx emissions are less than 40 tpy, no direct or secondary $PM_{2.5}$ impact assessment should be required. This guidance is irrespective of the ammonia emissions and no SERs have been defined by EPA for ammonia. An NSR Law Blog (Hiser, 2017)[3] indicates that "EPA also changed the definition of "significant" to include a provision that if ammonia is a precursor in a nonattainment area, then the State must submit a definition of significant for that area. See new 40 C.F.R. 51.165(a)(1)(x)(F). EPA believed that this approach was reasonable because ammonia is generally not a significant contributor in many areas and most existing $PM_{2.5}$ nonattainment areas do not have any existing major sources of ammonia."

Based on this information, Ammonia slip at 20 ppm has been analyzed for its Health Effects and is included in the Turbines Prioritization score; the results, including the 20 ppm Ammonia slip is a PS of 0.3892, which is defined as a "Low Priority" source and is considered an acceptable Health Risk.

e. Modified Clark Engines

BACT does not apply to the refurbishment of these engines and the changes will result in a net emission decrease and therefore does not constitute a "Modification" under NSR as defined in regulation XIII.

f. Offsets Evaluation [District Rule 1302(C)(3)]

Offsets are required for any new or modified Facility which has the Potential to Emit a Regulated Air Pollutant in an amount greater than or equal to the thresholds for the Nonattainment Air Pollutants and their Precursors specified in District Rule 1303 (B)(1). The offset threshold is 100 tons per year for CO, 15 tons per year for PM10, 25 tons per year for NO_X, 25 tons per year for SOx, and 25 tons per year for ROC (VOC).

The applicant has proposed utilizing NOx SERs generated from the modification of four of their Clark Engines to offset any criteria pollutant increases. As articulated earlier, CO will not require offsets as the MDAQMD is in CO attainment. VOC increases will be offset with NOx SERs at a 2:1 ratio. SOx increase will not require offsets as the increase is small, 0.60 tpy, and the facility is located in a SOx attainment area.

In summary, offsets are not required for this project.

g. Determination of Additional Federal Requirements
[District Rule 1302(C)(4)]

Pursuant to the requirements in District Rule 1302 B(1)(a)(ii), an analysis of Alternative Siting is not required as the proposed equipment does not require Offsets, nor is the Modification a "Major Modification" as defined in District Rule 1301 (DDD).
Pursuant to the requirements in District Rule 1302 B(1)(a)(iii), an analysis of any anticipated impacts on visibility is not required as the proposed equipment does not qualify as an application for a new Major Facility, nor is it a Major Modification for NSR purposes.

3. Determination of Requirements for Toxic Air Contaminants
[District Rule 1302(C)(5)]

a. **New Source Review For Toxic Air Contaminants, District Rule 1320:**
Pursuant to District Rule 1320 – New Source Review for Toxic Air Contaminants, BCS is subject to both State and Federal Toxic New Source Review, as BCS is a Modified Facility which has the potential to emit a Toxic Air Contaminant, and contains Emissions Units which are subject to an Airborne Toxic Control Measure (State T-NSR). Additionally, BCS has the potential to emit 10 tons per year of a single Hazardous Air Pollutant (Federal T-NSR) and/or 25 tpy of a combination of HAPs. Pursuant to the requirements of District Rule 1320, an applicability analysis of state and federal air toxic regulations was conducted for the proposed equipment (State T-NSR and Federal T-NSR, respectively). The State T-NSR and Federal T-NSR analyses are described below:

Section (E)(1)(b) of District Rule 1320 requires that if any ATCM applies to the proposed equipment, the requirements of that ATCM shall be added to the District permit.

New equipment that is subject to a State ATCM is the Diesel fired Emergency Water Pump, which is subject to the ATCM for Stationary Compression Ignition Engines, 17 CCR 93115 and must meet the emission limits of 93115 Table 2 for $175 \leq HP < 300$, as this engine is 237 bhp.

The engine is a certified Tier III engine that has certified emission levels of PM = 0.10 gm/bhp-hr, NMHC+NOx = 2.82 gm/Bhp-hr, and CO = 0.90 gm/Bhp-hr. These emission levels are lower than those required by the Diesel ATCM Table 2 and therefore the emissions meet the requirements of this ATCM; see: https://www.arb.ca.gov/diesel/documents/FinalReg2011.pdf.

Diesel ATCM 17 CCR 93115, Table 2

Table 2: Emission Standards for New Stationary Emergency Standby Direct-Drive Fire Pump Engines > 50 BHP g/bhp-hr (g/kW-hr)

Maximum Engine Power	Model year(s)	PM	NMHC+NOx	CO
50 ≤ HP < 75 (37 ≤ kW < 56)	2010 and earlier 2011+[1]	0.60 (0.80) 0.30 (0.40)	7.8 (10.5) 3.5 (4.7)	3.7 (5.0)
75 ≤ HP < 100 (56 ≤ kW < 75)	2010 and earlier 2011+[1]	0.60 (0.80) 0.30 (0.40)	7.8 (10.5) 3.5 (4.7)	3.7 (5.0)
100 ≤ HP < 175 (75 ≤ kW < 130)	2009 and earlier 2010+[2]	0.60 (0.80) 0.22 (0.30)	7.8 (10.5) 3.0 (4.0)	3.7 (5.0)
175 ≤ HP < 300 (130 ≤ kW < 225)	2008 and earlier 2009+[3]	0.40 (0.54) 0.15 (0.20)	7.8 (10.5) 3.0 (4.0)	2.6 (3.5)
300 ≤ HP < 600 (225 ≤ kW < 450)	2008 and earlier 2009+[3]	0.40 (0.54) 0.15 (0.20)	7.8 (10.5) 3.0 (4.0)	2.6 (3.5)
600 ≤ HP < 750 (450 ≤ kW < 560)	2008 and earlier 2009+	0.40 (0.54) 0.15 (0.20)	7.8 (10.5) 3.0 (4.0)	2.6 (3.5)
HP > 750 (kW > 560)	2007 and earlier 2008+	0.40 (0.54) 0.15 (0.20)	7.8 (10.5) 4.8 (6.4)	2.6 (3.5)

1. For model years 2011–2013, manufacturers, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 revolutions per minute (rpm) may comply with the emission limitations for 2010 model year engines.
2. For model years 2010–2012, manufacturers, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2009 model year engines.
3. In model years 2009–2011, manufacturers of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2008 model year engines.

There are no ATCMs applicable to the natural gas fired turbines, or the spark ignited natural gas fired compressors and or the natural gas fired generators.

Pursuant to District Rule 1320, section (E)(2), State T-NSR also requires an Emission Unit Prioritization Score to be calculated utilizing the most recently approved CAPCOA Facility Prioritization Guidelines, the most recently approved OEHHA Unit Risk Factor for cancer potency factors, and the most recently approved OEHHA Reference Exposure Levels (REL's) for non-cancer acute factors, and non-cancer chronic factors. Therefore, and pursuant to District Rule 1320 a Prioritization Score (PS) is calculated for each New or Modified emissions device based on the proposed potential to emit values. The results for each new or modified emission unit is provided below:

Modified Clark Engines, previously permitted under B004154, and permitted under new District Permits during their modification:

Clark 11, District Permit B013092, Cancer PS = 6.44
Clark 12, District Permit B013093, Cancer PS = 6.44
Clark 13, District Permit B013094, Cancer PS = 6.44
Clark 14, District Permit B013095, Cancer PS = 6.44
Clark 15, District Permit B013096, Cancer PS = 6.44

Cancer Prioritizations Scores are 6.44 each and therefore defined as "Intermediate Priority" emission sources, and acceptable without performing a HRA.

New Diesel IC Engine Emergency Water Pump; District Permit E013097: Cancer Prioritization Score is 0.2414 and therefore defined as a "Low Priority" emission source, and acceptable without performing a HRA.

5 – New Natural Gas Prime Generators; District Permits B012864, B012865, B012866, B012867 and B012868: Cancer Prioritization Score = 7.45 each and therefore defined as "Intermediate Priority" emission sources, and acceptable without performing a HRA.

New Turbine powered compressors; District Permits B012852, B012853, B012854, and B012855: Cancer Prioritization Score is 0.3892 and therefore defined as a "Low Priority" emission source, and acceptable without performing a HRA. Note: This prioritization score includes Ammonia Emissions at the rate of 20 ppm ammonia slip.

Note: All new and modified emission units also have acute and non-cancer chronic prioritization scores that are less than 1, and therefore defined as "Low Priority" emission devices, for those categories.

Conservatively, SoCalGas also conducted an HRA on the potential emissions of the proposed BCS modifications. The HRA predicted that each uncontrolled existing Clark engine and some of the proposed electric generators would have a cancer risk at the MICR location of slightly over 10 in a million (see Table 5-3 of the HRA), meaning the facility would be classified as a Significant Health Risk, thus T-BACT is required. T-BACT is the installation of an oxidation catalyst on the Clark engines and an NSCR/3-way catalyst on the new generators. The HRA results of the proposed, post-controlled equipment classifies this facility as a Moderate Risk, meaning the MICR is greater than or equal to one (1) in one million (1x10-6) at the location of any receptor, but less than ten (10) in a million (1x10-5). No further analyses is required for a facility designated as a Moderate Risk, other than the programmatic tracking of this facility's actual emissions which are required to be submitted to the District on an annual basis for criteria emissions, and a triennial basis for toxic emissions.

4. Control of Toxic Air Contaminants from Existing Sources, District Rule 1520:

Pursuant to District Rule 1520, the applicant submitted a 2017 Comprehensive Emission Inventory Report (CEIR), which was inputted into the HOTSPOTS ANALYSIS AND REPORTING PROGRAM EMISSION INVENTORY MODULE VERSION 2.1.0, (HARP2) Software program for subsequent analysis and results.

This methodology is consistent with the 2016 CAPCOA Facility Prioritization Guidelines, and is based on a conservative receptor selection of 450 meters (please refer to Appendix D for the Emission Unit Prioritization HARP data).

The Table below summarizes the BCS's 2017 pre-modification prioritization scores.
As shown, the carcinogenic Prioritization Score is greater than one (1) and less than ten (10), and therefore, BCS is categorized as an 'Intermediate Priority' facility as defined by District Rule 1320, section (E)(2)(b). Therefore, no Contemporaneous Risk Reduction is required during the BCS equipment upgrade. Nonetheless, all new and modified equipment will have add-on controls considered to be Toxics Best Available Control Technology, T-BACT, through the use of oxidation catalysts. Therefore, further Health Risk Reductions are not required during the BCS upgrade project.

2017 Facility Pre-Modification Prioritization Scores:

Cancer Priority	***Chronic Noncancer Priority***	***Acute Noncancer Priority***
8.437	*0.2227*	*0.0957*

5. Federal T-NSR:
Pursuant to section (F)(1) of District Rule 1320, the Modified Facility/Emissions Units were analyzed to determine if any current, enforceable Maximum Achievable Control Technology (MACT) standards apply to the affect Emission Units

40 CFR Part 63, Subpart YYYY — National Emission Standards for Hazardous Air Pollutants for Stationary Gas Turbines

This regulation applies to gas turbines greater than 1.0 MW located at major sources of HAP emissions. EPA placed a stay on Subpart YYYY for lean premix gas-fired turbines on August 8, 2004. EPA specifically identified turbines for use in natural gas transmission (SIC Code 4922, NAICS 486210, Natural gas transmission), as subject to this stay.

The EPA identified this stay as necessary to avoid wasteful and unwarranted expenditures on installation of emission controls which will not be required if the subcategories are delisted. Therefore, there are no Maximum Available Control Technology (MACT) emission limits required for the new turbines. Pursuant to 40 CFR 63.6145, Notification of the proposed new

Turbines is achieved through this document and revisions to the Title V Permit, considered and processed as a Title V Major Modification.

b. District Rule 1520 – Toxic Hot Spots Analysis:
Control of Toxic Air Contaminants from Existing Sources applies to BCS, since it is an existing facility that has a facility PTE greater than ten (10) tons per year for a single TAC. BCS most recent (2017 emission year) Comprehensive Emission Inventory Report (CEIR) was utilized to fulfill the requirements of section (D)(1)(b)(i) of District Rule 1520. Section (E)(1)(a)(ii) requires prioritization scores to be calculated utilizing the most recently approved CAPCOA Facility Prioritization Guidelines, the most recently approved OEHHA Unit Risk Factor for cancer potency factors, and the most recently approved OEHHA Reference Exposure Levels for non-cancer acute factors, and non-cancer chronic factors.

6. Determination of Requirements for Prevention of Significant Deterioration
[District Rule 1302(C)(6)]

a. PSD Analysis

Rule 1302(B)(1)(a)(i)c requires that any application for an ATC or modification to a Permit to Operate (PTO) includes: "A District Rule 1600 applicability analysis sufficient to determine whether the Facility or Modification is or is not a new PSD Major Source or a PSD Major Modification as defined in District Rule 1600(B) using the procedures set forth in 40 CFR 52.21 (a)(2)."

The BCS is located in an area designated as attainment or unclassified for all National Ambient Air Quality Standards (NAAQS). Therefore, the BCS is potentially subject to PSD for all criteria pollutants. The BCS is an existing PSD Major Source for CO and NOx since the facility PTE is greater than 250 tpy for these two pollutants.

BCS does not have a PSD permit since permitting of most of the emissions units pre-dates PSD regulations, and the permitting of Plant 3 in 2011 was not a PSD Major Modification at that time.

After determining that an existing source is a PSD Major Source, PSD applicability is determined in an additional two-step process. First, the PTE of new and modified equipment is determined and compared to PSD Significant Emissions Increases (SEI) thresholds for each PSD regulated pollutant. If the new and modified emissions are greater than these SEI thresholds, then emissions netting of contemporaneous emissions increases and decreases that have occurred at the facility can be used in a netting analysis, similar to that discussed above.

Table 5 summarizes the PSD Major Modification applicability analysis, using the "hybrid" approach as allowed in 40 CFR 52.21(a)(2)(iv)(f). This approach uses the PTE for new sources, but allows the emissions increases of modified sources to be based on "projected future actual" emissions basis rather than PTE. Past operation of Plant 2 has been less than 45% of the time during the baseline, and the use of Plant 2 is expected to continue to decline. Therefore, a conservative 45% operation was assumed for the projected future actuals after Phase II is implemented and also including the NOx reduction project and the installation of the oxidation catalyst.

Fine particulate matter (PM2.5) is also included as a regulated PSD pollutant, and is conservatively assumed equal to PM10 (Total particulate matter (PM) is a PSD regulated pollutant, and considered equal to PM10 in this case, but has a higher SEI threshold of 25 tpy). As shown in Table 5, PM2.5 is over the PSD SEI thresholds based on the proposed BCR Project PTE and projected future actuals from the new and modified sources. However, during the third step of the analysis, it is shown that, there are more than sufficient contemporaneous emissions decreases (and increases) to net out of PSD. For this analysis, the reductions from the planned shutdowns in Plant 1, Plant 3, Central Supporting, and the Auxiliary Building are sufficient reductions to show that the net PM2.5 increase of 9.45 tpy is below the 10 tpy PSD SEI Threshold.

PSD Applicability Analysis

Step 1: On a PTE basis, Blythe Compressor Station is a Major PSD Source (>250 tpy) for CO and NOx.

Step 2: The planned new EUs will not be a Major PSD modification based PTE for 3 turbines, 5 generators, and 1 FWP

Step 3: If any of the pollutants are over the PSD SEI thresholds, e.g., PM2.5, then check analysis for the possibility of netting out of the major pollutants with contemporaneous emissions reductions.

Table 5: PSD Applicability Analysis

PSD Applicability Analysis

Step 1: On a PTE basis, Blythe Compressor Station is a Major PSD Source (>250 tpy) for CO and NOx.

Step 2: The planned new EUs will not be a Major PSD modification based PTE for 3-New Turbines, 5-New Gnerators, and 1-New Fire Water Pump

Must consider modifications at Plant 2. (Hybrid Approach) to net out of PM2.5 based on Projected Future Actua

Proposed New Equipmant							
Equipment	Permit Numbers	Pollutant Emissions (tons/year)					
		CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Plant 4 (PTE for 4 Turbines) Only three running at any time	B012852, B012853, B012854, B012855	16.92	31.27	6.23	6.23	0.56	5.20
Generator Bldg. (PTE for 5 Generators)	B012864, B012865, B012866, B012867, B012868	31.49	7.87	4.03	4.03	0.12	6.30
Fire Water Pump	E013097	0.01	0.04	0.00	0.00	0.00	0.00
SUM New Emission Units		48.42	39.18	10.26	10.26	0.68	11.50

Plant 2 Baseline to Projected Future Actuals							
Plant 2-Baseline	B004154	51.04	280.48	5.55	5.55	0.09	17.35
Plant 2-Projected Future Actuals for 5-Refurbished Dresser-Clark Compressors 11, 12, 13, 14, & 15, operating at 45% capacity (Based on	B013092, B013093, B013094, B013095, B013096	17.39	76.41	6.31	6.31	0.10	7.88
Possible ERCs banked			-162.33				-3.59
Difference Baseline-Projected Future Actuals		-33.64	-41.74	0.76	0.76	0.01	-5.88

Comparison of Proposed New and Modified Equipmant to PSD Thresholds							
New Equipment	B012852, B012853, B012864, B012865, B012866, B012867, B012868, E013097	48.42	39.18	10.26	10.26	0.68	11.50
Plant 2 Net Emissions from 5-Refurbished Dresser-Clark Compressors 11, 12, 13, 14, & 15	B013092, B013093, B013094, B013095, B013096	-33.64	-41.74	0.76	0.76	0.01	-5.88
Total Project Changes From New & Modified Equip		14.78	-2.56	11.01	11.01	0.69	5.62
PSD NEI threshold		100.00	40.00	15.00	10.00	40.00	40.00
Significant Emissions Increase (SEI)?		NO	NO	NO	YES	NO	NO

Step 3 Analysis; Netting out of PSD for PM2.5:

Step 3: If any of the pollutants are over the PSD SEI thresholds, e.g., PM2.5, then can net out of the major pollutants with contemporaneous emissions reductions

Contemporaneous Emissions Decreases from Shutdowns					
Location	Permit Numbers	Pollutant Emissions			
					*$PM_{2.5}$
Historic Actual Emissions (HAE), 2015-2016 (24 months)					
Plant 1: Cancelled and Inoperative Dresser-Clark Compressors: 7, 8, & 9	B004154				1.35
Plant 3: Cancelled inoperative Catepillar Compressors (Phase II)	B008079, B008080				0.16
Central Supporting: Cancelled and inoperative 4- Catepillar Generators (Phase II)	B008081, B008082, B008083, B008084				0.04
Auxiliary Bldg	B004158, B004159				0.02
Total Project Changes					11.01
Total Shutdowns					-1.56
SUM After Netting					9.45
PSD NEI threshold					10.00
Significant Emissions Increase (SEI)?					NO

*PM2.5 assumed = to PM10

b. NAAQS Impact Analysis

District Rule 1302, section (D)(5)(b)(iv) requires that any new or Modified Facility located in an area classified by EPA as attainment or unclassifiable shall determine if the Facility will cause or contribute to a violation of the National Ambient Air Quality Standards (NAAQS). The proposed modification, discussed herein, will not cause a NET increase in emissions through the use of NOx reductions as SERs at a 2:1 Ratio of NOx for anticipated PM and CO increases, therefore, the proposed project will not contribute to a violation of the NAAQS.

7. Rules and Regulations Applicable to the Proposed Project

District Rules

Rule 201/203 – *Permits to Construct/Permit to Operate*. Any equipment which may cause the issuance of air contaminants must obtain authorization for such construction from the Air Pollution Control Officer. BCS is in compliance with this rule as they appropriately applied for a District permit for all new equipment and maintains District permits for all residing equipment.

Rule 204 – *Permit Conditions*. To assure compliance with all applicable regulations, the Air Pollution Control Officer (Executive Director) may impose written conditions on any permit. The District has imposed permit conditions to ensure BCS complies with all applicable regulations.

Rule 206 – *Posting of Permit to Operate*. Equipment shall not operate unless the entire permit is affixed upon the equipment or kept at a location for which it is issued and will be made available to the District upon request.

Rule 207 – *Altering or Falsifying of Permit.* A person shall not willfully deface, alter, forge, or falsify any issued permit.

Rule 209 – *Transfer and Voiding of Permits*. BCS shall not transfer, whether by operation of law or otherwise, either from one location to another, from one piece of equipment to another, or from one person to another. When equipment which has been granted a permit is altered, changes location, or no longer will be operated, the permit shall become void.

Rule 210 – *Applications*. BCS provided all the required information to correctly address the proposed equipment pursuant to this rule, although there were instances in which additional information were required, in which the thirty (30) day clock was restarted.

Rule 212 – *Standards for Approving Permits*. This rule establishes baseline criteria for approving permits by the District for certain projects. In accordance with these criteria, the proposed modifications and application does not cause issuance of air contaminants in violation of Sections 41700 or 41701 of the State Health and Safety code.

Rule 221 – *Federal Operating Permit Requirement.* BCS is in compliance with this rule, as they currently hold and maintain a Federal Operating Permit.

Rule 301 – *Permit Fees*. The proposed equipment will increase BCS's annual permit fees by the applicable amounts described in section (E) of this rule.

Rule 401 – *Visible Emissions*. This rule limits visible emissions opacity to less than 20 percent (or Ringlemann No. 1). In normal operating mode, visible emissions are not expected to exceed 20 percent opacity.

Rule 402 – *Nuisance*. This rule prohibits facility emissions that cause a public nuisance. The proposed modifications and associated equipment is required by permit condition to employ good engineering and operational principles in order to minimize emissions and the possibility of a nuisance.

Rule 403 – *Fugitive Dust*. Fugitive dust mitigation measures will be implemented during construction. Operation of the proposed project does not include sources of fugitive dust, thus, compliance with this rule is expected.

Rule 404 – *Particulate Matter- Concentration*. Installation and operation of the turbines, generators, and modifications to the Clark engines are not expected to result in particulate matter emissions in excess of the applicable concentration listed in Table 404(a) due to the equipment being fired exclusively on natural gas. Therefore, compliance with this rule is expected.

Rule 407 – *Liquid & Gas Air Contaminants*. This rule requires that a person shall not discharge into the atmosphere from any equipment Carbon monoxide (CO) exceeding 2,000 ppm by volume measured on a dry basis, averaged over 15 consecutive minutes. CO emissions from the

proposed turbines and modified Clark engines will be controlled with oxidation catalysts, and the proposed generators' CO emissions will be controlled with 3-way catalysts. Therefore, compliance with this rule is expected.

Rule 408 – *Circumvention*. This rule prohibits hidden or secondary rule violations. The proposed modifications as described is not expected to violate Rule 408.

Rule 409 – *Combustion Contaminants.* This rule requires that a person shall not discharge into the atmosphere from any equipment combustion contaminants exceeding 0.1 grain per cubic foot of gas calculated to 12 percent of CO2 at standard conditions averaged over a minimum of 15 consecutive minutes. All combustion equipment with non-emergency operations at the BCS will be fired on natural gas. Therefore, compliance with this rule is anticipated.

Rule 430 – *Breakdown Provisions*. Any Breakdown which results in a violation to any rule or regulation as defined by Rule 430 shall be properly addressed pursuant to this rule.

Regulation IX:
Rule 900 – *Standards of Performance for New Stationary Sources (NSPS)*. Rule 900 adopts all applicable provisions regarding standards of performance for new stationary sources as set forth in 40 CFR 60. These regulations are periodically updated to reflect actions published in the Federal Register (FR) by the EPA.

Regulation X – *National Emission Standards for Hazardous Air Pollutants*. Pursuant to Regulation X, BCS is required to comply with all applicable ATCMs. The Diesel Fired Emergency Water Pump is subject to and complies with the stationary Diesel ATCM, 17 CCR 93115.

Regulation XII – *Title V Permits*. This regulation contains requirements for sources which must have a FOP. BCS currently has a FOP and is expected to comply with all applicable rules and regulations.

Rule 1201 – *Federal Operating Permit Definitions.* BCS is defined as a federal Major Facility pursuant to this rule.

Rule 1203 – *Federal Operating Permits*. This document represents the preliminary determination for the proposed modifications to BCS's FOP. This proposed Significant Modification will also be properly noticed pursuant to District Rule 1207, as required.

Rule 1205 – *Modifications of Federal Operating Permits*. The proposed equipment classifies as a Significant Modification to BCS's Federal Operating Permit (FOP), and subsequently, this permit modification is issued in accordance with the provisions of District Rule 1203.

Rule 1208 – *Certification*. BCS included a Certification of Responsible Official as required with the submitted application for the proposed equipment.

Rule 1211 – *Greenhouse Gas Provisions of Federal Operating Permits*. BCS is a Major GHG Facility pursuant to Rule 1211. BCS's FOP includes all the requirements of this rule.

Regulation XIII – *New Source Review*

Rule 1302 – *Procedure*. This rule applies to all new or Modified Facilities and requires certain requirements to be fulfilled when submitting an application. All applicable requirements of this rule are discussed in this NSR document as part of the Analysis procedure. Certification of compliance with the Federal Clean Air Act, applicable implementation plans, and all applicable District rules and regulations have been addressed. The Authority to Construct (ATC) application package for the proposed equipment includes sufficient documentation to comply with Rule 1302(D)(5)(b)(ii). Permit conditions for the proposed project will require compliance with Rule 1302(D)(5)(b)(iii).

Rule 1303 – *Requirements*. This rule requires BACT and offsets for selected facility modifications. Equipment installed shall meet BACT and prior to operation of the new equipment (after the commissioning period) the proponent shall demonstrate that SER have been achieved and offsets will NOT be required pursuant to Rule 1303(B)(1). The proposed permitting action does trigger BACT, and ALL the New and Modified Emissions Units will be BACT equipped.

Rule 1304 – *Emissions Calculations*. The Proposed Emissions from the proposed modifications were calculated pursuant to section (B)(1)(a) of this rule.

Rule 1320 – *New Source Review for Toxic Air Contaminants*. Pursuant to the requirements of District Rule 1302, an applicability analysis of State and Federal air toxic regulations was conducted for the proposed modifications (State T-NSR and Federal T-NSR, respectively) and is discussed in further detail in this document.

Rule 1520 – *Control of Toxic Air Contaminants from Existing Sources*. The proposed project is subject to Rule 1520, as BCS has a facility PTE greater than ten (10) tons per year for ROC, PM, and NO_x, as well as a PTE to emit a TAC in excess of 10 tpy for a single HAP and greater that 25 tpy for a combination of HAPs; see Section (B)(1)(a) and (c). A Toxic 'Hot Spots' Program Analysis was conducted pursuant to section (E) of District Rule 1520. Facility Prioritization Scores were calculated pursuant to this rule and the results of the analysis is discussed in further detail above.

Regulation XVII – *Prevention of Significant Deterioration*. The purpose of this regulation is to set for requirements for all new Major PSD Facilities and Major PSD Modifications which emit or have the potential to emit a PSD Air Pollutant pursuant to the requirements of 40 CFR 52.21. The proposed modification does not constitute a new Major PSD Facility or a Major PSD Modification; therefore, PSD does Not apply to the proposed project. A detailed discussion of PSD occurs in the above sections of this document.

State Regulations

Regulation XI— Source Specific Standards:

District Rule 1159 —Stationary Gas Turbines
The purpose of this rule is to limit the emission of NOx, from commercial, industrial and institutional Stationary Gas Turbines 0.3 MW and larger. The new turbines will meet the NOx, emission limit of 25 ppmv and 200 ppmv of CO at 15% O2.

District Rule 1160 —Internal Combustion Engines
This rule does not apply because the BCS is not located in a federal ozone non-attainment area.

Regulation XII — Federal Operating Permits
This regulation contains requirements for sources which must have a federal operating permit. The identified changes constitute a significant modification of the Title V permit. Specific requirements of Regulation XII are stipulated as shown below.

Rule 1202 — Applications
This rule designates that official applications will be used as necessary under Regulation XII and outlines the specified information which shall be included on the official application to the Air Pollution Control Officer to determine completeness as well as provides a timeline for that determination. This application includes official District forms. The District has evaluated this permitting action and concluded that the proposed project requires a significant Title V Modification and will be processed as such and in accordance with the procedure specified in the rule.

Rule 1203 — Federal Operating Permits (FOP)
The rule defines the permit operating term, stipulates the process by which FOPs, Significant Modifications to FOPs and Renewals of FOPs shall be issued. This rule further identifies restrictions on issuance, permit contents, operational flexibility, compliance certification, permit shield, and violation of permit conditions. The proposed FOP action is considered a significant permit modification. The District will submit this SOB and Draft Title V FOP to the EPA and CARB and make documents available for public review and comment within the specified comment period in accordance with the procedure outlined in Rule 1203(B)(1).

Rule 1205 —Modifications of Federal Operating Permits
This rule specifies the process by which FOPs are modified. The District will determine if the action constitutes a significant permit modification and will incorporate the changes as required by Regulation XII, as applicable.

Rule 1302 —Procedure
Rule 1302 outlines the procedures for preparing an ATC permit application.

Rule 1303 — Requirements

The BACT and offset requirements of Regulation XIII are addressed in this rule.

The BACT and offset requirements of Regulation XIII are addressed in this rule.
BACT: Any new or modified Permit Unit which emits, or has the Potential to Emit, 25 lbs/day or more of any Nonattainment Air Pollutant shall be equipped with BACT. Plus any new or Modified Facility which emits, or has the Potential to Emit, 25 tpy or more of any Nonattainment Air Pollutant shall be equipped with BACT for each new Permit Unit. BACT will apply to new units for NOx and ROC per Rule 1303 (A)(3) since the facility has a PTE > 25 tpy of these non-attainment pollutants. A full top-down BACT analysis was conducted and is presented in Section 3 of the Application.

Offsets: Based on the emissions netting analysis presented in Section 4.3 of the application and rule thresholds, this facility is using SERs to offset the non-attainment pollutants. Rule 1305 describes the techniques for calculating the required offsets, including the use of SERs.

Rule 1304 — Emissions Calculations
The BCR Project involves the shutdown, modification and new equipment installation of various emission sources. This rule outlines how to account for the emission reductions and increases. Application Section 4 follows the requirements of this rule in the calculation of the emissions associated with the BCR Project.

Rule 1305 —Emissions Offsets
This Rule provides the procedures and formulas to determine the eligibility of, calculate the amount of, and determine the use of Offsets required pursuant to the provisions of District Rule 1303(B). The provisions of this rule have been followed in the netting analysis and a summary of those results are included in this document. Screen shots of that analysis are also provided in the appendix of this document. A live Excel spreadsheet is also available for review at the District office upon request.

Rule 1310— Federal Major Facilities and Modifications
This rule sets additional requirements for Federal Major Facilities and Modifications. The existing BCS is a major federal source, although the modifications proposed in the BCR Project are less than the federal significant emissions increase threshold, thus the project is not a Federal Major Modification, and this rule is not applicable.

Rule 1320 —New Source Review for Toxic Air Contaminants
This rule is applicable to all new, Modified or Relocated Facilities or Permit Units which emit or have the potential to emit any HAP, TAC, or Regulated Toxic Substance. MDAQMD Rule 1320 follows a step-wise process for evaluating applications for compliance with air toxics requirements. The initial steps are outlined below, including applicability of Federal and State T-NSR, and conducting HRAs for each EU.

Federal T-NSR

The BCS is currently considered a major source of HAP, and therefore is subject to Federal T-NSR. MDAQMD Rule 1320 requires that if a facility is subject to Federal T-NSR, any applicable NESHAP standards will apply. The BCR Project would be required to comply with any applicable currently enforceable NESHAP standards, or a case-by-case NESHAP standard as determined by the MDAQMD. Two MACT standards are applicable to the new equipment: Subpart YYYY (turbines) and Subpart ZZZZ (new generators) as outlined in Regulation X, NESHAPs, however, Subpart YYYY is currently stayed.

State T-NSR Program Analysis (State T-NSR)

This subsection requires the applicant and MDAQMD to identify and include in the permitting analysis any applicable and currently enforceable California Air Toxics Control Measures (ATCM). The natural-gas fired combustion Turbines and Reciprocating IC Engines are not subject to a California ATCM.

The new proposed Fire Water Pump (FWP) is subject to the Stationary Compression Ignition (CI) Engine ATCM, 17 CCR 93115. In accordance with this ATCM, the FWP District permit will not be operated more than 50 hours per year for maintenance and testing and unrestricted for emergency use. The FWP will therefore comply with State T-NSR through the applicable emissions limits requirements and hourly operating limitations.

Health Risk Assessment (HRA)

Under the State T-NSR, Rule 1320 requires evaluation of each Emission Unit using prioritization scoring and an HRA if the prioritization score is high. Application Section 5 describes the HRAs conducted for the BCR Project.

Conservatively, SoCalGas conducted an HRA on the potential emissions of the proposed BCS modifications even though the individual Emission Unit Prioritization Scores of the modified and new units were less than 10. The HRA predicted that each uncontrolled existing Clark engine and some of the proposed electric generators would have a cancer risk at the MICR location of slightly over 10 in a million (see Table 5-3 of the HRA), meaning the facility would be classified as a Significant Health Risk, thus T-BACT is required. T-BACT is the installation of an oxidation catalyst on the Clark engines and an NSCR/3-way catalyst on the new generators. The HRA results of the proposed, post-controlled equipment classifies this facility as a Moderate Risk, meaning the MICR is greater than or equal to one (1) in one million (1x10-6) at the location of any receptor, but less than ten (10) in a million (1x10-5). No further analyses is required for a facility designated as a Moderate Risk, other than the programmatic tracking of this facility's actual emissions which are required to be submitted to the District on an annual basis for criteria emissions, and a triennial basis for toxic emissions.

Regulation XIV — Emission Reduction Credit Banking

Application Section 4.4 describes the excess NOx and ROC SERs that may be available for ERC banking from the various facility equipment shutdowns and modifications at Plant 2. As outlined in Application Section 4.4, SoCalGas is applying to bank approximately 160 tons of NOx ERCs and possibly a small amount of ROC. The MDAQMD, however, will NOT issue ERCs until the entire project, Phase I and Phase II, is complete, and a thorough Post project netting analysis is

performed. This will ensure that the Net Emission Reductions are Real, Quantifiable, Surplus, Permanent and Enforceable.

Rule 1520 — Control of Toxic Air Contaminants from Existing Sources
This rule applies on a facility-wide basis requiring public notice and/or risk reduction at elevated levels of health risk for existing facilities based on actual levels of TAC emissions.

For the purposes of this permitting action, all EUs were assessed based on their maximum rated capacity for compliance with T-NSR requirements. Application Section 5 describes the HRAs conducted for all sources at the BCR Project based on PTE for each source and represents a worst-case health risk impact. This rule applies to existing or actual sources. As past operational records show, the plant will not operate at full capacity all year. An HRA was required and conducted based on the 2016 Facility Emissions Inventory. This HRA was reviewed by the MDAQMD and submitted to OEHHA for their review as required by District Rule. Subsequent to that OEHHA Submittal, BCS made revisions to their 2016 Emissions Inventory, which resulted in a Prioritization score of less than 10. This risk reduction therefore makes the HRA no longer required. Additionally, 2017 emissions inventory resulted in a Prioritization score for Cancer of 8.44, further substantiating that an HRA is Not Required.

It is further considered that the BCS project will employ T-BACT on all new and modified equipment through the use of oxidation catalyst and/or NSCR. Facility Toxic emissions will reduce as the project progresses and it is anticipated that the facility will change from a HAP Major source to a HAP Area source as a result of these reductions.

Regulation XVI — Prevention of Significant Deterioration (PSD)
This rule is applicable to projects that have emissions of attainment pollutants greater than the new Major PSD Facilities and Major PSD Modifications thresholds. Application Section 4.5 presents an applicability assessment of PSD, and it has been determined that the BCR Project is not a PSD Major Modification.

California Regulations

Diesel-Fired Engine Air Toxics Control Measures
The BCR Project FWP will be driven by a diesel-fired engine subject to the emission standards required by the California ATCM for Stationary Compression Ignition (CI) Engines. Section 93115.6(a)(4) sets emission standards and limits the number of operating hours necessary to comply with National Fire Protection Association (NFPA) testing requirements for new direct drive fire pump engines. This engine will comply with those emissions levels and testing and maintenance hour limitations enforced through District permit condition.

Distributed Generation Standards
California set NOx, CO, ROC, and PM emission standards for distributed generation (DG) units that produce electricity near the place of use. The new BCR Project generators are subject to the DG Unit emission standards. The BCR Project generators are subject to BACT requirements,

which require the installation of control technology that achieves emission levels that are lower than DG requirements.

Greenhouse Gas Regulations
The BCS is subject to the California regulation for the mandatory reporting of GHG emissions. The reporting of GHG emissions is based on actual fuel consumption. SoCalGas will continue to maintain appropriate GHG allowances for compliance with the ARB greenhouse regulations.

CARB Oil & Gas Regulation
The BCS is subject to the California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 13: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. As a natural gas gathering and boosting station, BCS will comply with the CARB Oil & Gas regulation, which took effect January 1, 2018.

California Environmental Quality Act (CEQA)
Since this is a modification of an existing facility, the requested permit action is ministerial in nature, therefore, is not subject to review under CEQA.

Federal Regulations

40 CFR 60, Subpart A – *NSPS General Provisions.* BCS will comply with this regulation pursuant to Conditions cited in their District permit conditions and section III of this Federal Operating Permit.

CFR 60 Subpart GG — *Standards of Performance for Stationary Gas Turbines*
This NSPS is applicable to stationary gas turbines with a heat input at peak load equal to or greater than 10 MMBtu per hour, based on the lower heating value of the fuel fired which commenced construction after October 3, 1977. Because 40 CFR 60 Subpart KKKK applies pursuant to Section 63.4305(b), the requirements of NSPS Subpart GG do not apply.

CFR 60 Subpart KKKK —Standards of Performance for Stationary Combustion Turbines
This NSPS is applicable to the turbines because they have a heat input at peak load equal to or greater than 10 MMBtu per hour, based on the higher heating value of the fuel, and commenced construction after February 18, 2005. Units installed after February 18, 2005 must comply with this regulation, which contains emissions standards for NOx and SOx, along with associated monitoring, reporting, recordkeeping, and testing requirements. Table 1 of the regulation gives the NOx emissions standards. The mechanically driven turbines proposed for the BCR Project are 71.8 MMBtu/hr, and fall into the category of new turbines firing natural gas between 50 MMBtu/hr and 850 MMBtu/hr at peak load. New turbines in this size range have a NOx emissions limit of 25 ppm @ 15% O2 during normal operation, and a limit of 150 ppm when operating at less than 75% load, including startup and shutdown. The proposed BACT NOx limit for the BCS turbines is 8 ppm steady state and 12 ppm during transition, which is less than the 25 ppm or 150 ppm limits for NOx. Therefore, the BCS turbines will be in compliance with the NOx concentration limit of this regulation. Sulfur content of the natural gas purchased will be < 0.05% by weight, and SO2 emissions are expected to be well below 0.06 lb/MMBtu

standard (emission rate of 0.0006 lb/MMBtu is assumed). Therefore, the turbines will be in compliance with the SOx emission requirements of this regulation.

- See Appendix K for Additional Turbine Regulatory Review as submitted by applicant.

40 CFR Part 63, Subpart YYYY — National Emission Standards for Hazardous Air Pollutants for Stationary Gas Turbines

This regulation applies to gas turbines greater than 1.0 MW located at major sources of HAP emissions. EPA placed a stay on Subpart YYYY for lean premix gas-fired turbines on August 8, 2004. EPA specifically identified turbines for use in natural gas transmission (SIC Code 4922, NAICS 486210, Natural gas transmission), as subject to this stay.

The EPA identified this stay as necessary to avoid wasteful and unwarranted expenditures on installation of emission controls which will not be required if the subcategories are delisted, therefore, there are no Maximum Available Control Technology (MACT) emission limits required for the new turbines. Pursuant to 40 CFR 63.6145, Notification of the proposed new Turbines is achieved through this document and revisions to the Title V Permit, considered and processed as a Title V Major Modification.

40 CFR 60, Subpart IIII – NSPS for Stationary Compression Ignition Internal Combustion Engines

The proposed Emergency Fire Water Pump is the only new or modified piece of equipment that is subject to this Subpart; compliance shall occur through a permit condition that limits its operation to no more than 50 hours per year for non-emergency use, such as testing and maintenance, and no hourly limits for emergency use scenarios.

Additionally, and pursuant to Subpart IIII Subsection 60.4202(d) and 60.4205(c), the engine shall comply with the emission standards referenced in Subpart IIII, Table 4, see:https://www.ecfr.gov/cgi-bin/text-idx?node=sp40.7.60.iiii#se40.8.60_14205. Emission comparisons, between the Manufacturer's Specifications and the requirements of Subpart IIII, Table 4, indicated that emission levels will be satisfied; the Emergency FWP is 237 bhp and therefore for Model years 2009+ the NMHC+NOx shall not exceed 3.0 grams/bhp-hr, CO shall not exceed 2.6 grams/bhp-hr and PM shall not exceed 0.15 grams/bhp-hr. This engine's emissions are 2.82 grams/bhp-hr for NMHC+NOx, 0.90 grams/bhp-hr for CO, and 0.10 grams/bhp-hr for PM. Therefore, this engine is in compliance with the emission standards of Subpart IIII.

Table 4 to Subpart IIII of Part 60—Emission Standards for Stationary Fire Pump Engines

[As stated in §§60.4202(d) and 60.4205(c), you must comply with the following emission standards for stationary fire pump engines]

Maximum engine power	Model year(s)	NMHC + NO_X	CO	PM
KW<8 (HP<11)	2010 and earlier	10.5 (7.8)	8.0 (6.0)	1.0 (0.75)
	2011 +	7.5 (5.6)		0.40 (0.30)
8≤KW<19 (11≤HP<25)	2010 and earlier	9.5 (7.1)	6.6 (4.9)	0.80 (0.60)
	2011 +	7.5 (5.6)		0.40 (0.30)
19≤KW<37 (25≤HP<50)	2010 and earlier	9.5 (7.1)	5.5 (4.1)	0.80 (0.60)
	2011 +	7.5 (5.6)		0.30 (0.22)
37≤KW<56 (50≤HP<75)	2010 and earlier	10.5 (7.8)	5.0 (3.7)	0.80 (0.60)
	2011 +[1]	4.7 (3.5)		0.40 (0.30)
56≤KW<75 (75≤HP<100)	2010 and earlier	10.5 (7.8)	5.0 (3.7)	0.80 (0.60)
	2011 +[1]	4.7 (3.5)		0.40 (0.30)
75≤KW<130 (100≤HP<175)	2009 and earlier	10.5 (7.8)	5.0 (3.7)	0.80 (0.60)
	2010 +[2]	4.0 (3.0)		0.30 (0.22)
130≤KW<225 (175≤HP<300)	2008 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2009 +[3]	4.0 (3.0)		0.20 (0.15)
225≤KW<450 (300≤HP<600)	2008 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2009 +[3]	4.0 (3.0)		0.20 (0.15)
450≤KW≤560 (600≤HP≤750)	2008 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2009 +	4.0 (3.0)		0.20 (0.15)
KW>560 (HP>750)	2007 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2008 +	6.4 (4.8)		0.20 (0.15)

[1]For model years 2011-2013, manufacturers, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 revolutions per minute (rpm) may comply with the emission limitations for 2010 model year engines.

[2]For model years 2010-2012, manufacturers, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2009 model year engines.

[3]In model years 2009-2011, manufacturers of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2008 model year engines.

40 CFR 60 Subpart JJJJ— *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*

This NSPS applies to spark ignited internal combustion engines which commenced construction after June 12, 2006, and is applicable to the new generators located in the Generator Building, that consist of five, 4SRB, Natural Gas Fired Engines producing 1,088 bhp each, powering electrical Generators. The generators must meet the standards for non-emergency spark ignition fueled with natural gas with maximum engine power >= 500 hp. The emission standards for this class and category of engines, are, 82 ppm for NOx, 270 ppm for CO and 60 ppm for ROC at 15% O2. The proposed generators will meet this regulatory emission limits through the use of three-way, non-selective catalysts.

Note: This regulation is not applicable to the existing Clark compressors, permitted under existing District Permit B004154, as they were constructed prior to June 12, 2006, and the modifications are not considered to be "reconstructions".

40 CFR 63 Subpart ZZZZ — National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The proposed, new generators located in the Generator Building, that consist of five, 4SRB, Natural Gas Fired Engines, producing 1,088 bhp each, which will power electrical generators, must meet a 76% formaldehyde reduction. Alternatively, engines in this category, can demonstrate compliance through either a 30% Total Hydrocarbon (THC) reduction, 75% CO reduction, or 270 ppmvd CO @ 15% O2, emission limits. If BCS is reclassified as an area source of HAP, 40 CFR 63 Subpart ZZZZ compliance will be achieved through demonstration with 40 CFR 60 Subpart JJJJ limit of 270 ppmvd CO @ 15% O2. Since a CO BACT level of 0.60 g/bhp-hr is less than 270 ppm @ 15% O2, 40 CFR 63 Subpart ZZZZ, compliance is achieved through the CO BACT limit, rather than the 76% formaldehyde reduction. If the BCS remains a major source of HAP emissions, the generator engines will also be subject to a Continuous Process Monitoring System (CPMS) for exhaust temperature at the catalyst inlet, and monthly catalyst differential pressure measurements.

Through the use of T-BACT for ALL New, and Modified combustion equipment, it is highly probable that the facility will become a HAP Area Source once both project phases, Phase I and Phase II, are complete. Post installation source testing, as required by permit conditions, will be utilized to verify emission levels, and/or reductions, will meet the applicable Federal requirements.

Note: 40 CFR 63 Subpart ZZZZ is not applicable to the existing Clark engines, pursuant to Section 63.6590(b)(3), since these are two-stroke lean burn (2SLB) engines, each with a rating of more than 500 bhp, and located at a HAP Major Source. These engines are therefore exempt from the referenced emission reductions. Moreover, once the BCS becomes a HAP Area Source, the existing Clark engines will be subject to the maintenance requirements in 40 CFR 63 Subpart ZZZZ Table 2d.6 and NOT the emission reductions. Permits will be revised as required during project advancement.

40 CFR Part 60, Subpart OOOOa — *Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015.*
This subpart applies to each centrifugal compressor facility, utilizing single centrifugal compressors, with wet seals. The BCR Project proposes to install dry seal turbine driven compressors that are not subject to this subpart. The requirements of Subpart OOOOa will be subsumed by compliance with the ARB Oil & Gas Regulation, described in more detail below.

40 CFR 61, Subpart M – *NES for Asbestos*
BCS complies with 40 CFR 61, Subpart M – *NESHAP for Asbestos* per conditions in Part II of their FOP.

40 CFR 63, Subpart ZZZZ – *NESHAP for Stationary Reciprocating Internal Combustion Engines*
The BCS will continue to be in compliance with 40 CFR 63 Subpart ZZZZ:

Rich-burn engines over 500 HP at a major source of HAP, the new generator engines must meet a 76% formaldehyde reduction. Alternatively, engines in this category can also demonstrate compliance through either a 30% Total Hydrocarbon (THC) reduction, 75% CO reduction, or 270 ppmvd CO @ 15% O2. If BCS is reclassified as an area source of HAP, 40 CFR 63 Subpart ZZZZ compliance is achieved through demonstration with 40 CFR 60 Subpart JJJJ limit of 270 ppmvd CO @ 15% O2. Since a CO BACT level of 0.60 g/bhp-hr is less than 270 ppm @ 15% O2. 40 CFR 63 Subpart ZZZZ compliance is achieved through the CO BACT limit, rather than the 76% formaldehyde reduction. If the BCS remains a major source of HAP emissions, the generator engines will also be subject to a Continuous Process Monitoring System (CPMS) for exhaust temperature at the catalyst inlet, and monthly catalyst differential pressure measurements.

40 CFR 63 Subpart ZZZZ is not applicable to the exiting Clark engines pursuant to Section 63.6590(b)(3) since these are two-stroke lean burn (2SLB) engines each with a rating of more than 500 bhp located at a major source of HAP emissions. Once the BCS becomes an area source of HAP emissions, the existing Clark engines will be subject to the maintenance requirements in 40 CFR 63 Subpart ZZZZ Table 2d.6.

40 CFR 82, *Protection of Stratospheric Ozone*- Requirements for Refrigeration Units with <50 lbs Refrigerant
This Federal regulation requires that Ozone Depleting Substances (ODS) containing equipment must to be serviced by licensed technicians and disposed of properly, per the paragraph below from §82.150(b), which covers every ODS containing device, regardless of size:

§82.150
This subpart applies to any person servicing, maintaining, or repairing appliances. This subpart also applies to persons disposing of appliances, including small appliances and motor vehicle air conditioners. In addition, this subpart applies to refrigerant reclaimers, technician certifying programs, appliance owners and operators, manufacturers of appliances, manufacturers of

recycling and recovery equipment, approved recycling and recovery equipment testing organizations, persons selling class I or class II refrigerants or offering class I or class II refrigerants for sale, and persons purchasing class I or class II refrigerants. BCS is expected to continue to operate in compliance with this requirement.

40 CFR 98, *Mandatory Greenhouse Gas Reporting*.
BCS is required to comply with Subpart A – General Provisions, and Subpart W — Petroleum and Natural Gas Systems, §98.230 through §98.238.

8. NSR Preliminary Decision - Conclusion
The District has reviewed the proposed modifications and application for the BCS Compressor and Generator upgrade project and conducted a written analysis as required by District Rule 1302, section (D)(1)(b) and District Rule 1203, section (B)(1)(a). The District has determined that the proposed modifications and application are in compliance with all applicable District, State, and Federal rules and regulations as proposed and when operated in accordance with District permit conditions and the revised FOP.

C. Title V Permit/FOP – Significant Permit Modification

1. Proposed Changes to FOP
A description and explanation of changes to the BCS Title V FOP are indicated below:

PART I: INTRODUCTORY INFORMATION
This section of the Federal Operating Permit contains general information about the BCS facility, including facility identifying information (Section A), a description of the facility (section B), and a description of the facility's equipment (section C).

These sections have been revised to include changes to the Facility Site Contacts, Section A, and significant changes to Section C, as affected by the New and Modified equipment, associated with the Blythe Compressor Station upgrade project.

PART II: FACILITYWIDE APPLICABLE REQUIREMENTS; EMISSIONS LIMITATIONS; MONITORING, RECORDKEEPING, REPORTING AND TESTING REQUIREMENTS; COMPLIANCE CONDITIONS; COMPLIANCE PLANS

This section of the Federal Operating Permit contains requirements applicable to the entire facility and equipment (section A), facility-wide monitoring, recordkeeping, and reporting requirements (section B), and facility-wide compliance conditions (section C).

Part II, Section A was revised to incorporate recent changes to District Rules; Rule 1113- Architectural Coatings, Rule 1114 - Wood Products Coatings, and Rule 1115 - Metal Parts and Products Coatings.

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

This section of the Federal Operating Permit contains equipment-specific applicable requirements including emission limitations, monitoring and recordkeeping, reporting and testing, and compliance plans.

This Part of the Title V Permit is Significantly affected by the proposed changes, which are incorporated by reference herein. Refer to Title V, Part III, Pages III-43 through III-97, for complete equipment description and permit operating conditions and requirements.

PART IV: STANDARD FEDERAL OPERATING PERMIT CONDITIONS

This section of the Federal Operating Permit contains standard federal operating permit conditions.

No changes were made to this section.

PART V: OPERATIONAL FLEXIBILITY

This section of the Federal Operating Permit contains information on Off Permit Changes.

No changes were made to this section.

PART VI: CONVENTIONS, ABREVIATIONS, DEFINITIONS

Section C of Part VI was revised to include additional Abbreviations.

PART VII: PART VII SIP History and Status for Cited Rules,

Part VII was revised to include the latest SIP History Table available.

2. CAM Analysis

The Compliance Assurance Monitoring (CAM) rule (40 CFR 64) applies to each Pollutant Specific Emissions Unit (PSEU) when it is located at a Major Facility that is required to obtain Title V, Part 70 or 71 permit and it meets all of the following criteria. "PSEU" means an emissions unit considered separately with respect to each regulated air pollutant.

The PSEU must:
a. Be subject to an emission limitation or standard; AND,
b. Use a control device to achieve compliance; AND,
c. Have the **potential pre-control** emissions that exceed or are equivalent to the major source threshold.

Please refer to Appendix A for the full CAM Analysis for the proposed BCR Project . The proposed project does not trigger new CAM requirements.

2. Title V/FOP Preliminary Determination – Conclusion

The District has reviewed the applications and proposed modifications to the BCS's Federal Operating Permit. The District has determined that the proposed modification are in compliance with all applicable District, State, and Federal rules and regulations as proposed when operated in the terms of the permit conditions given herein, and the attached revised FOP.

This preliminary determination will be submitted to EPA, CARB, and the public for review and comment on November 29, 2018. The public notice for this preliminary determination will be published on December 5, allowing for public comment until January 4, 2019.

D. Comment Period and Notifications

1. Public Comment

This preliminary determination will be publicly noticed on December 5, 2018, allowing for public comment until January 4, 2019.

Noticing Methods include the following, per District Rule 1207 (A)(1)(a) and District Rule 1302(D)(2) and (3):

- Published in newspapers of general circulation - Riverside Press Enterprise (Riverside County) and the Daily Press (San Bernardino County) on December 5, 2018.
- Mailed and/or emailed to MDAQMD contact list of persons requesting notice of actions (see the contact list following the Public Notice in this Appendix) on November 29, 2018.
- Posted on the MDAQMD Website at the following link: http://www.mdaqmd.ca.gov/permitting/public-notices-advisories/public-notices-permitting-regulated-industry

2. Notifications

The preliminary determination was submitted to EPA and CARB pursuant to District Rule 1207 for a forty-five (45) day review period on November 29, 2018. The final modified FOP shall be issued on or about Monday, January 14, 2019.

All correspondence as required by District Rules 1302 and 1207 were forwarded electronically to the following recipients:

Director, Office of Air Division
United States EPA, Region IX
75 Hawthorne Street
San Francisco, CA 94105
R9airpermits_AV_MD@epa.gov

Chief, Stationary Source Division
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812
ttle@arb.ca.gov

Mr. Carlos Gaeta
Field Operations Manager
Southern California Gas Company

Blythe Compressor Station (BCS)
13-100 West 14th Avenue, Blythe, CA 92225

Noticing Methods include the following, per District Rule 1207 (A)(1)(a) and District Rule 1302(D)(2) and (3):

- Published in newspapers of general circulation - *Riverside Press Enterprise* (Riverside County) and the *Daily Press* (San Bernardino County) on December 5, 2018.
- Mailed and/or emailed to MDAQMD contact list of persons requesting notice of actions (see the contact list following the Public Notice in this Appendix) on November 29, 2018.
- Posted on the MDAQMD Website at the following link: http://www.mdaqmd.ca.gov/permitting/public-notices-advisories/public-notices-permitting-regulated-industry

Appendix A
CAM Analysis

The Compliance Assurance Monitoring (CAM) rule (40 CFR 64) applies to each Pollutant Specific Emissions Unit (PSEU) when it is located at a Major Facility that is required to obtain Title V, Part 70 or 71 permit and it meets all of the following criteria. "PSEU" means an emissions unit considered separately with respect to each regulated air pollutant.

The PSEU must:
a. Be subject to an emission limitation or standard; AND,
b. Use a control device to achieve compliance; AND,
c. Have the potential pre-control emissions that exceed or are equivalent to the major source threshold.

The new turbines, new generators, and modified compressors in Plant 2 will be equipped with control devices.

- The turbines will be equipped with SCR and oxidation catalysts to meet BACT for NOx, CO, and VOC. The potential pre-control emissions associated with the turbines do not exceed the major source thresholds. Therefore, the turbines are not subject to CAM requirements.
- The generators will be equipped with NSCR to meet BACT for NOx, CO, and VOC. The potential pre-control emissions associated with the generators exceed the major source threshold for NOx. Since the generators are subject to NSPS Subpart JJJJ, the generators are exempt from CAM per 40 CFR Part 64.2.b.1.i.
- The Plant 2 compressors will be modified to add oxidation catalysts. The pre-control emissions of CO and ROC do not exceed the major source thresholds. Therefore, the Plant 2 compressors are not subject to CAM requirements.

See Applicability Determination Forms on the following pages:

Mojave Desert Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – COMPLIANCE ASSURANCE MONITORING

APPLICABILITY DETERMINATION FORM

I. FACILITY INFORMATION

1. FACILITY NAME: Blythe Compressor Station
2. FACILITY ID: 01437
3. TITLE V PERMIT #: 3101437

II. CAM STATUS SUMMARY FOR EMISSION UNITS – (Turbine Compressors)

4. Based on the criteria in the instructions (check one and attach additional pages as necessary)
a. ☐ There are no emissions units with control devices at this Title V facility
b. ☒ There are emissions units with control devices at this Title V facility, and the CAM applicability is shown below for each unit. A CAM Plan is attached for each affected emissions unit.

5. EMISSION UNIT (APPLICATION OR PERMIT #)	6. EQUIPMENT DESCRIPTION	UNCONTROLLED EMISSIONS		9. UNCONTROLLED POTENTIAL EMISSIONS EXCEED THE MAJOR SOURCE THRESHOLD AND USE A CONTROL DEVICE?	10. EXEMPT FROM CAM BY 40 CFR 64.2(b)(1)? (ENTER YES OR NO. IF YES, STATE THE REASON FOR EXEMPTION)	11. IS A CAM PLAN REQUIRED?
		7. POLLUTANT TYPE	8. PTE (tons/year)			
Permit #s B012852, B012853, B012854, B012855 Note, emissions are per unit, other 3 turbine compressors are the same	four new Siemens-Dresser SGT-300 Gas Turbine Driven Compressors at 7,954 brake-horsepower (bhp) each, with SCR and oxidation catalysts	NOx	17.37	No*	Yes, NSPS Subpart KKKK applicable (64.2.b.1.i)	NO
		ROC	8.65	No*	No	NO
		CO	7.05	No	No	NO
		PM10	NA	No Control Device	No	NO
		SOx	NA	No Control Device	Yes, NSPS Subpart KKKK applicable (64.2.b.1.i)	NO
		HAP (total)	0.32	No	Yes, NESHAP Subpart YYYY applicable (64.2.b.1.i)	NO

* Note: NOx and ROC Major Source Threshold for Blythe is 100 tpy (Zone B) per Rule 1201 definition

Mojave Desert Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – COMPLIANCE ASSURANCE MONITORING

APPLICABILITY DETERMINATION FORM

I. FACILITY INFORMATION

1. FACILITY NAME: Blythe Compressor Station
2. FACILITY ID: 01437
3. TITLE V PERMIT #: 3101437

II. CAM STATUS SUMMARY FOR EMISSION UNITS – (Generators)

4. Based on the criteria in the instructions (check one and attach additional pages as necessary)
a. ☐ There are no emissions units with control devices at this Title V facility
b. ☒ There are emissions units with control devices at this Title V facility, and the CAM applicability is shown below for each unit. A CAM Plan is attached for each affected emissions unit.

5. EMISSION UNIT (APPLICATION OR PERMIT #)	6. EQUIPMENT DESCRIPTION	UNCONTROLLED EMISSIONS		9. UNCONTROLLED POTENTIAL EMISSIONS EXCEED THE MAJOR SOURCE THRESHOLD AND USE A CONTROL DEVICE?	10. EXEMPT FROM CAM BY 40 CFR 64.2(b)(1)? (ENTER YES OR NO. IF YES, STATE THE REASON)	11. IS A CAM PLAN REQUIRED?
		7. POLLUTANT TYPE	8. PTE (tons/year)			
Permit #s B012864, B012865, B012866, B012867, B012868 Note, emissions are per unit, other 5 generators the same	Five 1,088 brake horsepower (bhp) natural gas-fired engine generators – GE Power Waukesha VHP-7042GSI S4 with emPact Emission Control System	NOx	167.95	Yes*	Yes, NSPS Subpart JJJJ applicable (64.2.b.1.i)	NO
		ROC	6.30	No*	Yes, NSPS Subpart JJJJ applicable (64.2.b.1.i)	NO
		CO	83.97	No	Yes, NSPS Subpart JJJJ applicable (64.2.b.1.i)	NO
		PM10	0.81	No Control Device	No	NO
		SOx	0.02	No Control Device	No	NO
		HAP (total)	1.0	No	Yes, NESHAP Subpart ZZZZ applicable (64.2.b.1.i)	NO

* Note: NOx and ROC Major Source Threshold for Blythe is 100 tpy (Zone B) per Rule 1201 definition

Mojave Desert Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – COMPLIANCE ASSURANCE MONITORING

APPLICABILITY DETERMINATION FORM

I. FACILITY INFORMATION

1. FACILITY NAME: Blythe Compressor Station
2. FACILITY ID: 01437
3. TITLE V PERMIT #: 3101437

II. CAM STATUS SUMMARY FOR EMISSION UNITS – (Plant 2 Clark Compressor Retrofits)

4. Based on the criteria in the instructions (check one and attach additional pages as necessary)
a. ☐ There are no emissions units with control devices at this Title V facility
b. ☒ There are emissions units with control devices at this Title V facility, and the CAM applicability is shown below for each unit. A CAM Plan is attached for each affected emissions unit.

5. EMISSION UNIT (APPLICATION OR PERMIT #)	6. EQUIPMENT DESCRIPTION	UNCONTROLLED EMISSIONS		9. UNCONTROLLED POTENTIAL EMISSIONS EXCEED THE MAJOR SOURCE THRESHOLD AND USE A CONTROL DEVICE?	10. EXEMPT FROM CAM BY 40 CFR 64.2(b)(1)? (ENTER YES OR NO. IF YES, STATE THE REASON)	11. IS A CAM PLAN REQUIRED?
		7. POLLUTANT TYPE	8. PTE (tons/year)			
B013092, B013093, B013094, B013095, B013096 Note, emissions for all 5 Clarks 11 – 15 would be the same	Clarks 11 - 15 Retrofit compressors in Plant 2 with oxidation catalyst systems	NOx	141.62	No (no control device)	No	NO
		ROC	8.76	No*	No	NO
		CO	25.77	No	No	NO
		PM10	2.80	No	No	NO
		SOx	0.04	No	No	NO
		HAP (total)	< 25	No	No	NO

* Note: NOx and ROC Major Source Threshold for Blythe is 100 tpy (Zone B) per Rule 1201 definition

Appendix B Application

Starts on Next Page

Application for Authority to Construct, Title V Modification, and Emission Reduction Credit Banking: Blythe Compressor Replacement Project

Southern California Gas Company

Blythe Compressor Station
MDAQMD Facility ID: 01437
13-100 West 14th Avenue
Blythe, CA 92225

September 2017

Prepared by:

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Office Locations:
Los Angeles, Orange County, Riverside,
Ventura, San Diego, Fresno, Berkeley, Bakersfield

Tel: (949) 248-8490
Fax: (949) 248-8499

Application for Authority to Construct (ATC), Title V Modification, and Emission Reduction Credit (ERC) Banking: Blythe Compressor Replacement (BCR) Project

Prepared for:
Southern California Gas Company

MDAQMD Facility ID: 01437

September 2017

Table of Contents

Table of Appendices

List of Tables

List of Figures

Application for ATC, Title V Modification, and ERC Banking: BCR Project

1.0 Introduction

Southern California Gas Company (SoCalGas) owns and operates a natural gas compressor station located in the city of Blythe, CA within the Mojave Desert Air Quality Management District (MDAQMD). SoCalGas is proposing to replace and refurbish some of the existing gas compression equipment at this site. The location of the facility is shown in Figure 1-1. The Blythe Compressor Station (BCS) is permitted as a Title V facility.

Figure 1-1: Regional Location of the SoCalGas Blythe Compressor Station

This application package contains the information necessary for the MDAQMD to process and issue 1) the Authority to Construct (ATC) permit, 2) a modification of the Facility's Title V Permit, and 3) Emission Reduction Credits (ERCs) related to the Blythe Compressor Replacement (BCR) Project. This application package includes facility information (Section 1.0), equipment and process descriptions (Section 2.0), best available control technology (BACT) determinations (Section 3.0), emission calculations (Section 4.0), health risk assessment (HRA) results (Section 5.0), and rule applicability determinations (Section 6.0). Application forms, equipment information, detailed emission calculations, additional BACT data, and HRA inputs are provided in the appendices.

1.1 BCR Project Overview

The BCS consists of three main compressor Plants: 1, 2, and 3, as well as some auxiliary equipment. Currently permitted equipment at the station consists of ten compressors driven by reciprocating engines fueled by natural gas, five electric generators driven by reciprocating engines fueled by natural gas, an air compressor, fuel storage tanks and gasoline dispensing equipment. Due to the age of some of the equipment, SoCalGas evaluated potential projects to improve the reliability of the BCS, and is proposing to upgrade and/or replace most of the existing engine driven compressors and generators. The BCR Project is planned to be staged and occur in phases over the next several years.

The BCR Project consists of the following primary components:

- The installation of a new Plant 4 consisting of four new Siemens-Dresser SGT-300 Gas Turbine Driven Compressors at 7,954 brake-horsepower (bhp) each, to be installed in two phases of two turbine driven compressors in each phase.
- A new generator building with six 1,044 bhp natural gas-fired engine generators will be installed in Phase I.
- A new 224 bhp emergency diesel fire water pump (FWP) will be installed in Phase I.
- The refurbishment of the five 1,760 bhp Clark compressors in Plant 2 to reduce nitrogen oxides (NO_x) emissions will be done in Phase I. These refurbishments will include a turbocharger and may include one or both of pre-combustion chamber (PCC) and High Pressure Fuel Injection (HPFI). EPA refers to PCC as Low Emission Combustion (LEC) and refers to HPFI as Enhanced Mixing (EM). Note, one of these Clark engines (#11) is currently permitted under a research permit related to these retrofits.
- The shutdown of the three existing 1,760 bhp Clark compressors in Plant 1 in Phase I.
- The shutdown of the two Caterpillar high speed reciprocating compressors in Plant 3, four Caterpillar generators in the Central Supporting area, and the two existing engines in the Auxiliary Building. These shutdowns will occur in Phase II of the BCR Project.

The proposed new equipment associated with the Project will emit criteria pollutants, including NO_x, carbon monoxide (CO), reactive organic compounds (ROC), respirable particulate matter (PM_{10}) and sulfur oxides (SO_x), and toxic air contaminants (TAC) from the combustion of natural gas and diesel fuel. The new equipment will perform the identical operational function as the equipment it replaces.

The refurbishments of the compressors in Plant 2 and the shutdown of equipment in Plants 1 and 3, Central Supporting, and the Auxiliary Building will significantly reduce actual and potential NO_x emissions from the BCS. The actual NO_x reductions are proposed to be used as Simultaneous Emissions Reductions (SER) to offset the net emissions increases of NO_x, ROC, and PM_{10} emissions from the new equipment. As there will be a substantial surplus of NO_x and a small surplus of ROC emissions reductions over that needed as SERs, SoCalGas is also applying to bank the surplus NO_x and ROC ERCs.

Since no changes are being proposed to the waste oil storage tank or gasoline dispensing equipment, those emissions units (EUs) are not discussed further in this application.

The equipment affected by this application is summarized in Table 1-1.

Table 1-1: Equipment Affected by This Application

Plant	Existing Equipment	Phase I	Phase II
1	3 Clark Reciprocating Compressors	Equipment shutdown	---
2	5 Clark Reciprocating Compressors	Equipment refurbished and oxidation catalysts installed	---
3	2 Caterpillar Reciprocating Compressors	---	Equipment shutdown
Central Supporting	4 Caterpillar Generators	---	Equipment shutdown
Auxiliary Building	1 PSVG and 1 Waukesha A/C	---	Equipment shutdown
Ancillary	1 5,300-gallon waste oil storage tank and gasoline dispensing equipment	No change proposed	No change proposed
4	---	2 new turbine driven compressors installed	2 new turbine driven compressors installed
Generator Building	---	6 new electric generators installed	---
FWP	---	1 new FWP and water tank installed	---

1.2 Facility Information

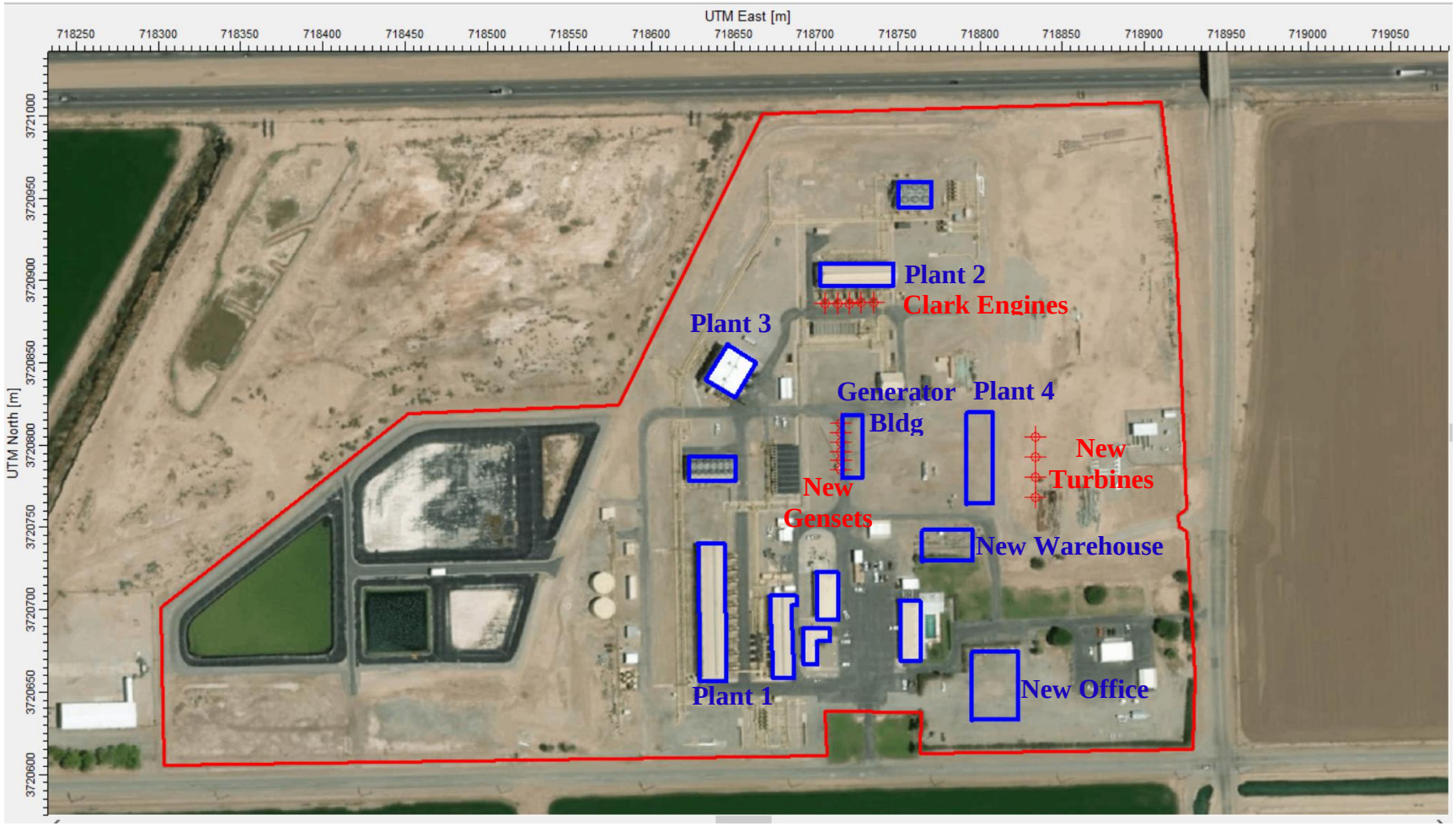
The BCS is a SoCalGas pipeline compression facility with three large diameter high-pressure gas transmission pipelines entering and leaving the station. It is located on about 408 acres in Blythe, California.

This facility operates twenty-four hours a day, seven days per week (24/7) and is on 24/7 call for various compression rates, to move gas from the El Paso Pipeline system into the SoCalGas and San Diego Gas & Electric (SDG&E) pipeline distribution systems. An aerial photograph of the existing facility is presented in Figure 1-2 and a detailed plot plan is provided in Appendix A.

The BCS compresses pipeline gas to a higher pressure, overcoming pipe friction losses and enabling the gas to continue to flow westward. The pipelines continuously supply Los Angeles, San Bernardino, Riverside, San Joaquin and San Diego Counties. The pipeline provides gas for over 6 million gas meters in the SoCalGas and SDG&E service territories. Transmission pipelines 2000 and 2001 are each 30 inches in diameter, and line 5000 is a 36-inch line.

Plant 1 initially contained ten compressor units, composed of seven Clark BA-8, 1,600 bhp integral gas engine compressors installed in 1948 and three Clark HBA-8, 1,760 bhp integral gas engine compressors installed in 1949. The seven older Clark units were shut down in 2003 to provide SERs for the installation of two Caterpillar reciprocating compressors in Plant 3, which were permitted in 2001, as well as provided banked NO_x ERCs. The remaining three Clark compressors in Plant 1 will be shutdown to provide SERs for the installation of turbine driven compressors in Plant 4 and the new generator building consisting of six new 1,044 bhp generators.

Figure 1-2: Facility Plot Plan Showing Location of Existing and Proposed Plants



Legend: Existing and planned buildings shown in blue, new and modified sources/stack locations shown in red.

Plant 2 contains five Clark HBA-8 1,760 bhp compressor units installed in 1954. These units will be refurbished to reduce NO_x emissions. NO_x reduction retrofits planned for Plant 2 Clark compressors will include turbochargers and may include one or both of PCC/LEC and HPFI/EM. The Plant 2 operational hours may eventually be ramped down with the installation of the gas turbine-driven compressor units.
The project will occur over two subsequent phases. In accordance with MDAQMD guidance, this ATC application is for completion of the BCR Project through the final project phase. An ERC application is also included.

1.2.1 Facility Contact Information

Contact information for the applicant and facility is provided in Table 1-2.

Table 1-2: Applicant Contact Information

Application Contact Information:	Karin Fickerson, CPP, CAPP, QEP Southern California Gas Company 1650 Mountain View Avenue, Oxnard, CA 93030 KFickerson@semprautilities.com 805-681-8013
Applicant Responsible Official Information:	Carlos Gaeta Field Operations Manager Southern California Gas Company CAGaeta@semprautilities.com 760-243-6574
Company ID:	0031
Facility ID:	01437
Facility Contact and Mailing Address/ Equipment Location:	Aaron Gushwa Southern California Gas Company 13-100 West 14th Avenue, Blythe, CA 92225 AGushwa@semprautilities.com 818-333-6246

1.2.2 Facility Location

The BCS is located at 13-100 West 14th Avenue, Blythe, CA 92225. The I-10 freeway is located just beyond the northern property boundary of property. Agricultural fields are located to the west, south, and east of the facility. Several residences and two businesses are located north of the I-10 freeway, and one business to the west.
The closest schools are located over two miles to the east in Blythe.

1.3 Requested Permit Actions

This application package contains the application forms necessary to obtain the ATC permits for the BCR Project and a modification of the Title V permit for the BCS. A list of the application forms included with this application is provided as Table 1-3. The application forms are included in Appendix A. Once the new equipment is permitted and installed, applications for Request to Cancel Permit will be filed for the equipment to be shutdown.
Since the BCS has a Title V permit, this application requests a concurrent revision of the Federal Operating Permit (FOP). Since the application involves new equipment (turbine driven

compressors and electric generators) which require a case-by-case determination of an emissions limit, it is expected that the modification will be processed as a Title V Significant Modification.

Table 1-3: MDAQMD Forms Accompanying This Application

Number of Forms	Title	Device Description
4	General Application Form	4 new turbine driven compressors
8	Air Pollution Control Equipment Application Form	4 Selective Catalytic Reduction (SCR) Systems and 4 Oxidation Catalyst Systems (both systems each per turbine driven compressor)
6	Internal Combustion Engine Permit Application Form	6 new electric generators
6	Air Pollution Control Equipment Application Form	6 Non-Selective Catalytic Reduction (NSCR)/3-Way Catalyst Systems (1 each per engine driven generator)
5	Internal Combustion Engine Permit Application Form	Changes to 5 existing Plant 2 Clark compression engines
1	Internal Combustion Engine Permit Application Form	1 new engine for the FWP
1	Title V – Permit Amendment/Modification (Form 1202N)	Revision of the FOP for this Facility

2.0 Process and Equipment Description

2.1 Process Description

The Blythe Compressor Station is operated as a critical part of the SoCalGas southern natural gas service and supply zone. Compressor stations are operated as facilities necessary to maintain system integrity, move natural gas supplies in response to changes in load centers, increase and regulate system pressures, and balance gas entering and leaving the system distribution system. As newer natural gas power plants have quick-start technology, the role of compressor stations to service rapid demand becomes an increasingly critical part of the California utility power grid and infrastructure. The Blythe Compressor Station is the largest compression facility. This project is designed to improve capacity while maintaining much of the existing infrastructure by way of engines, pads, piping supports and associated controls.

2.2 Proposed New Equipment and Emissions Control System Descriptions

The proposed new equipment and emissions control systems consist of the following:

- Four natural gas-fired, Siemens-Dresser SGT-300 Gas Turbine Driven Compressors at 7,954 bhp each;
- Four Peerless SCR and four oxidation catalyst systems on the four turbine driven compressors;
- Six GE Waukesha rich-burn natural-gas-fueled engines driving electric generators, 1,044 bhp, Model VGF-P48GSI;
- Six NSCR/3-way catalyst systems for the engines driving electric generators;
- Five oxidation catalyst systems, as well as turbochargers, and PCC/LEC and/or HPFI/EM (for installation on the five Clark compressors in Plant 2); and
- One diesel-fueled, John Deere engine driving a 224 bhp Clark FWP and associated water tank.

Although the BCR project will include four turbine driven compressors as described above, SoCalGas is only requesting that the permitted use for the combined equipment be the equivalent to full-time use for three turbines. One of the turbines will be back-up or on limited use such that the annual emissions will not exceed that of three full-time use turbines.
Manufacturers' information on these equipment is provided in Appendix B.

2.3 Proposed Plant 2 NO_x Emission Reductions

SoCalGas is currently investigating various technologies to evaluate the effectiveness for improving the operations of the five Clark compressor engines in Plant 2. A research permit has been obtained for Clark compressor No. 11 with serial number 30251 in Plant 2.
The technologies being evaluated during this research include PCC/LEC and HPFI/EM. The research project will be conducted to identify opportunities to reduce NO_x emissions from the facility. The facility will continue to comply with the research permit conditions.

3.0 Best Available Control Technolgy (BACT)

MDAQMD Rule 1303(A) requires that any new or modified "Permit Unit which emits, or has the Potential to Emit, 25 pounds per day or more of any Nonattainment Air Pollutant shall be equipped with BACT." Also, "Any new or Modified Facility which emits, or has the Potential to Emit, 25 tons per year or more of any Nonattainment Air Pollutant shall be equipped with BACT for each new Permit Unit."

The proposed new natural gas-fired turbine driven compressors in Plant 4 will each have a Potential to Emit (PTE) of greater than 25 lbs/day of NO_x. The existing and proposed BCS has/will have a facility-wide PTE of greater than 25 tpy of NO_x and ROC, and has a PTE of less than 25 tpy for PM_{10} and SO_x. Because the facility-wide PTE is currently ≥ 25 tpy of NO_x and ROC, NO_x and ROC BACT are required for both the new gas-fired turbine driven compressors and new electric generators. Therefore, this evaluation investigates NO_x and ROC BACT for both the proposed turbine driven compressors and generator engines. Although the facility-wide PTE for CO is ≥ 25 tpy, BACT is not required for CO because it is an attainment pollutant (and because the modification is not subject to Prevention of Significant Deterioration (PSD) permitting).

Modifications are planned for the five Clark compressor engines in Plant 2, one of which (#11) is currently operating under a research permit. The modification consists of a voluntary reduction of NO_x emissions. The post-project PTE of NO_x from each of these five engines will remain ≥ 25 lbs/day, although NO_x will be reduced as a result of the modification.

The proposed new and modified equipment at the BCS is to be used for gas compression for distribution of the natural gas. Natural gas-fired turbines in power generation are typically used in more steady-state applications, whereas the duty for this type of gas compression facility demands a highly variable load profile. The electric generator engines will also need to be run at variable loads corresponding to the gas compression and distribution needs. The variability of the load on this equipment and the need to quickly ramp up and down figures prominently in this BACT determination.

3.1 BACT Methodology

For this project, Yorke employed the five-step, top-down approach recommended by the EPA and MDAQMD for the determination of BACT. The five-step, top-down approach consists of the following steps:

Step 1 – Identify all control technologies;
Step 2 – Eliminate technically infeasible options;
Step 3 – Rank remaining control technologies by control effectiveness;
Step 4 – Evaluate most effective controls and document results; and
Step 5 – Select BACT.

If there is only a single feasible option, or if the applicant is proposing the most stringent alternative, then no further analysis is required. If two or more technically feasible options are identified, the next three steps are applied to identify and compare the economic, energy, and environmental impacts of the options.

In step 4, an analysis of the associated impacts of the control option in the listing is presented. Both beneficial and adverse impacts can be discussed. In the event the top candidate is shown to be inappropriate, due to energy, environmental, or economic impacts, the next most stringent alternative in the listing becomes the new control candidate and is similarly evaluated. This step

generally focuses on the cost-effectiveness of the technology or approach. Technical considerations and site-specific issues will often play a role in BACT determinations. This process continues until the technology cannot be eliminated.
Once a control option is determined to be achieved-in-practice and/or cost effective, the BACT control option determination is reached.

3.2 BACT Determinations

The purpose of this BACT evaluation is to determine the best control technology available for NO_x and ROC emissions for the new equipment associated with the BCR Project that is suitable, technically feasible, and cost effective. To identify available NO_x and ROC control technologies for the proposed new Permits Units, the following regulatory documents or programs were reviewed:

- EPA Reasonably Available Control Technology (RACT)/BACT/Lowest Achievable Emission Rate (LAER) Clearinghouse (RBLC);
- California air agency BACT Guidelines, including those from the California Air Resources Board (ARB), San Joaquin Valley Air Pollution Control District (SJVAPCD), South Coast Air Quality Management District (SCAQMD), and Bay Area Air Quality Management District (BAAQMD); and
- Permits and BACT analyses from New Source Review (NSR) permitting for similar facilities, in particular the SoCalGas Wheeler Ridge Compressor Station (WRCS) in the San Joaquin Valley.

A summary of relevant BACT determinations for NO_x and ROC emissions from turbines and generators found in these BACT databases and guidelines is discussed below.

3.2.1 Turbine NO_x BACT Evaluation

3.2.1.1 Step 1 – Identify All Control Technologies

Control technologies and emission limits for small natural gas-fired turbines were identified in the EPA's RBLC and other BACT databases reviewed. The results of the EPA RBLC database search for natural gas fired turbines, less than 25 MW, from January 1, 2007 to May 26, 2017 are summarized in Table 3-1, with a more detailed listing in Appendix C.

Note that Table 3-1 includes facilities that include both combustion turbines used for power generation and mechanical turbines used to drive compressors, such as those proposed for the BCR Project.

Table 3-1: EPA RBLC Entries for the Past 10 Years for NO_x Limits for Small (< 25 MW) Natural Gas-Fired Turbines

RBLCID	Facility Name	Corporate or Company Name	State	Permit Issuance Date	Throughput/ Size[1]	Control Method Description	NO_x Emission Limit[1]
AK-0083	Kenai Nitrogen Operations	Agrium U.S. Inc.	AK	1/6/2015	37.6 MMBtu/hr (4,573 HP)	SCR	7 ppmv, 3-hr avg.
LA-0287	Alexandria Compressor Station	Columbia Gulf Transmission Company	LA	7/21/2014	20,405 HP & 13,699 HP	DLN and GCP	15 ppmv 1-hr avg.
TX-0642	Sinton Compressor Station	Cheniere Corpus Christi Pipeline	TX	12/20/2013	20,000 HP	DLN	25 ppmvd
OK-0153	Rose Valley Plant	SemGas LP	OK	3/1/2013	9,443 HP	DLN	15 ppmvd, 1-hr avg.
OK-0148	Buffalo Creek Processing Plant	MarkWest Buffalo Creek Gas Co., LLC	OK	9/12/2012	10,179 HP	DLN	15 ppmvd, 1-hr avg.
NV-0050	MGM Mirage	MGM Mirage	NV	11/30/2009	4.6 MMBtu/hr (559 HP)	Lean Pre-Mix Technology	0.178 lb/MMBtu (~48 ppmvd)
WY-0067	Echo Springs Gas Plant	Williams Field Services Co.	WY	4/1/2009	12,555 HP	DLN	15 ppmv
WY-0067	Echo Springs Gas Plant	Williams Field Services Co.	WY	4/1/2009	16,162 HP	Good Combustion Practice (GCP)	15 ppmv
WY-0067	Echo Springs Gas Plant	Williams Field Services Co.	WY	4/1/2009	3,856 HP	DLN	25 ppmv
LA-0232	Sterlington Compressor Station	Gulf Crossing Pipeline Co., LLC.	LA	6/24/2008	79.1 MMBtu/hr (9,621 HP)	DLN and GCP	0.057 lb/MMBtu (~15 ppmvd)

1. First size/limit is as given in the RBLC, second value in parentheses when given was converted to provide a common basis for comparison, and should be considered to be an approximation since capacity factors and site conditions are not accounted for.

Based on the BACT determinations provided in Table 3-1 and other air district databases, the control techniques for NO_x considered in the BACT evaluation for the BCR Project include the following:

- SCR
- Dry Low NOx (DLN) Combustion[1]

3.2.1.2 Step 2 – Eliminate Technically Infeasible Options

A review of the listed control techniques of SCR and DLN was done to determine if these options should be considered technically feasible for small natural gas fired turbines. SCR and DLN technologies are considered feasible for the turbines proposed for the BCR Project.

3.2.1.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The identified control techniques are ranked in order of control effectiveness. SCR technology is considered the most effective of the options for control of NO_x emissions from gas turbines.

3.2.1.4 Step 4 – Evaluate Most Effective Controls and Document Results

Although SCR control technology is considered feasible for the BCR Project, the NO_x limit determined for the lowest NO_x emission rate in Table 3-1 of 7 ppmvd at 15% oxygen (O_2) is not considered feasible for this type of facility. As noted above, turbines used for gas compression must operate at a wide range of loads and be able to ramp quickly. The project with the 7 ppmvd limit is a manufacturing facility where the turbine is used for power generation, operated at a uniform load, and does not require the wide load range and fast ramping. The lowest level in Table 3-1 for a variable load turbine at a similar compressor station is 15 ppmvd.

A review of ARB and other air district databases did not find any more stringent results except for the SJVAPCD, which has a specific BACT finding for variable load turbines (SJVAPCD BACT Guideline 3.4.1, see Appendix C). This BACT guideline is based on the SoCalGas WRCS, and is considered very applicable. The NO_x levels identified as BACT for variable load turbines is 8 ppmvd @ 15% O_2 when in steady state operation and 12 ppmvd @ 15% O_2 when in a transitional state. This level of control is based on a high temperature SCR.

3.2.1.5 Step 5 – Select BACT

Based on the above review, BACT for NO_x during normal operation is determined to be SCR with an emission rate of 8 ppmvd @ 15% O_2 when in steady state operation and 12 ppmvd @ 15% O_2 when in a transitional state. Compliance with these emissions rates will be determined with a NO_x Continuous Emissions Monitoring System (CEMS) based on 3-hour rolling averages.

[1] Some of the control equipment in the RBLC where Solar turbines are used is identified as *SoLoNOx*™, which is another type of DLN combustion technology. Solar Turbines introduced *SoLoNOx*™ in 1992 as a low-emissions option for the company's gas turbines rated at 3.5 MW and above, and is proprietary to Solar Turbines, but is essentially the same as DLN control.

3.2.2 Turbine ROC BACT Evaluation

3.2.2.1 Step 1 – Identify All Control Technologies

Control technologies and ROC emission limits for small natural gas-fired turbines were identified in the EPA's RBLC and other BACT databases reviewed. The results of the EPA RBLC database search for natural gas fired turbines, less than 25 MW, from January 1, 2007 to May 26, 2017 are summarized in Table 3-2, with a more detailed listing in Appendix C. Like Table 3-1, Table 3-2 contains both combustion turbines for power generation and the more applicable mechanical turbines used to drive compressors.

Based on the BACT determinations provided in Table 3-2 and other air district databases, the control techniques for ROC considered in the BACT evaluation for the BCR Project turbines include the following:

- Oxidation catalyst; and
- Good combustion practice (GCP).

3.2.2.2 Step 2 – Eliminate Technically Infeasible Options

A review of the listed control techniques of oxidation catalyst and GCP was done to determine if these options should be considered technically feasible for natural gas-fired turbines. Both these control options are considered feasible for the BCR Project.

3.2.2.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The ROC control techniques are ranked in order of control effectiveness. Oxidation catalyst is considered the most effective of these options for the control of ROC emissions from gas turbines.

3.2.2.4 Step 4 – Evaluate Most Effective Controls and Document Results

None of the entries in Table 3-2 indicates a control option based on oxidation catalyst, although it shows an ROC limit of 0.0021 lb/MMBtu, 3-hr average for the Kenai Nitrogen Operations in Alaska. It is interesting to note that the "Permit Compliance Notes" for this entry in the EPA RBLC indicate that an oxidation catalyst was not considered to be cost effective for this application.

Similar to the NO_x BACT discussion above, the Kenai facility is not considered applicable due to its uniform load operation. The SJVAPCD BACT Guideline 3.4.1 indicates an ROC emission limit of 0.007 lb/MMBtu for a variable load turbine. However, the WRCS permit contains an emissions limit of 4.3 ppm for a similar type of turbine and this BACT level is considered the most appropriate for this BCR Project.

3.2.2.5 Step 5 – Select BACT

Based on the above review, BACT for ROC is determined to be an oxidation catalyst with an emission limit of 4.3 ppmvd @ 15% O_2, which is the ROC limit for similar sized turbines at the WRCS. Compliance with this limit will be determined based on an average of 3 source test runs of 40-minute duration.

Table 3-2: EPA RBLC Entries for the Past 10 Years for ROC Limits for Small (< 25 MW) Natural Gas-Fired Turbines

RBLCID	Facility Name	Corporate or Company Name	Facility State	Permit Issuance Date	Throughput/ Size[1]	Control Method Description	ROC Emission Limit[1]
AK-0083	Kenai Nitrogen Operations	Agrium U.S. Inc.	AK	1/6/2015	37.6 MMBtu/hr (4,573 HP)	Not specified	0.0021 lb/MMBtu, 3-hr avg. (~2 ppmvd)
OK-0153	Rose Valley Plant	SemGas LP	OK	3/1/2013	9,443 HP	GCP	10 ppmvd, 3-hr avg.
OK-0148	Buffalo Creek Processing Plant	MarkWest Buffalo Creek Gas Co. LLC	OK	9/12/2012	10,179 HP	Not Specified	25 ppmvd, 3-hr avg.
NV-0050	MGM Mirage	MGM Mirage	NV	11/30/2009	4.6 MMBtu/hr (559 HP)	GCP and Natural Gas Fuel	0.024 lb/MMBtu (19 ppmvd)
WY-0067	Echo Springs Gas Plant	Williams Field Services Co.	WY	4/1/2009	12,555 HP	GCP	25 ppmvd
WY-0067	Echo Springs Gas Plant	Williams Field Services Co.	WY	4/1/2009	16,162 HP	GCP	25 ppmvd
WY-0067	Echo Springs Gas Plant	Williams Field Services Co.	WY	4/1/2009	3,856 HP	GCP	50 ppmvd
LA-0232	Sterlington Compressor Station	Gulf Crossing Pipeline Co. LLC.	LA	6/24/2008	79.1 MMBtu/hr (9,621 HP)	GCP and Natural Gas Fuel	2.62 lb/hr (25 ppmvd)

1. First size/limit is as given in the RBLC, second value in parentheses when given was converted to provide a common basis for comparison, and should be considered to be an approximation since capacity factors and site conditions are not accounted for.

3.2.3 Generator NO_x BACT Evaluation

3.2.3.1 Step 1 – Identify All Control Technologies

Control technologies and emission limits for generator engines were identified in the EPA's RBLC and other BACT databases reviewed. The results of the EPA RBLC database search for large (> 500 HP but < 10,000 HP) natural gas fueled internal combustion engines (ICEs) from January 1, 2007 to May 26, 2017 are summarized in Table 3-3, with a more detailed listing in Appendix C.

Table 3-3 contains facilities with both rich burn and lean burn natural gas-fired engines. Lean burn engines must use SCR to reach low NO_x levels similar to rich burn engines. While SCR has been applied successfully to many power generating applications, they are generally base-loaded cogeneration plants rather than "island" power applications. SoCalGas has extensive experience operating rich burn engines with NSCR/3-way catalysts, and believes this is a better route than introducing the uncertainty of operating lean burn engines with SCR in an island mode.

Based on the BACT determinations provided in Table 3-3 and other air district databases, the control techniques for NO_x considered in the BACT evaluation for the BCR Project include the following:

- Non-Selective Catalytic Reduction (NSCR) or a 3-way catalyst; and
- Lean Burn Combustion.

3.2.3.2 Step 2 – Eliminate Technically Infeasible Options

A review of the listed control techniques was done to determine if they should be considered technically feasible for the BCR Project generator engines. Although technically feasible, lean burn combustion was not considered practicable for this application and does not provide emissions control advantages, so was eliminated.

3.2.3.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

For this project, the NSCR/3-way catalyst is considered the most effective for the control of NO_x emissions from the generator engines.

3.2.3.4 Step 4 – Evaluate Most Effective Controls and Document Results

Table 3-3 indicates that the most stringent NO_x emissions control level in the EPA RBLC for NSCR/3-way catalysts is 0.2 g/bhp-hr (15 ppm). The ARB BACT database has two entries for Waukesha Spark Ignition rich-burn ICE with 3-way catalysts of 7.3 ppm (0.10 g/bhp-hr) in 2004 and 9 ppm (0.12 g/bhp-hr) in 2003 for NO_x levels. The SJVAPCD BACT Guideline 3.3.12 for Non-Agricultural Fossil Fuel-Fired ICE > 50 bhp lists NO_x levels achieved in practice of 0.07 g/bhp-hr (5 ppm).

The two ARB BACT findings are not considered to be the same class/category of the engines proposed for the BCR Project since one is a rich-burn 1,695 HP engine at Bear Valley Electric in SCAQMD (Waukesha L7044GSI) which provides peak power during ski season, and the other is a rich-burn 2,000 HP (Waukesha P9390GSI) that drives a water pump at a petroleum production field.

Table 3-3: EPA RBLC Entries for the Past 10 Years for NO_x Limits for Natural Gas-Fired Generator Engines

RBLCID	Facility Name	Corporate or Company Name	Facility State	Permit Issuance Date	Throughput/ Size[1]	Control Method Description	NO_x Emission Limit[1]
LA-0292	Holbrook Compressor Station	Cameron Interstate Pipeline LLC	LA	1/22/2016	5,000 HP	Lean-burn and GCP	4.96 lb/hr (0.45 g/bhp-hr)
PA-0302	Clermont Compressor Station	NFG Midstream Compressor Station	PA	4/16/2014	Not Specified	NSCR	0.2 g/bhp-hr
PA-0301	Carpenter Compressor Station	MarkWest Liberty Midstream & Resources, LLC	PA	3/31/2014	2,370 & 3,550 HP	Lean Burn	0.5 g/bhp-hr
PA-0297	Kelly IMG Energy LLC/Kelly IMG Plt	Kelly IMG Energy LLC	PA	5/23/2013	3.11 MW (4,170 HP)	Not Specified	0.5 g/bhp-hr
OK-0153	Rose Valley Plant	SemGas LP	OK	3/1/2013	1,775 HP	NSPS	0.5 g/bhp-hr, 3-hr avg.
OK-0148	Buffalo Creek Processing Plant	MarkWest Buffalo Creek Gas Co LLC	OK	9/12/2012	1,775 & 2,370 HP	Ultra-Lean Burn	0.5 g/bhp-hr, 1-hr avg.
LA-0257	Sabine Pass LNG Terminal	Sabine Pass LNG, LP & Sabine Pass Liquefaction, LLC	LA	12/6/2011	2,012 HP	Comply with 40 CFR 60 JJJJ	9.76 lb/hr (2.2 g/bhp-hr)
PA-0287	Welling Compressor Station	MarkWest Liberty Midstream & Resources LLC	PA	9/27/2011	1,980 HP	3-way catalyst, Johnson Matthey	0.2 g/bhp-hr
MI-0390	White Pigeon Compressor Station – Plant #3	Consumers Energy	MI	11/24/2008	Not Specified	Lean Burn with 2-way catalyst	0.5 g/bhp-hr

1. First size/limit is as given in the RBLC, second value in parentheses when given was converted to provide a common basis for comparison, and should be considered to be an approximation.

The SJVAPCD was contacted to obtain additional information on the BACT Guideline, and were told that the 0.07 g/bhp-hr value was based on a single source test rather than a permit limit. Therefore, the ARB and SJVAPCD emission rates are dismissed in our selection of BACT.

An NSCR/3-way catalyst, the most effective technology for NO_x control for large ICEs, is proposed for the generators for the BCR Project with a vendor emissions guarantee of 0.15 g/bhp-hr for NO_x. Therefore, this emissions level, with the most effective technology of NSCR/3-way catalyst, is proposed as BACT for the generators for the BCR Project.

3.2.3.5 Step 5 – Select BACT

Based on the above review, BACT is determined to be NSCR/3-way catalyst to meet 0.15 g/bhp-hr for NO_x. Compliance with this limit will be determined based on an average of 3 source test runs each of 40-minute duration.

3.2.4 Generator ROC BACT Evaluation

3.2.4.1 Step 1 – Identify All Control Technologies

Control technologies and emission limits for generator engines were identified in the EPA's RBLC and other BACT databases reviewed. The results of the EPA RBLC database search for large (> 500 HP and < 10,000 HP) natural gas fueled ICEs from January 1, 2007 to May 26, 2017 are summarized in Table 3-4, with a more detailed listing in Appendix C. Like Table 3-3, Table 3-4 reflects both rich burn and lean burn engines.

Based on the BACT determinations provided in Table 3-4 and other air district databases, the control techniques for ROC considered in the BACT evaluation for the BCR Project include the following:

- Oxidation catalyst; and
- NSCR/3-way catalyst.

3.2.4.2 Step 2 – Eliminate Technically Infeasible Options

A review of the listed control techniques was done to determine if they should be considered technically feasible for generator engines. An oxidation catalyst is typically used on lean burn engines, while an NSCR/3-way catalyst is used for rich burn engines. An NSCR/3-way catalyst includes an oxidation catalyst, hence the stand-alone oxidation catalyst that would be used for a lean burn engine is eliminated for this application.

3.2.4.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

For this project, the NSCR/3-way catalyst is considered the most effective for the control of ROC emissions from the generator engines.

Table 3-4: EPA RBLC Entries for the Past 10 Years for ROC Limits for Natural Gas-Fired Generator Engines

RBLCID	Facility Name	Corporate or Company Name	Facility State	Permit Issuance Date	Throughput/ Size[1]	Control Method Description	ROC Emission Limit[1]
LA-0292	Holbrook Compressor Station	Cameron Interstate Pipeline LLC	LA	1/22/2016	5,000 HP	Oxidation catalyst and GCP	1.25 lb/hr (0.11 g/bhp-hr)
PA-0302	Clermont Compressor Station	NFG Midstream Compressor Station	PA	4/16/2014	Not Specified	NSCR	0.2 g/bhp-hr
PA-0301	Carpenter Compressor Station	MarkWest Liberty Midstream & Resources, LLC	PA	3/31/2014	2,370 & 3,550 HP	Oxidation catalyst	0.25 g/bhp-hr
PA-0297	Kelly IMG Energy LLC/Kelly IMG Plt	Kelly IMG Energy LLC	PA	5/23/2013	3.11 MW (4,170 HP)	Oxidation catalyst	0.176 g/bhp-hr
OK-0153	Rose Valley Plant	SemGas LP	OK	3/1/2013	1,775 HP	Oxidation catalyst	0.13 g/bhp-hr, 3-hr avg.
OK-0148	Buffalo Creek Processing Plant	MarkWest Buffalo Creek Gas Co LLC	OK	9/12/2012	1,775 & 2.370 HP	Oxidation catalyst	0.22 g/bhp-hr
LA-0257	Sabine Pass LNG Terminal	Sabine Pass LNG, LP & Sabine Pass Liquefaction, LLC	LA	12/6/2011	2,012 HP	Comply with 40 CFR 60 JJJJ	4.43 lb/hr (1.0 g/bhp-hr)
PA-0287	Welling Compressor Station	MarkWest Liberty Midstream & Resources LLC	PA	9/27/2011	1,980 HP	3-way catalyst, Johnson Matthey	0.12 g/bhp-hr

1. First size/limit is as given in the RBLC, second value in parentheses when given was converted to provide a common basis for comparison, and should be considered to be an approximation.

3.2.4.4 Step 4 – Evaluate Most Effective Controls and Document Results

Table 3-4 indicates that the most stringent ROC emissions control level in the EPA RBLC for a rich-burn engine is a 3-way catalyst with an ROC emission rate of 0.12 g/bhp-hr. The Holbrook Compressor Station engine shown in Table 3-4 is lean-burn and hence not the appropriate class/category. As noted in Section 3.2.3, the ARB BACT findings were not considered to be the appropriate class/category of engine, and hence not applicable. Additionally, the SJVAPCD BACT Guideline 3.3.12 for Non-Agricultural Fossil Fuel-Fired ICE > 50 bhp lists ROC levels achieved in practice of 0.15 g/bhp-hr.

An NSCR/3-way catalyst, the most effective technology for ROC control for large ICEs, is proposed for the generators for the BCR Project with an emission rate of 0.12 g/bhp-hr.

3.2.4.5 Step 5 – Select BACT

Based on the above review, BACT for the new generators is determined to be NSCR/3-way catalyst to meet 0.12 g/bhp-hr for ROC. Compliance with this limit will be determined based on an average of 3 source test runs of 40-minute duration.

3.2.5 BACT Review for Plant 2 Clark Compressor Engines

As noted in the introduction to this section, a major aspect of the BSR Project are NO_x reductions planned for the five Clark compressor Engines in Plant 2. This control will be achieved during the refurbishments which will include the installation of turbochargers and may include one or both of PCC/LEC and HPFI/EM. PTE for ROC, PM_{10} and SO_x from the Plant 2 compressors will be less than 25 lbs/day, and hence BACT for these pollutants is not required in conjunction with the proposed modifications.

3.2.6 BACT Determination Summary

Table 3-5 provides a summary of the BACT determinations described above.

Table 3-5: Summary of BACT Determination for the BCR Project

Equipment	Pollutant	Control Technology	Emissions Limit	Averaging Period	Compliance Demonstration Method
Variable Load Turbine Driven Compressors	NO_x	SCR	8 ppmvd @ 15% O_2 (steady state) 12 ppmvd @ 15% O_2 (transitional state)	3-hour rolling average	NO_x CEMS
	ROC	Oxidation catalyst	4.3 ppmvd @ 15% O_2)	Average of 3 test runs of 40-minute duration	Source Test
Generator Engines	NO_x	3-way Catalyst/NSCR	0.15 g/bhp-hr	Average of 3 test runs of 40-minute duration	Source Test
	ROC	3-way Catalyst/NSCR	0.12 g/bhp-hr	Average of 3 test runs of 40-minute duration	Source Test

The BACT determinations shown in Table 3-5 will be applied during normal operation. For all equipment, the proposed emission rates will not apply during the equipment start-up not exceeding two hours in duration during which the unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. Similarly, these emission rates will not apply during shutdown period of time during which the unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off.

3.3 Toxics-BACT Determination

Rule 1320 requires that the applicability of State or Federal NSR be determined for any new or modified Emissions Units (EUs). This applicability determination is based on the Prioritization Score for the EU, and may require that an HRA be performed. If the HRA indicates that the EU may have a Moderate Risk (i.e., a risk of cancer of greater than one in one million at the location of the Maximum Individual Cancer Risk (MICR) receptor), then the application of Toxics BACT (T-BACT) is required.

For the new natural gas-fired turbine driven compressors (although not subject to T-BACT) and the existing Plant 2 natural gas-fired compressors, T-BACT is expected to be oxidation catalysts. For the new natural gas-fired reciprocating engine driven generators, T-BACT is expected to be 3-way catalyst/NSCR. The oxidation catalysts and 3-way catalyst/NSCR will control organic TACs and ROC. Since these control options have been determined to be applicable in the ROC BACT discussion in Section 3.2.4 above, these control options also meet T-BACT requirements. As noted above, information on control efficiencies of oxidation catalysts and 3-way catalyst/NSCR was obtained from a vendor web site. This review determined that a range of control efficiencies is achievable as shown in Table 3-6. Table 3-6 also shows the control efficiency that was selected as T-BACT, with the lowest efficiency selected for the older Clark compressor engines, and a higher efficiency assumed for the new turbine driven compressors and electric generators.

Table 3-6: ROC and TAC Control Efficiencies for Control Equipment

Source	Technology	Range		Selected	
		ROC	TACs	ROC	TACs
Clarks	oxidation catalyst	60-99	60-99	60	60
Turbines	oxidation catalyst	60-99	60-99	80	80
New Generators	3-way Catalyst/NSCR	50-90	80-95	80	80

Source: http://www.dcl-inc.com/catalyst-specifications/

4.0 Emissions calculations

The proposed new turbine driven compressors and electric generators will emit CO, NO_x, ROC, PM_{10}, and SO_x, as well as TACs, via internal combustion of natural gas. The net emissions increases of NO_x, PM_{10}, and ROC will be offset with Simultaneous Emissions Reductions (SERs) through the shutdown of existing sources. Additionally, NO_x, ROC and CO emissions will be reduced by the addition of emissions controls on the compressors in Plant 2. ERCs are requested for the NO_x and ROC reductions that are in excess of what is needed for SERs. The emissions and SERs are quantified in the following sections, and the detailed spreadsheets are provided in Appendix D.

4.1 New Turbines and Generators

4.1.1 Criteria Pollutants

For the proposed new natural-gas fired turbines and generators, NO_x and ROC emissions are calculated based on the BACT emission standards determined in Section 3. CO emissions for the turbine are based on WRCS permit limits of 8 ppm (which is lower than the SJVAPCD BACT Guideline of 0.024 lb/MMBtu (10.7 ppm) and CO emissions for the new generators are based on vendor data (Appendix B). PM_{10} and SO_x emissions for the turbines are based on AP-42 and mass balance calculations, with an annual average sulfur content of 0.2 grains/100 dry standard cubic foot (dscf). PM_{10} and SO_x emissions for the electric generators are based on the AP-42 Section 3.1 natural gas emission factors.

As an example for the turbines, the NO_x concentration (ppmvd at 15% O_2) is converted to units of pounds per million standard cubic feet (lb/MMscf) using Equation 1:

E.F. (lb/MMscf) = ppmvd/10^{-6} x M.W. x (20.9/(20.9 – O_2)) x F_D x HHV/V_m (Eq. 1)

Where:

E.F. = Emission Factor (lb/MMscf)
ppmvd = Criteria pollutant concentration corrected to 15% O_2
M.W. = Molecular weight (46 for NO_x)
O_2 = 15% O_2 correction for turbines and internal combustion
F_D = EPA dry F_D factor, 40 CFR Part 60 (8,710 dscf/MMBtu)
HHV = Higher Heating Value of natural gas (1,020 Btu/scf)
V_m = Molar volume at standard temperature and pressure (385.5 scf/lb-mol)

For NO_x, BACT for the variable load turbines was determined to be 8 ppmvd for normal operation and 12 ppmvd during load transitions. For the maximum daily emissions in pounds per day (lbs/day), it was assumed the turbines would be in normal operation 75% of the time and 25% of the time in transition. Using the transitional BACT limit of 12 ppm @ 15% O_2 for NO_x, the emission factor is calculated as follows:

E.F. (lb/MMscf) = 12 ppmv/10^{-6} x 46 lb/lb-mol x (20.9/(20.9 – 15)) x 8,710 dscf/MMBtu x 1020 Btu/scf / 385.5 scf/lb-mol = 45.06 lb/MMscf

A summary of emission factors is shown in Table 4-1. The estimated criteria pollutant emissions from the proposed equipment are shown in Table 4-2. Emission calculation worksheets are provided in Appendix D.

Table 4-1: Summary of Criteria Pollutant Emission Factors

Pollutant	Turbine Emission Factor

Pollutant	Turbine Emission Factor		
	lb/MMBtu	lb/MMscf	References
CO	0.018	18.29	WRCS permit with oxidation catalyst
NO_x	0.029	30.04	BACT – steady state
NO_x	0.044	45.06	BACT – transitional state
ROC	0.006	5.62	BACT
PM_{10}	0.0066	6.73	AP-42 Section 3.1 Stationary Gas Turbines, Table 3.1-2a
SO_x	0.0006	0.60	Mass Balance with Sulfur content data
Pollutant	**Generator Emission Factors**		
	lb/MMBtu		**References**
CO	0.161	0.60 g/bhp-hr	Vendor
NO_x	0.044	0.15 g/bhp-hr	Vendor / BACT
ROC	0.013	0.12 g/bhp-hr	Vendor / BACT
PM_{10}	0.0194	19.79 lb/MMscf	AP-42 Section 3.2 Natural Gas-fired Reciprocating Engines, Table 3.2-3 4-Stroke Rich-Burn Engines
SO_x	0.0006	0.60 lb/MMscf	

Table 4-2: Summary of Criteria Pollutant Emissions for New and Modified Equipment Post-Phase II

Facility	Units	CO	NO_x	ROC	PM_{10}	SO_x
Proposed Plant 2	tpy	27.21	135.84	12.33	9.87	0.15
Plant 4	tpy	16.92	31.27	5.20	6.23	0.56
Generator Bldg.	tpy	36.26	9.06	7.25	4.37	0.13
FWP	tpy	0.03	0.13	0.00	0.00	0.00
Total	**tpy**	**80.42**	**176.30**	**24.79**	**20.47**	**0.84**
Proposed Plant 2	lbs/day	149.11	744.32	67.58	54.07	0.84
Plant 4	lbs/day	92.72	171.37	28.48	34.13	3.04
Generator Bldg.	lbs/day	198.68	49.67	39.74	23.92	0.72
FWP	lbs/day	0.30	1.26	0.03	0.04	0.00
Total	**lbs/day**	**440.81**	**966.62**	**135.83**	**112.16**	**4.61**

Note: Plant 4 consists of emissions from 3 new turbines at full operation, with the 4th turbine as a back-up. The Generator Building will have 6 new generators.

4.1.2 Toxic Air Contaminants

TAC emission factors and the estimated TAC emissions from the proposed equipment are shown in Table 4-3. Emission calculation worksheets are provided in Appendix D.

Table 4-3: Summary of TAC Emissions for New and Modified Equipment Post-Phase II

Pollutant	CAS	Existing[1] Plant 2 Clarks	New[2] Plant 4 Turbines	New[3] Electric Generators	Total Emissions[4]	
		tpy	tpy	tpy	tpy	lb/yr

Pollutant	CAS	Existing[1] Plant 2 Clarks	New[2] Plant 4 Turbines	New[3] Electric Generators	Total Emissions[4]	
1,3-Butadiene	106990	0.105	0.000	0.029	0.135	269.37
2,2,4-Trimethylpentane	540841	0.109	0.000	0.000	0.109	217.39
Acetaldehyde	75070	0.997	0.008	0.123	1.128	2,255.29
Ammonia	7664417	0.000	25.68	0.000	25.68	51,368.7
Benzene	71432	0.249	0.002	0.003	0.255	509.54
Biphenyl	92524	0.001	0.000	0.000	0.001	1.01
Ethyl benzene	100414	0.014	0.006	0.000	0.020	40.04
Formaldehyde	50000	2.634	0.134	0.904	3.672	7,344.52
Hexane	110543	0.057	0.000	0.000	0.057	114.35
Phenol	108952	0.005	0.000	0.000	0.005	10.82
Propylene	115071	0.000	0.000	0.706	0.706	1,411.80
Propylene oxide	75569	0.000	0.005	0.000	0.005	10.96
Styrene	100425	0.007	0.000	0.001	0.008	15.13
Toluene	108883	0.072	0.025	0.025	0.121	241.85
Xylenes	1330207	0.034	0.012	0.009	0.055	110.24
PAHs excluding Napthalene	1151	0.000	0.000	0.000	0.000	0.34
Naphthalene	91203	0.012	0.000	0.004	0.017	33.81
Acenaphthene	83329	0.000	0.000	0.000	0.000	0.51
Acenaphthylene	208968	0.000	0.000	0.001	0.001	2.09
Benzo(b)fluoranthenen	205992	0.000	0.000	0.000	0.000	0.02
Benzo(e)pyrene	192972	0.000	0.000	0.000	0.000	0.01
Benzo(g,h,l)perylene	191242	0.000	0.000	0.000	0.000	0.02
Benzo(k)fluoranthene	207089	0.000	0.000	0.000	0.000	0.01
Chrysene	218019	0.000	0.000	0.000	0.000	0.20
Fluoranthene	206440	0.000	0.000	0.000	0.000	0.18
Fluorene	86737	0.000	0.000	0.000	0.001	1.04
Phenanthrene	85018	0.000	0.000	0.000	0.001	1.53
Pyrene	129000	0.000	0.000	0.000	0.000	0.16
				Total	**5.59[4]**	**63,691**

Notes:

1. Includes all 5 Plant 2 Clark Compressors in total.
2. There are 4 new turbine driven compressors associated with Plant 4, but 1 is reserved as a backup, thus only 3 turbine driven compressors are included in the total.
3. Includes 6 electric generators in the total.
4. Total in tpy includes Federal hazardous air pollutants (HAPs) only, i.e., ammonia excluded.
5. PAHs are identified by green highlight.

The TAC emission factors are from SCAQMD for natural gas-fired turbines: http://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/supplemental-instructions-for-ab2588-facilities.pdf?sfvrsn=12. Acrolein was excluded per MDAQMD guidance; Chlorinated compounds and bromides were excluded per SoCalGas input. Ammonia emissions are based on assumed slip level of 20 ppm. The control efficiencies assumed for the TACs are shown above in Table 4-3. An HRA was not prepared for the FWP as it is exempt per Rule 1320 as emergency equipment operating less than 200 hours per year.

4.2 Simultaneous Emissions Reductions

In Phase I, SERs will be achieved with the shutdown of the 3 remaining compressor engines in Plant 1 and the NO_x and ROC reductions from the refurbishment of the Clark engines and addition of the oxidation catalysts in Plant 2. In Phase II, SERs are generated by the shutdown of the two compressors in Plant 3, the four compressors in Central Supporting, and the two engines in the Auxiliary Building.

For Plant 1, Central Supporting, and the Auxiliary Building engines, SERs are based on Historic Actual Emissions (HAE) over a 2-year period (2015-2016). The SERs from Plant 2 are calculated based on the post-modification PTE reflective of the addition of turbochargers, the potential addition of one or both of PCC/LEC and HPFI/EM, and the addition of oxidation catalysts to reduce emissions – minus the HAE for the 2-year period for Plant 2. The PTE and HAE for Clark #11 in Plant 2 is not included since it is operating under a research permit. Furthermore, the PTE for the Clark compressors in Plant 2 remains based on 24/7 operation even though actual operation is expected to decrease from current levels as the new turbine driven compressors becomes operational. Since Plant 3 was permitted in 2011, and the NO_x and ROC emissions were completely offset with SERs at the time (i.e., the shutdown of seven of the compressor engines in Plant 1), the HAE is equal to the PTE values to be used as SERs for these pollutants.

For this BCR Project, 2015-2016 data were used as the most recent complete 2-year period for the calculation of HAEs. HAEs were calculated using MDAQMD Emission Inventory Report data as reported for the sources in these facilities. The PTE for NO_x and ROC from Plant 3 was based on limits in the permits to operate B008079 and B008080.

The emissions available as SER from the shutdown of these facilities and refurbishment of Plant 2 is shown in Table 4-4. Detailed emissions calculations are provided in Appendix D.

Table 4-4: Summary of SERs Available from Shutdown and Modification of Existing Emissions Units Post-Phase II

Facility	Units	CO	NO_x	ROC	PM_{10}	SO_x
Plant 1	tpy	12.40	68.13	4.21	1.35	0.02
Plant 2	tpy	43.51	239.10	14.79	4.73	0.07
Plant 3	tpy	0.35	51.17	10.96	0.05	0.04
Central Supporting	tpy	1.81	0.46	0.00	0.04	0.01
Auxiliary Bldg.	tpy	8.33	5.38	0.07	0.02	0.00
Total	**tpy**	**66.38**	**364.24**	**30.04**	**6.19**	**0.15**
Plant 1	lbs/day	67.93	373.32	23.09	7.39	0.12
Plant 2	lbs/day	238.39	1,310.12	81.04	25.93	0.41
Plant 3	lbs/day	1.90	280.38	60.08	0.27	0.21
Central Supporting	lbs/day	9.91	2.52	0.03	0.19	0.07
Auxiliary Bldg.	lbs/day	45.62	29.50	0.38	0.12	0.01
Total	**lbs/day**	**363.75**	**1,995.84**	**164.62**	**33.91**	**0.80**

Note: Emission reductions reflect HAE for all pollutants except for NO_x and ROC from Plant 3, which are based on PTE.

4.3 Emissions Netting Analysis

Per Rule 1303(B), any new or modified stationary source which has a PTE of non-attainment pollutants or their precursors greater than the offset threshold amounts given in the rule (e.g., 25 tpy of NO_x, ROC, and SO_x, and 15 tpy of PM_{10}) are required to provide offsets. CO emissions are not required to be offset since CO is an attainment pollutant in this area. SO_x emissions are not required to be offset since the BCS has a SO_x PTE of well below 25 tpy (SO_x PTE is below 1 tpy for this source). Offsets may be provided by SERs.

Per Rule 1304(B)(1)(a), a netting analysis is done in lbs/day by subtracting the HAE from the PTE. A netting analysis comparing the proposed PTE for this BCR Project to the available SERs for NO_x, ROC and PM_{10} is shown in Table 4-5. The netting analysis is done in two steps: first, the SER for each pollutant is subtracted from the proposed PTE. Next, remaining PM_{10} emissions are offset with NO_x SERs at a very conservative 2 to 1 ratio (if ROC PTE-HAE had been positive, then ROC emissions would also be offset with NO_x SERs at a very conservative 2 to 1 ratio).

Table 4-5: Emissions Netting Analysis (tpy)

Units	NO_x	ROC	PM_{10}
Proposed New PTE (from Table 4-2)	176.30	24.79	20.47
SER (from Table 4-4)	364.24	30.04	6.19
Difference PTE-SER	-187.94	-5.26	14.28
Difference With 2:1 NO_x Trade for PM_{10}	-159.38	0	0

This netting analysis demonstrates that there is ample SERs from the planned reductions to offset the proposed Post-Phase II emissions, with potentially almost 160 tpy of NO_x reductions and 5

tpy of ROC remaining that could be banked as NO_x and ROC ERC, dependent on the provision of source test data.[2]

4.4 ERC Banking

To bank ERCs, the MDAQMD must demonstrate that the reductions meet the following criteria:

- Permanent
- Enforceable
- Surplus
- Quantifiable
- Real

According to the MDAQMD website, no formal application form for ERC banking exists. The following information is usually submitted in a package:

- Name, address and telephone number of the owner of the emissions unit
- Name of contact person for ERC application
- Information sufficient to identify the source and causation of the reductions
- Information that shows that the reduction is Permanent
- Commitment from the owner that the reduction is Enforceable (such as a proposed permit condition (preferred) or memorandum of understanding)
- Information that shows that the reduction is Surplus (not otherwise required by law, rule, regulation or condition)
- Information that allows and supports the quantification of the reduction (actual before and after emissions, source test results, calculation details)
- Information that shows that the reduction is Real (including proof that the actual emissions before reduction were reported to the District as part of a criteria emissions inventory report)
- Application fee

This application package provides the above information as follows:

- Contact information related to this application is provided in Table 1-2, as well as on the MDAQMD forms in Appendix A.
- The reductions will be permanent as equipment will be shut down and permits to operate will be canceled. In the case of Plant 2, engine modifications and emissions control equipment (oxidation catalysts) will be installed to reduce emissions.
- Reductions will be enforceable based on changes to the permits to operate for the BCS.

[2] The SERs shown in Table 4-4 reflect Post-Phase II emission reductions. If Phase II is not built or plans change related to Phase II based on the operation of Phase I equipment, it can be seen that the NO_x reductions from Plants 1 and 2 alone without the other shutdowns are ample to provide the SERs for the new equipment.

- The proposed shutdowns and emissions reductions are surplus as they are voluntary, and not relied upon in the MDAQMD Air Quality Management Plans.
- This application provides quantification of the emissions reductions based on the prior emissions reporting using MDAQMD annual emissions reporting emissions factors. Upon review of these data, SoCalGas will work with MDAQMD to develop a source test plan should it be needed to support the quantification of the reductions for ERC banking.
- The emissions reductions are real, as they are based on actual historic operations and annual emissions reporting to the MDAQMD.
- The application fee of $368 is included in the filing fee.

4.5 Prevention of Significant Deterioration (PSD) Applicability Analysis

Rule 1302(B)(1)(a)(i)c requires that any application for an ATC or modification to a Permit to Operate (PTO) includes: "A District Rule 1600 applicability analysis sufficient to determine whether the Facility or Modification is or is not a new PSD Major Source or a PSD Major Modification as defined in District Rule 1600(B) using the procedures set forth in 40 CFR 52.21(a)(2)."

The BCS is located in an area that is designated as attainment or unclassified for all National Ambient Air Quality Standards (NAAQS). Therefore, the BCS is potentially subject to PSD for all criteria pollutants. The BCS is an existing PSD Major Source (> 250 tpy) of CO and NO_x on a PTE basis. However, the BCS does not have a PSD permit since the permitting of most of the emissions units at this source pre-date the PSD regulations, and the permitting of Plant 3 in 2011 was not a PSD Major Modification.

After determining that an existing source is a PSD Major Source, PSD applicability is determined in an additional two-step process. First, the PTE of new and modified equipment is determined and compared to PSD Significant Emissions Increases (SEI) thresholds for each PSD regulated pollutant. If the new and modified emissions are greater than these SEI thresholds, then emissions netting of contemporaneous emissions increases and decreases that have occurred at the facility can be used in a netting analysis, similar to that discussed in Section 4.3 above.

Table 4-6 provides a PSD Major Modification applicability analysis, using the "hybrid" approach as allowed in 40 CFR 52.21(a)(2)(iv)(f). This approach uses the PTE for new sources, but allows the emissions increases of modified sources to be based on "projected future actual" emissions basis rather than PTE. Past operation of Plant 2 has been less than 50% of the time during the baseline, and the use of Plant 2 is expected to continue to decline. Therefore, a conservative 50% operation was assumed for the projected future actuals and also including the NO_x reduction project and the installation of the oxidation catalyst. For this PSD applicability analysis, the Clark #11 in Pant (that was excluded from the MDAQMD netting analysis since it is subject to the research permit) is included (since it is considered to be contemporaneous). Furthermore, the NO_x emissions have been adjusted to not count the reductions that may be banked as ERCs, but still have more than enough to show that there will be no net emissions increase in NO_x from a PSD perspective.

Fine particulate matter ($PM_{2.5}$) is also included as a regulated PSD pollutant, and is conservatively assumed equal to PM_{10} (Total particulate matter (PM) is also a PSD regulated pollutant, and is also considered equal to PM_{10} in this case, but has a higher SEI threshold of 25

tpy). As shown in Table 4-6, in the second[3] step only $PM_{2.5}$ is over the PSD SEI thresholds based on the proposed BCR Project PTE and projected future actuals from the new and modified sources. But then in the third step, there are more than sufficient contemporaneous emissions decreases (and increases) to net out of PSD. For this analysis, the reductions from Plant 1 alone are sufficient reductions to show no net significant emissions increase in $PM_{2.5}$.

Table 4-6: PSD Applicability Analysis for the Proposed BCR Project

Location	Pollutant Emissions (tpy)					
	CO	**NO_x**	**ROC**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**
Proposed New Equipment PTE						
Plant 4	16.92	31.27	5.20	6.23	6.23	0.56
Generator Bldg.	36.26	9.06	7.25	4.37	4.37	0.13
FWP	0.03	0.13	0.00	0.00	0.00	0.00
Total	53.21	40.47	12.45	10.60	10.60	0.69
Plant 2 Baseline to Projected Future Actuals						
Plant 2-Baseline	51.04	280.48	17.35	5.55	5.55	0.09
Plant 2-Projected	17.01	84.90	7.71	6.17	6.17	0.10
Possible ERC Banked		159.38	5.26			
Difference	-34.03	-36.20	-4.38	0.62	0.62	0.01
Total New and Modified BCR Project Emissions Comparison to PSD Thresholds						
New Equipment	53.21	40.47	12.45	10.60	10.60	0.69
Plant 2 Net Emissions	-34.03	-36.20	-4.38	0.62	0.62	0.01
Total Project Changes	19.18	4.27	8.07	11.21	11.21	0.70
PSD SEI Threshold	100.00	40.00	40.00	15.00	10.00	40.00
Significant Emissions Increase?	**NO**	**NO**	**NO**	**NO**	**YES**	**NO**
Emissions Netting with Contemporaneous Emissions Decrease						
Total Project Changes	--	--	--	--	11.21	--
Plant 1 Shutdown	--	--	--	--	-1.35	--
Net Emissions Increase	--	--	--	--	9.87	--
PSD SEI Threshold	--	--	--	--	10.00	--
Significant Emissions Increase?	--	--	--	--	**NO**	--

Table 4-6 demonstrates that the BCR Project is not a PSD Major Modification. We note that subsequent to all the equipment shutdowns anticipated in Phases I and II, the BCS will no longer be a PSD Major Source (> 250 tpy) of CO, but will remain a PSD Major Source of NO_x, although at a greatly reduced overall PTE.

[3] The first step was determining that the facility is a PSD major source, e.g., with a facility-wide NO_x PTE of over 250 tpy.

5.0 Health Risk Assessment

This section of the ATC application discusses the methodology used and the results obtained from the HRAs for the proposed new EUs at the BCR Project. Per MDAQMD Rule 1320, HRA results were obtained for each individual equipment to make risk determinations per EU.

5.1 Air Dispersion Modeling Approach

Air dispersion models calculate the atmospheric transport and fate of pollutants from the emission source. The models calculate the concentration of selected pollutants at specific downwind ground-level points, such as residential or off-site workplace receptors. The transformation (fate) of an airborne pollutant, its movement with the prevailing winds (transport), its crosswind and vertical movement due to atmospheric turbulence (dispersion), and its removal due to dry and wet deposition are influenced by the pollutant's physical and chemical properties and by meteorological and environmental conditions. Factors such as distance from the source to the receptor, meteorological conditions, intervening land use and terrain, pollutant release characteristics, and background pollutant concentrations affect the predicted air concentration of an air pollutant. Air dispersion models take these factors into consideration when calculating downwind ground-level pollutant concentrations.
All geographical coordinates referenced in this Section and Appendix E are in the Universal Transverse Mercator (UTM) coordinate system, with the WGS84 Datum, zone 11. AERMOD air dispersion modeling input files used to create the dispersion characteristics for the HRA are provided in Appendix E-1.

5.1.1 Model Selection

The air dispersion modeling methodology is based on generally accepted modeling practices. The air dispersion model used for the HRAs was AERMOD Version 16216r, with the Lakes Environmental Software implementation/user interface, AERMOD View™ Version 9.4.0. AERMOD was run with all sources emitting unit emissions (1 gram/second) to obtain the X/Q values that are necessary for input into HARP2.

5.1.2 Modeling Options

Regulatory defaults, the "Rural" modeling option, and "Elevated" terrain were used for the analyses.

5.1.3 Meteorological Data

AERMOD-ready pre-processed meteorological (MET) data files were obtained directly from the ARB's HARP website (https://www.arb.ca.gov/toxics/harp/admrt.htm). Blythe Airport was chosen as the MET station closest to and most representative of conditions at the facility. The MET data files contained data for the years 2009 through 2014.

5.1.4 Elevation Data

Digital elevation data were imported into AERMOD and elevations were assigned to receptors, buildings, and emission sources, as necessary. Digital elevation data were obtained through the AERMOD View™ WebGIS import feature in the United States Geological Survey's (USGS) Digital Elevation Model (DEM) format, with a resolution of 10-meter grid spacing.

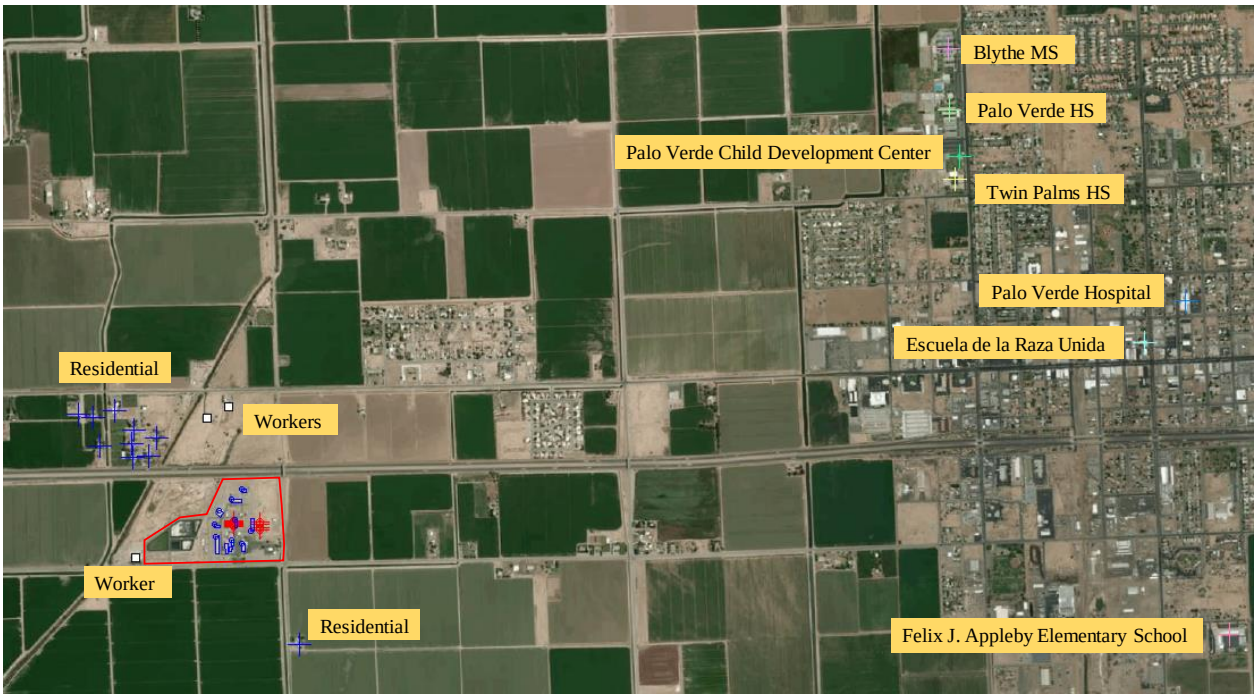
5.1.5 Receptors

HRA results were obtained at various locations around the facility. A grid of receptors was located to determine the MICR location, plus discrete receptors that were positioned at specific locations of concern. Per MDAQMD guidance, the MICR receptor is located in any current residential area and areas that may be developed for residential uses in the future, or any current worker locations or areas zoned for workplaces.

A plot plan of the facility was overlaid on an aerial map to establish the facility boundary. The facility boundary encompasses the existing facility and the proposed Project. Fenceline receptors were placed every 50 meters apart, except along the northern edge of the property, since the northern edge of the property is along the southern edge of the I10 Freeway. Gridded receptors were located 100 meters apart from the fenceline out 2,000 meters to capture the MICR.

Discrete Cartesian receptors were used to evaluate the locations of the maximally exposed residential, sensitive and off-site workplace. No schools are located within 2 kilometers. A series of receptors were placed at the residences to the northwest and southeast of the project. Receptors were located at the nearest schools, daycare center, and hospital. The nearest off-site worker is immediately west of the facility. Figure 5-1 shows the locations of the discrete receptors, with the property line identified in red.

Figure 5-1: Residential, Sensitive, and Worker Receptor Locations



5.1.6 On-Site Buildings

The on-site buildings close to the emission sources were included in the modeling using the best available dimensional data. Building downwash effects were assessed using BPIPPRIME.

5.1.7 Emission Sources and Release Parameters

The exhaust stacks from each new turbine, new generator and existing Clark engine were modeled as individual point sources. Each emission source was sited using the plot plan

provided, as shown in Figure 1-2. The release parameters for each source that are shown in Table 5-1 were provided by the project engineer. SoCalGas is proposing to install 4 new turbines, with 1 reserved as a backup, for the BCR Project. To ensure health impacts were not underestimated, health risk impacts were determined for all 4 turbines operating 24/7 all year, to present the individual EU risk, as required by MDAQMD Rule 1320.

Table 5-1: Emission Sources and Release Parameters

Description	Stack IDs	Stack Height	Stack Diameter	Stack Velocity	Stack Temp	UTM x	UTM y
		H_S	D_S	V_S	T_S	NAD83 z11	NAD83 z11
		m	M	m/s	°K	m	m
Plant 2 Natural Gas-Fired Clark Compressors	CLARK11	9.27	0.51	37.94	509.82	718,706	3,720,886
	CLARK12	9.27	0.51	37.94	509.82	718,713	3,720,886
	CLARK13	9.27	0.51	37.94	509.82	718,721	3,720,886
	CLARK14	9.27	0.51	37.94	509.82	718,728	3,720,886
	CLARK15	9.27	0.51	37.94	509.82	718,735	3,720,886
Plant 4 – Natural Gas-Fired Turbine Driven Compressors	TURB1	18.29	2.29	18.40	688.71	718,834	3,720,805
	TURB2	18.29	2.29	18.40	688.71	718,834	3,720,793
	TURB3	18.29	2.29	18.40	688.71	718,834	3,720,780
	TURB4	18.29	2.29	18.40	688.71	718,834	3,720,768
Generator Building – Natural Gas-Fired Generators	GEN1	7.62	0.44	14.81	878.71	718,715	3,720,785
	GEN2	7.62	0.44	14.81	878.71	718,715	3,720,791
	GEN3	7.62	0.44	14.81	878.71	718,715	3,720,796
	GEN4	7.62	0.44	14.81	878.71	718,715	3,720,801
	GEN5	7.62	0.44	14.81	878.71	718,715	3,720,807
	GEN6	7.62	0.44	14.81	878.71	718,715	3,720,813

5.2 HRA Approach

The HRAs followed the Office of Environmental Health Hazard Assessment (OEHHA) Tier-1 techniques to calculate the health risk impacts at all receptors including the nearby residential, sensitive and off-site worker receptors[4]. The health risk calculations were performed using the Hotspots Analysis and Reporting Program Version 2 (HARP2) Risk Assessment Standalone Tool (RAST, version 17052). The X/Q values that were determined for each source using AERMOD were imported into HARP2 and used in conjunction with hourly and annual emissions to determine the ground level concentrations (GLC) for each pollutant. The GLC are then used to estimate the long-term cancer health risk to an individual, and the non-cancer chronic and acute health indices.

A description of the health risk indices in the HARP2 output is provided below.

5.2.1 Maximum Individual Cancer Risk

The MICR is the estimated probability of a maximally exposed individual potentially contracting cancer because of exposure to TACs over a period of 30 years for residential receptor

[4] Office of Environmental Health Hazard Assessment (OEHHA), 2015, Air Toxics Hot Spots Program, Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments, February.

locations and 25 years for off-site worker receptor locations. Sensitive receptors such as schools, hospitals, convalescent homes, and day-care centers are evaluated the same as residences.

The exposure pathways used to estimate the MICR for both residential/sensitive receptors and off-site workplace receptors are listed in Table 5-2. Any exposure pathways not explicitly shown in Table 5-2, e.g., drinking water, livestock or fish consumption, were not included in the HRAs. Within 2 kilometers from the project site, there are no drinking water reservoirs and currently there are no cattle, dairy, pig or chicken farms. The Colorado River is approximately 10 kilometers from the site, thus the fish consumption pathway was not included.

Table 5-2: Exposure Pathways

Exposure Pathway	Residential/Sensitive	Off-Site Workplace
Inhalation	Yes	Yes
Homegrown Produce	Yes	No
Dermal	Yes	Yes
Soil Ingestion	Yes	Yes
Mother's Milk	Yes	No

Cancer risk was estimated used the "OEHHA Derived" calculation method and a deposition velocity of 0.02 meters per second. The "OEHHA Derived" method uses high end exposure parameters for the top two exposure pathways and mean exposure parameters for the remaining pathways for cancer risk estimates. The BCR Project will be permitted to operate 24/7, thus, no worker adjustment factor (WAF) was applied in HARP2.

5.2.2 Chronic Hazard Risk

Some TACs increase non-cancer health risk due to long-term (chronic) exposures. The Chronic Hazard Index (HIC) is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system. The HIC estimates for all receptor types used the "OEHHA Derived" calculation method. The reported HIC is for the maximally-affected target organ system.

5.2.3 Acute Hazard Risk

Some TACs increase non-cancer health risk due to short-term (acute) exposures. The Acute Hazard Index (HIA) is the sum of the individual substance acute hazard indices for all TACs affecting the same target organ system. Acute risk is calculated from a 1 hour exposure using the "OEHHA Derived" calculation method. The reported HIA is for the maximally-affected target organ system.

5.2.4 Cancer Burden

Cancer burden is the estimated increase in the occurrence of cancer cases in a population subject to a MICR of greater than or equal to one in one million (1.0×10^{-6}) based on a 70-year exposure to TACs. The cancer burden is determined for the population located within the zone of impact, defined as the area within the one in one million cancer risk isopleth for a 70-year exposure. Cancer burden is only estimated if the cancer risk is greater than one in one million.

5.3 HRA Results

The HARP2 output reports for all results presented in this section can be found in Appendix E-2. The maximum predicted cancer risk (both with and without emissions controls), HIC and HIA per EU from the AERMOD/HARP2 HRAs are summarized in Table 5-3. Peak cancer risk, HIC and HIA per EU at nearby residential, sensitive and worker receptors are presented in Appendix E. Since the cancer risk for each EU after emissions control was predicted to be less than 1 in a million at the nearest resident, cancer burden was not estimated.

T-BACT is determined per EU if a moderate risk is identified. Moderate risk is defined as a EU for which an HRA indicates the MICR is greater than one in one million (1 x 10-6) at the location of any receptor. Based on the results from the HRAs, T-BACT will be required for the new generators and the Clark engines since the cancer risk of the uncontrolled emissions is greater than one in one million as shown in Table 5-3. T-BACT will be met with the installation of oxidation catalysts on the Clark compressors and an NSCR/3-way catalyst per each new generator. In addition, the turbine driven compressors will have oxidation catalysts to control TAC emission.

Table 5-3: Maximum Health Risk Per Emission Unit

Source	With Uncontrolled Emissions	With Controlled Emissions		
	Cancer Risk (in a million)	Cancer Risk (in a million)	Chronic Hazard Index	Acute Hazard Index
Turbine1	0.122	0.024	0.0003	0.0016
Turbine2	0.121	0.024	0.0003	0.0018
Turbine3	0.121	0.024	0.0003	0.0014
Turbine4	0.123	0.025	0.0003	0.0013
Generator1	6.623	1.325	0.004	0.023
Generator2	8.744	1.749	0.006	0.022
Generator3	10.116	2.023	0.007	0.023
Generator4	10.355	2.071	0.007	0.023
Generator5	9.565	1.913	0.006	0.023
Generator6	9.085	1.817	0.006	0.023
Clark11	13.348	5.339	0.013	0.041
Clark12	13.315	5.326	0.013	0.046
Clark13	12.855	5.142	0.013	0.047
Clark14	12.279	4.912	0.012	0.049
Clark15	12.726	5.091	0.013	0.049

6.0 RULE COMPLIANCE EVALUATION

The MDAQMD is the regional air agency responsible for permitting equipment within the portion of Riverside County in which the BCS is located. MDAQMD implements the requirements of the federal and California Clean Air Acts by formulating air quality management plans and adopting rules. In addition to regional and federal air programs, California has established regulations associated with air toxics control measures and greenhouse gas emission standards. The following rules and regulations are applicable to the proposed permitting actions.

6.1 MDAQMD Air Quality Regulations

6.1.1 Regulation II – Permits

6.1.1.1 Rule 201 – Permits to Construct

Requires that the owner/operator obtain an authority to construct (ATC) permit prior to building, erecting, installing, altering or replacing any equipment which may cause the issuance of air contaminants. An ATC shall remain in effect until the permit to operate (PTO) is granted.

6.1.1.2 Rule 203 – Permit to Operate

Requires that the owner/operator obtain a PTO for the equipment at a facility and that the equipment must be operated in compliance with to the conditions specified in the PTO.

6.1.2 Regulation III – Fees

6.1.2.1 Rule 301 – Permit Fees

An application filing fee as defined in Rule 301(C)(1) is required for each new or modified emissions unit, with the current non-refundable filing fee of $269 per unit applicable until the end of 2017. Filing fees are also required for each control device unit.

Per Rule 301(C)(2), a Project Evaluation Fee for Complex Sources may also be assessed where a Health Risk Assessment (HRA) is required. This fee or a deposit is payable upon notice and invoicing by the District. Since HRAs have been included in this application, the $6,500 is included with the application fee in order to expedite processing.

6.1.2.2 Rule 302 – Other Fees

Two fees identified in Rule 302 apply to the proposed permitting action. An application for Emissions Reduction Credits (ERC) is required to include an application fee of $368 per Rule 302(H)(1). In addition, an Analysis Fee per 302(D) may be required if source testing is needed to support the ERC calculations. Fees associated with analyses will be provided upon invoicing by the MDAQMD.

Table 6-1 provides a summary of the fees associated with this application. A check for the amount shown is provided with this application package.

Table 6-1: MDAQMD Application Filing Fees

Equipment	Quantity	Rate	Extended
Air Emission Units			
Plant 4 New Turbine Driven Compressors	4	$269	$1,076.00
Generator Bldg – New Electric Generators	6	$269	$1,614.00
Plant 2 – Modified Clark Compressors	5	$269	$1,345.00
Fire Water Pump	1	$269	$269.00
Subtotal	**16**	**$269**	**$4,304.00**
Air Emission Control Device			
Plant 4 – SCRs	4	$269	$1,076.00
Plant 4 – oxidation catalysts	4	$269	$1,076.00
6 New 3-Way Catalysts	6	$269	$1,614.00
Plant 2 – Clark oxidation catalysts	5	$269	$1,345.00
Subtotal	**19**	**$269**	**$5,111.00**
Emission Reduction Credits			
ERC Review	1	$368	$368.00
Subtotal	**1**	**$368**	**$368.00**
Complex Source Deposit			
Project Evaluation Fee	1	$6,500	$6,500.00
Subtotal	**1**	**$6,500**	**$6,500.00**
Total	**36**	--	**$16,283.00**

6.1.3 Regulation IV – Prohibitions

6.1.3.1 Rule 401 – Visible Emissions

All sources at the BCS will be fired on pipeline quality natural gas. Visible emissions exceeding the limits of this rule are not expected during normal operations.

6.1.3.2 Rule 402 – Nuisance

Nuisance problems are not expected as a result of this permitting action.

6.1.3.3 Rule 403 – Fugitive Dust

Fugitive dust mitigation measures will be implemented during construction. Operation of the proposed project does not include sources of fugitive dust, thus, compliance with this rule is expected.

6.1.3.4 Rule 404 – Particulate Matter-Concentration

Installation and operation of the turbines, generators, and modifications to the Clark engines are not expected to result in particulate matter emissions in excess of the applicable concentration listed in Table 404(a) due to the equipment being fired exclusively on natural gas. Therefore, compliance with this rule is expected.

6.1.3.5 Rule 407 – Liquid & Gas Air Contaminants

This rule requires that a person shall not discharge into the atmosphere from any equipment:

1. Carbon monoxide (CO) exceeding 2,000 ppm by volume measured on a dry basis, averaged over 15 consecutive minutes.

CO emissions from the proposed turbines and modified Clark engines will be controlled with oxidation catalysts, and the proposed generator CO emissions will be controlled with 3-way catalysts. Therefore, compliance with this rule is expected.

6.1.3.6 Rule 409 – Combustion Contaminants

This rule requires that a person shall not discharge into the atmosphere from any equipment combustion contaminants exceeding 0.1 grain per cubic foot of gas calculated to 12 percent of CO_2 at standard conditions averaged over a minimum of 15 consecutive minutes. All combustion equipment with non-emergency operations at the BCS will be fired on natural gas. Therefore, compliance with this rule is anticipated.

6.1.4 Regulation IX – Standards of Performance for New Stationary Sources

Regulation IX, New Source Performance Standards (NSPS), was adopted by reference as set forth in 40 Code of Federal Regulations, Part 60 (40 CFR 60). These regulations are periodically updated to reflect actions published in the Federal Register (FR) by the EPA.

6.1.4.1 40 CFR 60 Subpart GG – Standards of Performance for Stationary Gas Turbines

This NSPS is applicable to stationary gas turbines with a heat input at peak load equal to or greater than 10 MMBtu per hour, based on the lower heating value of the fuel fired which commenced construction after October 3, 1977. Because 40 CFR 60 Subpart KKKK applies pursuant to Section 63.4305(b), the requirements of this NSPS do not apply.

6.1.4.2 40 CFR 60 Subpart KKKK – Standards of Performance for Stationary Combustion Turbines

This NSPS is applicable to the turbines because they have a heat input at peak load equal to or greater than 10 MMBtu per hour, based on the higher heating value of the fuel, and commenced construction after February 18, 2005. Units installed after February 18, 2005 must comply with this regulation, which contains emissions standards for NOx and SOx, along with associated monitoring, reporting, recordkeeping, and testing requirements. Table 1 of the regulation gives the NOx emissions standards. The mechanically driven turbines proposed for the BCR Project are 71.8 MMBtu/hr, and fall into the category of new turbines firing natural gas between 50 MMBtu/hr and 850 MMBtu/hr at peak load. New turbines in this size range have a NOx emissions limit of 25 ppm @ 15% O2 during normal operation, and a limit of 150 ppm when operating at less than 75% load, including startup and shutdown. The proposed BACT NOx limit for the BCS turbines is 8 ppm steady state and 12 ppm during transition, which is less than the 25 ppm or 150 ppm limits for NOx. Therefore, the BCS turbines will be in compliance with the NOx concentration limit of this regulation. Sulfur content of the natural gas purchased will be < 0.05% by weight, and SO2 emissions are expected to be well below 0.06 lb/MMBtu standard (emission rate of 0.0006 lb/MMBtu is assumed). Therefore, the turbines will be in compliance with the SOx emission requirements of this regulation.

6.1.4.3 40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

This NSPS applies to spark ignited internal combustion engines which commenced construction after June 12, 2006. This regulation is applicable to the new generators. The generators must meet the standards for non-emergency spark ignition fueled with natural gas with maximum engine power ≥ 500 HP. These emission standards are 82 ppm for NO_x, 270 ppm for CO and 60 ppm for VOC at 15% O_2, which the proposed generators will meet. This regulation is not applicable to the existing Clark compressors as they were constructed prior to June 12, 2006 and the modifications are not reconstructions.

6.1.4.4 40 CFR Part 60, Subpart OOOOa – Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015

This subpart applies to each centrifugal compressor facility, which is a single centrifugal compressor using wet seals. The BCR Project proposes to install dry seal turbine driven compressors, which are not subject to this subpart.

The requirements of Subpart OOOOa will be subsumed by compliance with the ARB Oil & Gas Regulation which is described in more detail in Section 6.2 below.

6.1.5 Regulation X – National Emission Standards for Hazardous Air Pollutants

Regulation X, National Emission Standards for Hazardous Air Pollutants (NESHAP), was adopted by reference to the appropriate section of the CFR. These regulations are periodically updated to reflect actions published in the FR by the Environmental Protection Agency. Applicability of these regulations depend on whether the facility is a major or area source. A major source is defined as a facility with emissions of 10 tpy or more of a single HAP or 25 tpy or more of a combination of HAPs. An area source of HAP emissions is a source that is not a major source.

Currently the BCS is a major source of HAPs due to emission of formaldehyde. After full implementation of the BCR Project, the total combined HAPs from all sources will be less than 25 tpy and from any individual HAP will be less than 10 tpy, and BCS should consider reclassified as an area source. Due to the phasing of the project, the following NESHAPs are applicable.

6.1.5.1 40 CFR Part 63, Subpart YYYY – National Emission Standards for Hazardous Air Pollutants for Stationary Gas Turbines

This regulation applies to gas turbines greater than 1.0 MW located at major sources of HAP emissions. EPA placed a stay on Subpart YYYY for lean premix gas-fired turbines on August 8, 2004. EPA specifically identified turbines for use in natural gas transmission (SIC Code 4922, NAICS 486210, Natural gas transmission), as subject to this stay. The EPA identified this stay as necessary to avoid wasteful and unwarranted expenditures on installation of emission controls which will not be required if the subcategories are delisted. Therefore, there are no Maximum Available Control Technology (MACT) emission limits required for the new turbines, although the new turbines must comply only with the Initial Notification pursuant to 40 CFR 63.6145. The permitting of the BCR Project as a Major Modification to the BCS Title V (Federal) Operating Permit, will serve as Initial

Notification to EPA through the mandatory review and to MDAQMD as a delegated authority.

6.1.5.2 40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

As rich-burn engines over 500 HP at a major source of HAP, the new generator engines must meet a 76% formaldehyde reduction. Alternatively, engines in this category can also demonstrate compliance through either a 30% Total Hydrocarbon (THC) reduction, 75% CO reduction, or 270 ppmvd CO @ 15% O_2. If BCS is reclassified as an area source of HAP, 40 CFR 63 Subpart ZZZZ compliance is achieved through demonstration with 40 CFR 60 Subpart JJJJ limit of 270 ppmvd CO @ 15% O_2. Since a CO BACT level of 0.60 g/BHP-hr is less than 270 ppm @ 15% O_2, 40 CFR 63 Subpart ZZZZ compliance is achieved through the CO BACT limit, rather than the 76% formaldehyde reduction. If the BCS remains a major source of HAP emissions, the generator engines will also be subject to a Continuous Process Monitoring System (CPMS) for exhaust temperature at the catalyst inlet, and monthly catalyst differential pressure measurements.

40 CFR 63 Subpart ZZZZ is not applicable to the exiting Clark engines pursuant to Section 63.6590(b)(3) since these are two-stroke lean burn (2SLB) engines each with a rating of more than 500 bhp located at a major source of HAP emissions. If the BCS becomes an area source of HAP emissions, the existing Clark engines will be subject to the maintenance requirements in 40 CFR 63 Subpart ZZZZ Table 2d.6.

6.1.6 Regulation XI – Source Specific Standards

6.1.6.1 Rule 1159 – Stationary Gas Turbines

The purpose of this rule is to limit the emission of NO_x from commercial, industrial and institutional Stationary Gas Turbines 0.3 MW and larger. The new turbines will meet the NO_x emission limit of 25 ppmv and 200 ppmv of CO at 15% O_2.

6.1.6.2 Rule 1160 – Internal Combustion Engines

This rule does not apply because the BCS is not located in a federal ozone non-attainment area.

6.1.7 Regulation XII – Federal Operating Permits

This regulation contains requirements for sources which must have a federal operating permit. The identified changes constitute a significant modification of the Title V permit. Specific requirements of Regulation XII are stipulated as shown below.

6.1.7.1 Rule 1202 – Applications

This rule designates that official applications will be used as necessary under Regulation XII and outlines the specified information which shall be included on the official application to the Air Pollution Control Officer to determine completeness as well as provides a timeline for that determination. This application includes official District forms. The District will evaluate this permitting action to determine if it will be a significant modification and will be processed as such according to the procedure specified in the rule.

6.1.7.2 Rule 1203 – Federal Operating Permits (FOP)

The rule defines the permit operating term, stipulates the process by which FOPs, Significant Modifications to FOPs and Renewals of FOPs shall be issued. This rule further identifies restrictions on issuance, permit contents, operational flexibility, compliance certification, permit shield, and violation of permit conditions. The proposed FOP action is considered a significant permit modification. The District is responsible for obtaining EPA, State, and public review within the specified comment period in accordance with the procedure outlined in Rule 1203(B)(1).

6.1.7.3 Rule 1205 – Modifications of Federal Operating Permits

This rule specifies the process by which FOP are modified. The District will determine if the action constitutes a significant permit modification and will incorporate the changes as required by Regulation XII, as applicable.

6.1.8 Regulation XIII – New Source Review

This regulation is applicable to any new or modified Facility or Emissions Unit which requires a permit pursuant to the provisions of District Regulation II.

6.1.8.1 Rule 1302 – Procedure

Rule 1302 outlines the procedures for preparing an ATC permit application.

6.1.8.2 Rule 1303 – Requirements

The BACT and offset requirements of Regulation XIII are addressed in this rule.

BACT: Any new or modified Permit Unit which emits, or has the Potential to Emit, 25 lbs/day or more of any Nonattainment Air Pollutant shall be equipped with BACT. Plus any new or Modified Facility which emits, or has the Potential to Emit, 25 tpy or more of any Nonattainment Air Pollutant shall be equipped with BACT for each new Permit Unit. BACT will apply to new units for NO_x and ROC per Rule 1303 (A)(3) since the facility has a PTE > 25 tpy of these non-attainment pollutants. A full top-down BACT analysis was conducted and is presented in Section 3.

Offsets: Based on the emissions netting analysis presented in Section 4.3 and the rule thresholds, this facility is using SERs to offset the non-attainment pollutants. Rule 1305 describes the techniques for calculating the required offsets, including the use of SERs.

6.1.8.3 Rule 1304 – Emissions Calculations

The BCR Project involves the closure, modification and new installation of various emission sources. This rule outlines how to account for the emission reductions and increases. Section 4 follows the requirements of this rule in the calculation of the emissions associated with the BCR Project.

6.1.8.4 Rule 1305 – Emissions Offsets

This Rule provides the procedures and formulas to determine the eligibility of, calculate the amount of, and determine the use of Offsets required pursuant to the provisions of District Rule 1303(B). The provisions of this rule have been followed in the netting analyses provided in Section 4 of this application.

6.1.8.5 Rule 1310 – Federal Major Facilities and Modifications

This rule sets additional requirements for Federal Major Facilities and Modifications. The existing BCS is a major federal source, although the modifications proposed in the BCR Project are less than the federal significant emissions increase threshold, thus the project is not a Federal Major Modification, and this rule is not applicable.

6.1.8.6 Rule 1320 – New Source Review for Toxic Air Contaminants

This rule is applicable to all new, Modified or Relocated Facilities or Permit Units which emit or have the potential to emit any HAP, TAC, or Regulated Toxic Substance. MDAQMD Rule 1320 follows a step-wise process for evaluating applications for compliance with air toxics requirements. The initial steps are outlined below, including applicability of Federal and State T-NSR, and conducting HRAs for each EU.

Federal T-NSR: The BCS is currently considered a major source of HAP, and therefore is subject to Federal T-NSR. MDAQMD Rule 1320 requires that if a facility is subject to Federal T-NSR, any applicable NESHAP will apply. The BCR Project would be required to comply with any applicable currently enforceable NESHAP s, or a case-by-case MACT standard as determined by the MDAQMD. Two NESHAPs are applicable to the new equipment: Subpart YYYY (turbines) and Subpart ZZZZ (new generators) as outlined in Regulation X, NESHAPs, although Subpart YYYY is currently stayed.

State T-NSR Program Analysis (State T-NSR): This subsection requires the applicant and MDAQMD to identify and include in the permitting analysis any applicable and currently enforceable California Air Toxics Control Measures (ATCM). Based on our review of the project components, as a natural-gas fired facility Blythe is not currently subject to a California ATCM.

The new proposed FWP is subject to the Stationary Compression Ignition (CI) Engine ATCM. The FWP permit will include a 200 hour/year operating limit, and will not be operated more than 50 hours per year for maintenance and testing, in accordance with the ATCM. The FWP will comply with State T-NSR through these permitted operating limits.

Health Risk Assessment (HRA): Under the State T-NSR, Rule 1320 requires evaluation of each Emission Unit using prioritization scoring and an HRA if the prioritization score is high. Section 5 describes the HRAs conducted for the BCR Project.

The HRA predicted that each uncontrolled existing Clark engine and some of the proposed electric generators would have a cancer risk at the MICR location of slightly over 10 in a million (see Table 5-3), meaning the facility would be classified as a Significant Health Risk, thus T-BACT is required. T-BACT is the installation of an oxidation catalyst on the Clark engines and an NSCR/3-way catalyst on the new generators. The HRA of the proposed, post-controlled equipment results classifies this facility as a Moderate Risk, meaning the MICR is greater than or equal to one (1) in one million (1x10-6) at the location of any receptor. No further analyses is required for the facility designated as a Moderate Risk other than the continued tracking of this facility's actual emissions on an annual basis, which is required by AB2588 and the District's Emissions Inventory Program.

6.1.9 Regulation XIV – Emission Reduction Credit Banking

Section 4.4 describes the excess NO_x and ROC SERs that may be available for ERC banking from the various facility equipment shutdowns and modifications at Plant 2. As outlined in

Section 4.4, SoCalGas is applying to bank up to 160 tons of NO_x ERCs and possibly a small amount of ROC.

6.1.10 Regulation XV – Emission Standards for Specific Toxic Air Contaminants

6.1.10.1 Rule 1520 – Control of Toxic Air Contaminants from Existing Sources

This rule applies on a facility-wide basis requiring public notice and/or risk reduction at elevated levels of health risk for existing facilities based on actual levels of TAC emissions. For the purposes of this permitting action, all EUs were assessed based on their maximum rated capacity for compliance with T-NSR requirements. Section 5 describes the HRAs conducted for all sources at the BCR Project based on PTE for each source and represents a worst-case health risk impact. This rule applies to existing or actual sources. As past operational records show, the plant will not operate at full capacity all year, thus an HRA based on actual operations will predict even lower health risks.

6.1.11 Regulation XVI – Prevention of Significant Deterioration (PSD)

This rule is applicable to projects that have emissions of attainment pollutants greater than the new Major PSD Facilities and Major PSD Modifications thresholds. Section 4.5 presents an applicability assessment of PSD, and determines that the BCR Project is not a PSD Major Modification.

6.2 California Regulations

6.2.1 Diesel-Fired Engine Air Toxics Control Measures

The BCR Project FWP will be driven by a diesel-fired engine subject to the emission standards required by the California ATCM for Stationary Compression Ignition (CI) Engines. Section 93115.6(a)(4) sets emission standards and limits the number of operating hours necessary to comply with National Fire Protection Association (NFPA) testing requirements for new direct drive fire pump engines.

6.2.2 Distributed Generation Standards

California set NO_x, CO, VOC, and PM emission standards for distributed generation (DG) units that produce electricity near the place of use. The new BCR Project generators are subject to the DG Unit emission standards. The BCR Project generators are subject to BACT requirements, which require the installation of control technology that achieves emission levels below the DG Unit standards. Therefore, compliance with this regulation is expected.

6.2.3 Greenhouse Gas Regulations

The BCS is subject to the California regulation for the mandatory reporting of GHG emissions. The reporting of GHG emissions is based on actual fuel consumption. SoCalGas will continue to maintain appropriate GHG allowances for compliance with the ARB greenhouse regulations.

6.2.4 ARB Oil & Gas Regulation

The BCS is subject to the California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 13: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. As a natural gas transmission

compression station, BCS will comply with the ARB Oil & Gas regulation which takes effect January 1, 2018.

6.2.5 California Environmental Quality Act (CEQA)

Since this is a modification of an existing facility, the requested permit action is ministerial in nature, therefore, is not subject to review under CEQA.

APPENDIX A – PLOT PLAN AND MDAQMD APPLICATION FORMS

Number of Forms	Title	Device Description
4	General Application Form	4 new turbine driven compressors
8	Air Pollution Control Equipment Application Form	4 Selective Catalytic Reduction (SCR) Systems and 4 Oxidation Catalyst Systems (both systems each per turbine driven compressor)
6	Internal Combustion Engine Permit Application Form	6 new electric generators
6	Air Pollution Control Equipment Application Form	6 Non-Selective Catalytic Reduction (NSCR)/3-Way Catalyst Systems (1 each per engine driven generator)
5	Internal Combustion Engine Permit Application Form	Changes to 5 existing Plant 2 Clark compression engines
1	Internal Combustion Engine Permit Application Form	1 new engine for the FWP
1	Title V – Permit Amendment/Modification (Form 1202N)	Revision of the FOP for this Facility

Appendix C Addendum
Blythe Application Package

Yorke
ENGINEERING, LLC
www.YorkeEngr.com

December 21, 2017

Mr. Alan De Salvio
Deputy Director – Mojave Desert Operations
Mojave Desert Air Quality Management District
14306 Park Avenue
Victorville, CA 92392
Work: (760) 245-1661 x6726
E-mail: ADeSalvio@MDAQMD.CA.gov

Subject: Southern California Gas Company, Addendum to Blythe Compressor Station (Facility ID# 01437), Blythe Compressor Replacement Project

Dear Mr. De Salvio:

In mid-September, Southern California Gas Company (SoCalGas) submitted an Authority to Construct (ATC) and Title V operating permit revision application for modifications to the Blythe Compressor Station (BCS) associated with the Blythe Compressor Replacement (BCR) Project. Since the submittal of this application, SoCalGas has made some minor tweaks to the scope of the BCR Project that update the information included in the initial application. It's my understanding that when Karin Fickerson of SoCalGas spoke to you in November to discuss the changes, it was agreed that SoCalGas should submit this addendum to describe the changes.

This Addendum to the previously submitted application package includes new information, as described in this letter, and attachments, which update or replace the information in the Appendices to the September application as follows:

- Attachment 1 (Updates to Application Appendix A) – Updated plot plan and application form mark-up
- Attachment 2 (Updates to Application Appendix B) – Replacement specification sheet for the generators;
- Attachment 3 (Updates to Application Appendix D) – Updated criteria pollutant emissions calculations, including netting analyses, and toxic air contaminant (TAC) emissions; and
- Attachment 4 (Updates to Application Appendix E) – Updated Health Risk Assessment (HRA) modeling files

Note, the changes are summarized and then a more detailed discussion is provided on each topic.

Updated Equipment Information

The BCR Project remains the same, i.e., new turbine-driven compressors and electric generators replace existing equipment. The proposed BCR Project tweaks include the following:

- Change the proposed equipment to now include five 1,088 brake horsepower (bhp) natural gas-fired engine generators – GE Power Waukesha VHP-7042GSI S4 with emPact Emission Control System – instead of six 1,044 bhp generators.

- The emergency diesel Fire Water Pump (FWP) engine may be a slight larger model, i.e., up to 250 bhp instead of 224 bhp;
- Clarify that one 10,000-gallon aqueous ammonia tank (<20% ammonia concentration) will be associated with the Selective Catalytic Reduction (SCR) control equipment;
- Don't take credit for the shutdown of the two engines in the Auxiliary Building (an Ingersoll Rand #PSVG and a Waukesha #F817QU) as a component of the BCR Project (they will be shut down in the first half of 2018 prior to the start of construction of the BCR Project);
- Delay shutdown of Plant 1 to provide overlap with commissioning of first two turbine-driven compressors in Plant 4; and
- The refurbishment of Plant 2 Clark engines will proceed throughout the BCR Project.

A specification sheet for the new generators is provided in **Attachment 2 (Appendix B)**.

Updated Emissions Calculations and Analyses

The equipment updates described above will result in changes to the emission inventory for the proposed BCR Project. Proposed changes related to emissions include the following:

Updated criteria pollutant and toxic air contaminant (TAC) emissions to reflect the equipment changes;

Updated equipment operation timing and the emissions netting analysis during Phase I, including delaying the shutdown of Plant 1 and adjusting the timing for the refurbishment of the Clark engines in Plant 2;

Provide discussions of the commissioning, startup, and shutdown operation, as well as the regulatory applicability related to the use of ammonia for emissions control; and

Update the health risk assessment (HRA) results to reflect the revision of the number and size of the generators, as well as the facility layout changes described below.

Updated criteria pollutant and air toxic emissions inventories, along with the updated netting analyses, are provided in **Attachment 3 (Appendix D)**. Updated HRA modeling files are provided in **Attachment 4 (Appendix E)**. No change to the Best Available Control Technology (BACT) evaluation (Appendix C to the application), analysis methods, or conclusions related to the requirements are considered necessary.

Revised Facility Layout

The facility layout has been revised to reflect the reduced number of generators, the ammonia tank, slight shifting of Plant 4, the new Operations Building, the new Administration Building, and the splitting of the Power Operations Center into two buildings. Specifically, the southwest corner of Plant 4 has been moved 64 feet east and 39.5 feet north. The dimensions of Plant 4 increased by 15 feet in the east/west direction and 25.5 feet in the north/south direction. The Plant 4 exhaust stacks each moved 46'-2" to the east and between 35' and 50' to the north.

A new plot plan and a markup of one of the new generator MDAQMD application forms to show the generator changes are provided in **Attachment 1 (Appendix A)**.

Yorke ENGINEERING, LLC
www.YorkeEngr.com

UPDATED EQUIPMENT INFORMATION

Equipment Updates

The above changes with respect to the revised two phases of the BCR Project are shown in Table 1 below, which replaces Table 1-1 included in the initial application.

Table 2: Equipment Affected by This Application

Plant	Existing Equipment	Phase I	Phase II
1	3 Clark Reciprocating Compressors	~~Equipment shutdown~~	Equipment shutdown
2	5 Clark Reciprocating Compressors	3 or more engines will be refurbished and oxidation catalysts installed	Refurbish remaining Clark engines, if any
3	2 Caterpillar Reciprocating Compressors	–	Equipment shutdown
Central Supporting	4 Caterpillar Generators	–	Equipment shutdown
~~Auxiliary Building~~	~~1 PSVG and 1 Waukesha A/C~~ (shutdown will occur prior to construction of the BCR Project)	~~–~~	~~Equipment shutdown~~
Ancillary	1 5,300-gallon waste oil storage tank and gasoline dispensing equipment	No change proposed	No change proposed
4	–	2 new turbine-driven compressors installed	2 new turbine-driven compressors installed
Generator Building	–	5 ~~6~~ new electric generators installed	–
FWP	–	1 new FWP and water tank installed	–
Ammonia Tank	–	1 new 10,000-gallon ammonia tank installed	–

Ammonia Regulatory Review

This BCR Project will include the installation of a 10,000-gallon aqueous ammonia storage tank. The tank will have an inner diameter of 8 feet and be 28 feet long. The requirements associated with ammonia are found in Code of Federal Regulations (CFR) Title 40 Part 68 and the California Accidental Release Prevention (CalARP) Program. Because the ammonia tank will contain 19% aqueous ammonia, it will not be subject to federal Risk Management Program (RMP) requirements pursuant to 40 CFR Part 68. The tank will be subject to the CalARP Program. A Risk Management Plan will be prepared for the proposed project.

UPDATED EMISSIONS CALCULATIONS AND ANALYSES

Commissioning and Equipment Installation Timing

Commissioning of the new turbines will consist of an 8-hour burn-out procedure prior to installing the catalyst in the housing to prevent catalyst damage and verify soundness of housing structure. Following burn-out, the turbines will go through startup sequencing testing to ensure operating performance of the units. During and following sequence testing, the ammonia injection gird will be tuned to optimize ammonia flow rate and nitrogen oxide (NO_x) reduction through the SCR bed.

Plant 1 will remain operating throughout commissioning until the operation of the first two new turbine-driven compressors in Plant 4 are integrated successfully to maintain station operability. To conservatively account for this overlap, the shutdown of Plant 1 has been moved from Phase I to Phase II as shown in Table 1 above.

Additionally, it is expected that the refurbishment of the Plant 2 Clark engines will proceed in steps. The current plan is to refurbish at least Clark #11 in 2018 and any remaining units in 2019 and 2020. This approach will allow SoCalGas to fine tune the retrofits and ensure that the engines are optimized. To make sure that there are sufficient Simultaneous Emissions Reductions (SERs) from Plant 2 to offset the emissions from the new equipment in Plant 4 and the Generator Building, the Phase I netting analysis has been revised to show three of the Plant 2 Clarks as refurbished in Phase I (in addition to Clark #11). An updated netting analysis is also provided in Attachment 2. Should MDAQMD have the opportunity to provide operational flexibility related to the Plant 1 overlap with Plant 4 commissioning of Phase I, it may be possible to show sufficient SERs from refurbishments of fewer Plant 2 Clarks than demonstrated in the netting analyses provided in this submittal.

This Addendum, as well as the prior application submitted in September 2017, has excluded the Clark #11 in Plant 2. This exclusion was based on the meeting between SoCalGas and Yorke representatives with MDAQMD staff in July 2017 to discuss the BCR Project. At that meeting, MDAQMD indicated that Clark #11 should be excluded since it was operating under a previously issued research permit. However, those emission reductions have not yet been achieved as SoCalGas has not yet implemented the retrofits, and it is requested that MDAQMD reconsider if those reductions can be included as SERs and/or banked Emissions Reduction Credits (ERCs) as part of the BCR Project.

Startup and Shutdown Emissions Limits

The following text was included in Section 3.2.6 in the ATC application:

> "The BACT determinations shown in Table 3-5 will be applied during normal operation. For all equipment, the proposed emission rates will not apply during the equipment start-up not exceeding two hours in duration during which the unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. Similarly, these emission rates will not apply during shutdown period of time during which the unit is taken from an operational to a non-operational status by allowing it to cool down from its operating

temperature to ambient temperature as the fuel supply to the unit is completely turned off."

To account for these periods, SoCalGas proposes that the same permit conditions as those contained in the SoCalGas Wheeler Ridge Compressor Station permit in the San Joaquin Valley Air Pollution Control District (SJVAPCD) be included for the BCR Project, as follows:

25. Gas turbine engine startup is that period of time not exceeding two hours in duration during which the unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation.

26. Gas turbine engine shutdown is that period of time not exceeding two hours in duration during which the unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off.

NO_x emissions will be monitored via the NO_x Continuous Emissions Monitor during startup and shutdown and emissions during these periods will be maintained within the facility's annual emissions limits.

Revised HRA Results

As noted previously, the HRAs were redone to reflect the slight shifting of the location of buildings and the changes to the number and size of the generators. Updated TAC emissions are provided in Attachment 3. The latest stack parameters and building dimensions were incorporated. Revised HRA results are shown in Table 2, which is updated Table 5-3 from the ATC application. As before, the results indicate that risks remain below the thresholds. Comparing these results to the prior ones indicate that the HRA impacts are only slightly different.

Table 3: Maximum Health Risk Per Emission Unit

Source	With Uncontrolled Emissions	With Controlled Emissions		
	Cancer Risk (in a million)	Cancer Risk (in a million)	Chronic Hazard Index	Acute Hazard Index
Turbine1	0.144	0.029	0.0003	0.0020
Turbine2	0.163	0.033	0.0004	0.0018
Turbine3	0.253	0.051	0.0005	0.0016
Turbine4	0.186	0.037	0.0004	0.0016
Generator1	6.169	1.234	0.004	0.015
Generator2	7.098	1.420	0.005	0.016
Generator3	7.358	1.472	0.005	0.015
Generator4	5.881	1.176	0.004	0.015
Generator5	4.080	0.816	0.003	0.015
Clark11	13.348	5.339	0.013	0.041

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Source	With Uncontrolled Emissions	With Controlled Emissions		
Clark12	13.315	5.326	0.013	0.046
Clark13	12.855	5.142	0.013	0.047
Clark14	12.279	4.912	0.012	0.046
Clark15	12.726	5.091	0.013	0.046

SoCalGas appreciates the MDAQMD considering these changes. Please contact Karin Fickerson at (805) 681-8013 or via e-mail at KFickerson@SempraUtilities.com if additional information is needed to process this permit application with this additional information. We look forward to working with you to complete the preliminary permit as soon as possible.

Happy Holidays!

Sincerely,

Sara J. Head
Principal Scientist
SHead@YorkeEngr.com

cc: Sam Oktay, Mojave Desert Air Quality Management District
Karin Fickerson, Southern California Gas Company

Enclosures:

Attachment 1 – Proposed Facility Plot Plan and Revised Generator Application Form (Updates to Application Appendix A)
Attachment 2 – Generator Specification Sheet (Updates to Application Appendix B)
Attachment 3 – Emissions Calculations (Updates to Application Appendix D)
Attachment 4 – Health Risk Assessment Modeling Files (Updates to Application Appendix E)

Appendix D
2017 HARP Emissions Summary and Prioritization Score

2017 Emissions Summary:

File name: C:\SCG_Blythe_2017_District_Approved\SCG_Blythe_2017_District_Approved_09-25-18_Emissions_Summary.rtf

HARP Facility Emission Summary

HARP EIM Version: 2.1.1

Project Path: C:\SCG_Blythe_2017_District_Approved
Project Database: C:\SCG_Blythe_2017_District_Approved\SCG_Blythe_2017_District_Approved.mdb
CEIDARS Utility Database: C:\HARP2\Tables\CEIDARSTables022016.mdb
Facility List: N/A
Pollutant List: N/A
Sorting Order: FACID, CO, AB, DIS, YEAR, TOXAPPEN, POLABBREV
Date Created: 9/25/2018 1:46:50 PM
Operator: SJO

(Note: Emissions in LBS/YR for toxics, TONS/YR for criteria pollutants, CURRIES/YR for radio nuclides. * User defined pollutants are marked by an asterisk with the pollutant ID.)

FACILITY	NAME / ADDRESS / CITY	ZIP	CO	AB	DIS	CATEGORY	HAP	POLLUTANT	POLLUTANT ID	EMISSIONS	YEAR
3101437	SCG - BLYTHE			4922							
	13100 W 14TH AVENUE										
	BLYTHE	92225	33	MD	MOJ	A-I		1,2,4TriMeBenze	95636	0.734	2017
						A-I		Propylene	115071	1020.016	2017
						A-I	Y	1,3-Butadiene	106990	44.528	2017
						A-I	Y	2,2,4TriMePentn	540841	12.825	2017
						A-I	Y	Acenaphthene	83329	0.154	2017
						A-I	Y	Acenaphthylene	208968	1.009	2017
						A-I	Y	Acetaldehyde	75070	775.639	2017
						A-I	Y	B[b]fluoranthen	205992	2.207E-02	2017
						A-I	Y	B[e]pyrene	192972	2.129E-02	2017
						A-I	Y	B[g,h,i]perylen	191242	5.002E-02	2017
						A-I	Y	B[k]fluoranthen	207089	1.331E-02	2017
						A-I	Y	Benzene	71432	136.881	2017
						A-I	Y	Biphenyl	92524	10.876	2017
						A-I	Y	Chrysene	218019	4.997E-02	2017
						A-I	Y	Ethyl Benzene	100414	28.191	2017
						A-I	Y	Fluoranthene	206440	0.161	2017
						A-I	Y	Fluorene	86737	0.612	2017
						A-I	Y	Formaldehyde	50000	2247.684	2017
						A-I	Y	Hexane	110543	56.944	2017
						A-I	Y	Me t-ButylEther	1634044	0.983	2017
						A-I	Y	Methanol	67561	1883.187	2017
						A-I	Y	Naphthalene	91203	5.803	2017
						A-I	Y	Phenanthrene	85018	0.848	2017
						A-I	Y	Phenol	108952	1.231	2017
						A-I	Y	Pyrene	129000	0.153	2017
						A-I	Y	Styrene	100425	2.978	2017
						A-I	Y	Toluene	108883	135.358	2017
						A-I	Y	Xylenes	1330207	68.264	2017
						A-II		Isobutyraldehyd	78842	7.441	2017
						Crit		CO	42101	67.412	2017
						Crit		NOX	42603	385.805	2017
						Crit		PM	11101	9.430	2017
						Crit		PM10	85101	9.148	2017
						Crit		PM10-NON	85105	7.230	2017
						Crit		PM2.5	88101	9.430	2017
						Crit		PM25-NON	88105	7.233	2017
						Crit		PM-NON	11105	7.230	2017
						Crit		SOX	42401	0.200	2017
						Crit		TOG	43101	1.351E-02	2017
						Crit		VOC	43104	30.367	2017

2017 HARP Prioritization Score:

File name: C:\SCG_Blythe_2017_District_Approved\SCG_Blythe_2017_District_Approved_09-25-18_Prioritization.rtf

HARP Facility Prioritization Report

HARP EIM Version: 2.1.1

Reporting Year: 2017
Project Path: C:\SCG_Blythe_2017_District_Approved
Project Database: C:\SCG_Blythe_2017_District_Approved\SCG_Blythe_2017_District_Approved.mdb
CEIDARS Utility Database: C:\HARP2\Tables\CEIDARSTables022016.mdb
HARP Health Talbe: HEALTH201708
Sorting Order: DIS, AB, CO, TS, FACID
Date Created: 9/25/2018 1:48:00 PM
Operator: SJO

POLLUTANT HEALTH VALUES FROM HARP HEALTH DATABASE:

POLLUTANT ID	POLLUTANT	CANCERURF(INH) (ug/m^3)^-1	ACUTEREL ug/m^3	CHRONICREL(INH) ug/m^3
95636	1,2,4TriMeBenze	N/A	N/A	N/A
106990	1,3-Butadiene	1.70E-04	6.60E+02	2.00E+00
540841	2,2,4TriMePentn	N/A	N/A	N/A
83329	Acenaphthene	N/A	N/A	N/A
208968	Acenaphthylene	N/A	N/A	N/A
75070	Acetaldehyde	2.70E-06	4.70E+02	1.40E+02
205992	B[b]fluoranthen	1.10E-04	N/A	N/A
192972	B[e]pyrene	N/A	N/A	N/A
191242	B[g,h,i]perylen	N/A	N/A	N/A
207089	B[k]fluoranthen	1.10E-04	N/A	N/A
71432	Benzene	2.90E-05	2.70E+01	3.00E+00
92524	Biphenyl	N/A	N/A	N/A
218019	Chrysene	1.10E-05	N/A	N/A
42101	CO	N/A	N/A	N/A
42101	CO	N/A	N/A	N/A
100414	Ethyl Benzene	2.50E-06	N/A	2.00E+03
206440	Fluoranthene	N/A	N/A	N/A
86737	Fluorene	N/A	N/A	N/A
50000	Formaldehyde	6.00E-06	5.50E+01	9.00E+00
110543	Hexane	N/A	N/A	7.00E+03
78842	Isobutyraldehyd	N/A	N/A	N/A
1634044	Me t-ButylEther	2.60E-07	N/A	8.00E+03
67561	Methanol	N/A	2.80E+04	4.00E+03
91203	Naphthalene	3.40E-05	N/A	9.00E+00
42603	NOX	N/A	N/A	N/A
42603	NOX	N/A	N/A	N/A
85018	Phenanthrene	N/A	N/A	N/A
108952	Phenol	N/A	5.80E+03	2.00E+02
11101	PM	N/A	N/A	N/A
11101	PM	N/A	N/A	N/A
11101	PM	N/A	N/A	N/A
85101	PM10	N/A	N/A	N/A
85101	PM10	N/A	N/A	N/A
85101	PM10	N/A	N/A	N/A
85101	PM10	N/A	N/A	N/A
88101	PM25	N/A	N/A	N/A
88101	PM25	N/A	N/A	N/A
88101	PM25	N/A	N/A	N/A
88101	PM25	N/A	N/A	N/A
115071	Propylene	N/A	N/A	3.00E+03
129000	Pyrene	N/A	N/A	N/A
42401	SOX	N/A	N/A	N/A
100425	Styrene	N/A	2.10E+04	9.00E+02
43101	TOG	N/A	N/A	N/A
108883	Toluene	N/A	3.70E+04	3.00E+02
43104	VOC	N/A	N/A	N/A
43104	VOC	N/A	N/A	N/A
43104	VOC	N/A	N/A	N/A
43104	VOC	N/A	N/A	N/A
1330207	Xylenes	N/A	2.20E+04	7.00E+02

PRIORITIZATION SCORE SUMMARY:

Facility Name
Proximity Method
Optional Factors

FACID	CO	AB	DIS	Emission and Potency Procedure Cancer	Acute	Chronic	NonCancer	Dispersion Adjustment Procedure Cancer	Acute	Chronic	NonCancer	Highest Score
SCG - BLYTHE												
Proximity Method:												
Annual Operating Hours 8760												
3101437	33	MD	MOJ	8.44	9.57E-02	0.22	0.29	8.41	9.57E-02	0.22	0.29	8.44

Appendix E
Actual Emissions from Existing Equipment

Actual Emissions for Existing Facility Equipment

MDAQMD Permit Number	Equipment Description	Location	Rating (bhp)	2015 Fuel (mmcf/yr)	2016 Fuel (mmcf/yr)	Historic Actual Avg Fuel (mmcf/yr)	Emission Factor Source
B004154	CLARK #12	Plant No.2	1,760	52.71	65.54	59.13	AP-42 (2SLB at <90% load)
B004154	CLARK #13	Plant No.2	1,760	58.40	50.58	54.49	
B004154	CLARK #14	Plant No.2	1,760	70.61	58.47	64.54	
B004154	CLARK #15	Plant No.2	1,760	72.35	64.31	68.33	
B008079	Cat. Compr. 1	Plant No.3	3,785	26.76	43.25	35.01	NOx, CO, VOC: 2015 (3/9/2015 and 7/6/2015) and 2016 (3/7/2016)
B008080	Cat. Compr. 2	Plant No.3	3,785	63.68	119.60	91.64	SOx: 2015 and 2016 (MDAQMD) PM10: Based on PM source test (2002)
B008081	Cat. Gen 1	Central Supporting	400	11.20	12.14	11.67	NOx, CO, VOC, PM10: 2015
B008082	Cat. Gen 2	Central Supporting	400	2.61	4.82	3.72	(3/10/2015, 3/11/2015 and
B008083	Cat. Gen 3	Central Supporting	400	11.13	11.13	11.13	7/15/2015) and 2016 (3/7/2016)
B008084	Cat. Gen 4	Central Supporting	400	13.93	14.33	14.13	SOx for 2015 and 2016
B004158	PSVG # 5	Auxiliary Building	408	9.44	0.03	4.73	AP-42 (4SRB at <90% load)
B004159	Waukesha A/C	Auxiliary Building	160	0.02	0.00	0.01	

MDAQMD Permit Number	Equipment Description	2015 Emission Factors (lb/mmcf)					2016 Emission Factors (lb/mmcf)				
		CO	NO_x	PM_{10}	SO_x	VOC	CO	NO_x	PM_{10}	SO_x	VOC
B004154	CLARK #12	353.0	1940.0	38.4	0.6	120.0	353.0	1940.0	38.4	0.6	120.0
B004154	CLARK #13	353.0	1940.0	38.4	0.6	120.0	353.0	1940.0	38.4	0.6	120.0
B004154	CLARK #14	353.0	1940.0	38.4	0.6	120.0	353.0	1940.0	38.4	0.6	120.0
B004154	CLARK #15	353.0	1940.0	38.4	0.6	120.0	353.0	1940.0	38.4	0.6	120.0
B008079	Cat. Compr. 1	7.8	171.0	2.8	0.6	9.2	4.3	122.0	2.8	0.6	10.6
B008080	Cat. Compr. 2	5.7	134.0	2.4	0.6	22.0	5.3	125.0	2.4	0.6	11.2
B008081	Cat. Gen 1	25.1	15.0	1.1	0.6	0.1	138.0	29.5	1.1	0.6	0.1
B008082	Cat. Gen 2	97.5	11.1	0.7	0.6	0.1	97.5	8.7	0.7	0.6	0.5
B008083	Cat. Gen 3	111.0	16.7	1.1	0.6	0.7	51.7	18.2	1.1	0.6	0.1
B008084	Cat. Gen 4	150.0	56.5	3.2	0.6	0.1	45.7	4.7	3.2	0.6	0.1
B004158	PSVG # 5	3510.0	2270.0	9.5	0.6	29.6	3510.0	2270.0	9.5	0.6	29.6
B004159	Waukesha A/C	3510.0	2270.0	9.5	0.6	29.6	3510.0	2270.0	9.5	0.6	29.6

MDAQMD Permit Number	Equipment Description	2015 Emissions (tons/year)					2016 Emissions (tons/year)				
		CO	NO_x	PM_{10}	SO_x	VOC	CO	NO_x	PM_{10}	SO_x	VOC
B004154	CLARK #12	9.30	51.13	1.01	0.02	3.16	11.57	63.58	1.26	0.02	3.93
B004154	CLARK #13	10.31	56.65	1.12	0.02	3.50	8.93	49.07	0.97	0.02	3.04
B004154	CLARK #14	12.46	68.50	1.36	0.02	4.24	10.32	56.72	1.12	0.02	3.51
B004154	CLARK #15	12.77	70.18	1.39	0.02	4.34	11.35	62.38	1.23	0.02	3.86
B008079	Cat. Compr. 1	0.10	2.29	0.04	0.01	0.12	0.09	2.64	0.06	0.01	0.23
B008080	Cat. Compr. 2	0.18	4.27	0.08	0.02	0.70	0.32	7.47	0.14	0.04	0.67
B008081	Cat. Gen 1	0.14	0.08	0.01	0.00	0.00	0.84	0.18	0.01	0.004	0.001
B008082	Cat. Gen 2	0.13	0.01	0.00	0.00	0.00	0.24	0.02	0.00	0.001	0.001
B008083	Cat. Gen 3	0.62	0.09	0.01	0.00	0.00	0.29	0.10	0.01	0.003	0.001
B008084	Cat. Gen 4	1.05	0.39	0.02	0.00	0.00	0.33	0.03	0.02	0.004	0.001
B004158	PSVG # 5	16.57	10.71	0.04	0.00	0.14	0.05	0.03	0.00	0.00	0.00
B004159	Waukesha A/C	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MDAQMD Permit Number	Equipment Description	Historic Actual Emissions, HAE (tons/year)					Historic Actual Emissions, HAE (lbs/year)				
		CO	NO_x	PM_{10}	SO_x	VOC	CO	NO_x	PM_{10}	SO_x	VOC
B004154	CLARK #12	10.44	57.36	1.14	0.02	3.55	20,872.69	114,711.11	2,270.57	35.48	7,095.53
B004154	CLARK #13	9.62	52.86	1.05	0.02	3.27	19,235.60	105,714.08	2,092.48	32.70	6,539.02
B004154	CLARK #14	11.39	62.61	1.24	0.02	3.87	22,784.13	125,215.90	2,478.50	38.73	7,745.31
B004154	CLARK #15	12.06	66.28	1.31	0.02	4.10	24,119.28	132,553.58	2,623.74	41.00	8,199.19
B008079	Cat. Compr. 1	0.10	2.46	0.05	0.01	0.18	195.60	4,926.27	96.30	21.00	351.78
B008080	Cat. Compr. 2	0.25	5.87	0.11	0.03	0.69	496.83	11,741.44	217.92	54.98	1,370.23
B008081	Cat. Gen 1	0.49	0.13	0.01	0.00	0.00	978.38	263.09	12.25	7.00	1.52
B008082	Cat. Gen 2	0.18	0.02	0.00	0.00	0.00	362.44	35.57	2.52	2.23	1.46
B008083	Cat. Gen 3	0.45	0.10	0.01	0.00	0.00	905.51	194.22	11.69	6.68	4.47
B008084	Cat. Gen 4	0.69	0.21	0.02	0.00	0.00	1,372.43	427.03	44.51	8.48	1.84
B004158	PSVG # 5	8.31	5.37	0.02	0.00	0.07	16,614.02	10,744.68	44.97	2.84	140.11
B004159	Waukesha A/C	0.02	0.01	0.00	0.00	0.00	36.26	23.45	0.10	0.01	0.31

MDAQMD Permit Number	Equipment Description	Potential Emissions, PTE (tons/year)				
		CO	NO_x	PM_{10}	SO_x	VOC
B004154	CLARK #12	25.77	141.62	2.80	0.04	8.76
B004154	CLARK #13	25.77	141.62	2.80	0.04	8.76
B004154	CLARK #14	25.77	141.62	2.80	0.04	8.76
B004154	CLARK #15	25.77	141.62	2.80	0.04	8.76
B008079	Cat. Compr. 1	24.12	25.58	1.27	0.26	5.48
B008080	Cat. Compr. 2	24.12	25.58	1.27	0.26	5.48
B008081	Cat. Gen 1	2.55	1.16	0.35	0.02	0.58
B008082	Cat. Gen 2	2.55	1.16	0.35	0.02	0.58
B008083	Cat. Gen 3	2.55	1.16	0.35	0.02	0.58
B008084	Cat. Gen 4	2.55	1.16	0.35	0.02	0.58
B004158	PSVG # 5	81.48	52.70	0.22	0.01	0.69
B004159	Waukesha A/C	23.37	15.11	0.06	0.00	0.20

Appendix F
Phase I NSR Netting Analysis

Summary of Phase I Netting Analysis						
Equipment	Permit Numbers	Pollutant Emissions (tpy)				
		CO	NO_x	PM_{10}	SO_x	VOC
Historic Actual Emissions (HAE), 2015-2016 (24 months)						
Plant 2 (HAE for Clarks 11, 12, 14, 15)	*B004154*	41.42	227.62	4.51	0.07	14.08
SUM of HAE		41.42	227.62	4.51	0.07	14.08
Proposed Emissions: Post Phase I -Full Operation (tpy)						
Plant 2 (4 Clarks Refurbished)	*B013092, B013093, B013095, B013096*	30.92	135.84	11.21	0.18	14.02
Plant 4 (PTE for 2 Turbines)	*B012852, B012853*	11.28	20.85	4.15	0.37	3.46
Generator Bldg. (PTE for 5 Generators)	*B012864, B012865, B012866, B012867, B012868*	31.49	7.87	4.03	0.12	6.30
Fire Water Pump	*E013097*	0.01	0.04	0.00	0.00	0.00
SUM of New/Modified Sources		73.71	164.60	19.39	0.67	23.78
Difference PTE-HAE		32.29	-63.03	14.89	0.60	9.70
With PM10 and ROC trades		**32.29**	**-13.85**	**0.00**	**0.60**	**0.00**

Plant 1, Plant 3, Central Supporting and Plant 2 Clark 13 that are not modified in Phase I are not included in the Phase I netting analysis.

Summary of Phase I Netting Analysis						
Equipment	Permit Numbers	Pollutant Emissions (lbs/day)				
		CO	NO_x	PM_{10}	SO_x	VOC
Historic Actual Emissions (HAE), 2015-2016 (24 months)						
Plant 2 (for Clarks 11, 12, 14, 15)	*B004154*	226.95	1,247.25	24.69	0.39	77.15
SUM of HAE		226.95	1,247.25	24.69	0.39	77.15
Proposed Emissions: Post Phase I -Full Operation (lbs/day)						
Plant 2 (4 Clarks Refurbished)	*B013092, B013093, B013095, B013096*	169.44	744.32	61.44	0.96	76.80
Plant 4 (PTE for 2 Turbines)	*B012852, B012853*	61.81	114.24	22.76	2.03	18.99
Generator Bldg. (PTE for 5 Generators)	*B012864, B012865, B012866, B012867, B012868*	172.55	43.14	22.06	0.67	34.51
Fire Water Pump	*E013097*	0.06	0.19	0.01	0.00	0.01
SUM of New/Modified Sources		403.86	901.89	106.26	3.66	130.30
Difference PTE-HAE		176.92	-345.36	81.57	3.27	53.15
With PM10 and ROC trades		**176.92**	**-75.91**	**0.00**	**3.27**	**0.00**

Appendix G
PSD Applicability Analysis

PSD Applicability Analysis

Step 1: On a PTE basis, Blythe Compressor Station is a Major PSD Source (>250 tpy) for CO and NOx.

Step 2: The planned new EUs will not be a Major PSD modification based PTE for 3 turbines, 5 generators, and 1 FWP but also need to consider modifications at Plant 2. (Hybrid Approach)

Proposed New Equipmant							
Equipment	Permit Numbers	Pollutant Emissions (tons/year)					
		CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Plant 4 (PTE for 3 Turbines)	*B012852, B012853, B012854, B012855*	16.92	31.27	6.23	6.23	0.56	5.20
Generator Bldg. (PTE for 5 Generators)	*B012864, B012865, B012866, B012867, B012868*	31.49	7.87	4.03	4.03	0.12	6.30
Fire Water Pump	*E013097*	0.01	0.04	0.00	0.00	0.00	0.00
SUM New EUs		48.42	39.18	10.26	10.26	0.68	11.50
Plant 2 Baseline to Projected Future Actuals							
Plant 2-Baseline	*B004154*	51.04	280.48	5.55	5.55	0.09	17.35
Plant 2-Projected (5 Clarks at 45% operating capacity)	*B013092, B013093, B013094, B013095, B013096*	17.39	76.41	6.31	6.31	0.10	7.88
Possible ERCs banked			-162.33				-3.59
Difference Baseline-PFA		-33.64	-41.74	0.76	0.76	0.01	-5.88
Comparison of Proposed New and Modified Equipmant to PSD Thresholds							
New Equipment	*B012852, B012853, B012854, B012864, B012865, B012866, B012867, B012868, E013097*	48.42	39.18	10.26	10.26	0.68	11.50
Plant 2 Net Emissions	*B013092, B013093, B013094, B013095, B013096*	-33.64	-41.74	0.76	0.76	0.01	-5.88
Total Project Changes		14.78	-2.56	11.01	11.01	0.69	5.62
PSD NEI threshold		100.00	40.00	15.00	10.00	40.00	40.00
Significant Emissions Increase (SEI)?		NO	NO	NO	YES	NO	NO

Note, PM also = PM10, well below PSD threshold of 25 tpy

Step 3: If any of the pollutants are over the PSD SEI thresholds, e.g., PM2.5, then can net out of the major pollutants with contemporaneous emissions reductions

Contemporaneous Emissions Decreases from Shutdowns							
Location	Permit Numbers	Pollutant Emissions (tons/year)					
					$PM_{2.5}$		
Historic Actual Emissions (HAE), 2015-2016 (24 months)							
Plant 1	*B004154*				1.35		
Plant 3	*B008079, B008080*				0.16		
Central Supporting	*B008081, B008082, B008083, B008084*				0.04		
Auxiliary Bldg	*B004158, B004159*				0.02		
Total Project Changes					11.01		
Total Shutdowns					-1.56	PM2.5 assumed = to PM10	
SUM After Netting					9.45		
PSD NEI threshold					10.00		
Significant Emissions Increase (SEI)?					NO		

Appendix H
Historic Actual and Proposed Fuel Use

Historic Actual and Proposed Fuel Use					
Location	**Equipment Description**	**Heat Rate (MMBtu/hr)**	**Potential Annual Fuel Rate (mmcf/yr)**	**Historic Actual Avg Fuel (mmcf/yr)**	**Proposed Fuel Use (mmcf/yr)**
Plant No.1	CLARK #8	17.00	146.00	27.78	-
Plant No.1	CLARK #9	17.00	146.00	31.62	-
Plant No.1	CLARK #10	17.00	146.00	10.84	-
Plant No.2	CLARK #11	17.00	146.00	42.66	146.00
Plant No.2	CLARK #12	17.00	146.00	59.13	146.00
Plant No.2	CLARK #13	17.00	146.00	54.49	146.00
Plant No.2	CLARK #14	17.00	146.00	64.54	146.00
Plant No.2	CLARK #15	17.00	146.00	68.33	146.00
Plant No.3	Cat. Compr. 1	28.00	240.47	35.01	-
Plant No.3	Cat. Compr. 2	28.00	240.47	91.64	-
Plant No.4	Natural gas turbine	71.83	616.89	-	616.89
Plant No.4	Natural gas turbine	71.83	616.89	-	616.89
Plant No.4	Natural gas turbine	71.83	616.89	-	616.89
Plant No.4	Natural gas turbine	71.83	0.00	-	0.00
Central Supporting	Cat. Gen 1	4.00	34.35	11.67	-
Central Supporting	Cat. Gen 2	4.00	34.35	3.72	-
Central Supporting	Cat. Gen 3	4.00	34.35	11.13	-
Central Supporting	Cat. Gen 4	4.00	34.35	14.13	-
Generator bldg	Natural gas engine generator	9.47	81.37	-	81.37
Generator bldg	Natural gas engine generator	9.47	81.37	-	81.37
Generator bldg	Natural gas engine generator	9.47	81.37	-	81.37
Generator bldg	Natural gas engine generator	9.47	81.37	-	81.37
Generator bldg	Natural gas engine generator	9.47	81.37	-	81.37
Auxiliary bldg	PSVG # 5	5.41	46.43	4.73	-
Auxiliary bldg	Waukesha A/C	1.55	13.32	0.01	-

Appendix I
Phase II Final PTE Emissions with Controls Applied

Phase II Final PTE Emissions with Controls Applied

MDAQMD Permit Number	Equipment Description	Location	Rating (bhp)	Heat Rate (MMBtu/hr)	Annual Usage (hrs/yr)	Annual Fuel Usage	Source-Efficiency Factors	Emission Factor Source	Emission Factors			Phase II Emission Factors (lb/mmcf or as shown)					Phase II Emission Factors (lb/MMBtu)					Phase II Emissions (tons/year)					Phase II Emissions (lbs/day)				
									CO	NO_x	VOC	CO	NO_x	PM_{10}	SO_x	VOC	CO	NO_x	PM_{10}	SO_x	VOC	CO	NO_x	PM_{10}	SO_x	VOC	CO	NO_x	PM_{10}	SO_x	VOC
B012852	Natural gas turbine - 75% load	Plant No.4	--	71.83	6,570	462.67	Manufacturers Spec. (65.3 MMBTU/hr *1.1)	Wheeler Ridge/BACT (NO_x, CO, VOC), AP-42 (PM10), sulfur content of fuel (SO_x): 75% operation in transition mode.	8	8	4.3	18.29	30.04	6.73	0.6	5.62	0.018	0.029	0.0066	0.0006	0.006	4.23	6.95	1.56	0.14	1.30	23.18	38.08	8.53	0.76	7.12
B012853	Natural gas turbine - 75% load	Plant No.4	--	71.83	6,570	462.67			8	8	4.3	18.29	30.04	6.73	0.6	5.62	0.018	0.029	0.0066	0.0006	0.006	4.23	6.95	1.56	0.14	1.30	23.18	38.08	8.53	0.76	7.12
B012854	Natural gas turbine - 75% load	Plant No.4	--	71.83	6,570	462.67			8	8	4.3	18.29	30.04	6.73	0.6	5.62	0.018	0.029	0.0066	0.0006	0.006	4.23	6.95	1.56	0.14	1.30	23.18	38.08	8.53	0.76	7.12
B012855	Natural gas turbine - 75% load	Plant No.4	--	71.83	6,570	462.67			8	8	4.3	18.29	30.04	6.73	0.6	5.62	0.018	0.029	0.0066	0.0006	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B012852	Natural gas turbine - 25% load	Plant No.4	--	71.83	2,190	154.22	Manufacturers Spec. (65.3 MMBTU/hr *1.1)	Wheeler Ridge/BACT (NO_x, CO, VOC), AP-42 (PM10), sulfur content of fuel (SO_x): 25% operation in transition mode.	8	12	4.3	18.29	45.06	6.73	0.6	5.62	0.018	0.044	0.0066	0.0006	0.006	1.41	3.47	0.52	0.05	0.43	7.73	19.04	2.84	0.25	2.37
B012853	Natural gas turbine - 25% load	Plant No.4	--	71.83	2,190	154.22			8	12	4.3	18.29	45.06	6.73	0.6	5.62	0.018	0.044	0.0066	0.0006	0.006	1.41	3.47	0.52	0.05	0.43	7.73	19.04	2.84	0.25	2.37
B012854	Natural gas turbine - 25% load	Plant No.4	--	71.83	2,190	154.22			8	12	4.3	18.29	45.06	6.73	0.6	5.62	0.018	0.044	0.0066	0.0006	0.006	1.41	3.47	0.52	0.05	0.43	7.73	19.04	2.84	0.25	2.37
B012855	Natural gas turbine - 25% load	Plant No.4	--	71.83	2,190	154.22			8	12	4.3	18.29	45.06	6.73	0.6	5.62	0.018	0.044	0.0066	0.0006	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B012852	Natural gas turbine - Total	Plant No.4	--	71.83	8,760	616.89	Manufacturers Spec. (65.3 MMBTU/hr *1.1)	Wheeler Ridge/BACT (NO_x, CO, VOC), AP-42 (PM10), sulfur content of fuel (SO_x)	--	--	--	18.29	33.80	6.73	0.6	5.62	0.018	0.033	0.0066	0.0006	0.006	5.64	10.42	2.08	0.19	1.73	30.91	57.12	11.38	1.01	9.49
B012853	Natural gas turbine - Total	Plant No.4	--	71.83	8,760	616.89			--	--	--	18.29	33.80	6.73	0.6	5.62	0.018	0.033	0.0066	0.0006	0.006	5.64	10.42	2.08	0.19	1.73	30.91	57.12	11.38	1.01	9.49
B012854	Natural gas turbine - Total	Plant No.4	--	71.83	8,760	616.89			--	--	--	18.29	33.80	6.73	0.6	5.62	0.018	0.033	0.0066	0.0006	0.006	5.64	10.42	2.08	0.19	1.73	30.91	57.12	11.38	1.01	9.49
B012855	Natural gas turbine - Total	Plant No.4	--	71.83	8,760	616.89			--	--	--	18.29	33.80	6.73	0.6	5.62	0.018	0.033	0.0066	0.0006	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B012864	Natural gas engine generator	Generator bldg	1,088	9.47	8,760	81.37	Manufacturers Spec. (8,708 BTU/bhp-hr)	Vendor/BACT (NO_x and VOC), Vendor (CO), AP-42 (total PM10, SO_x)	--	--	--	0.60 g/bhp-hr	0.15 g/bhp-hr	19.79	0.6	0.12 g/bhp-hr	0.152	0.038	0.0194	0.000588	0.030	6.30	1.57	0.81	0.024	1.26	34.51	8.63	4.41	0.13	6.90
B012865	Natural gas engine generator	Generator bldg	1,088	9.47	8,760	81.37			--	--	--	0.60 g/bhp-hr	0.15 g/bhp-hr	19.79	0.6	0.12 g/bhp-hr	0.152	0.038	0.0194	0.000588	0.030	6.30	1.57	0.81	0.024	1.26	34.51	8.63	4.41	0.13	6.90
B012866	Natural gas engine generator	Generator bldg	1,088	9.47	8,760	81.37			--	--	--	0.60 g/bhp-hr	0.15 g/bhp-hr	19.79	0.6	0.12 g/bhp-hr	0.152	0.038	0.0194	0.000588	0.030	6.30	1.57	0.81	0.024	1.26	34.51	8.63	4.41	0.13	6.90
B012867	Natural gas engine generator	Generator bldg	1,088	9.47	8,760	81.37			--	--	--	0.60 g/bhp-hr	0.15 g/bhp-hr	19.79	0.6	0.12 g/bhp-hr	0.152	0.038	0.0194	0.000588	0.030	6.30	1.57	0.81	0.024	1.26	34.51	8.63	4.41	0.13	6.90
B012868	Natural gas engine generator	Generator bldg	1,088	9.47	8,760	81.37			--	--	--	0.60 g/bhp-hr	0.15 g/bhp-hr	19.79	0.6	0.12 g/bhp-hr	0.152	0.038	0.0194	0.000588	0.030	6.30	1.57	0.81	0.024	1.26	34.51	8.63	4.41	0.13	6.90
E013097	Diesel Fire Water Pump	Fire Pump Skid	237	--	50	600 gal/yr	Manufacturer's Spec Sheet	Vendor data (CO, NO_x, PM10, VOC), sulfur content (SO_2)	--	--	--	0.90 g/bhp-hr	2.70 g/bhp-hr	0.10 g/bhp-hr	0.0002 lb/gal	0.12 g/bhp-hr	--	--	--	--	--	0.012	0.035	0.001	0.0001	0.002	0.47	1.41	0.05	0.0025	0.06

There are 4 new turbines associated with Plant 4, but 1 is reserved as a backup, thus only 3 turbines are included in the annual emissions.
Total annual and daily turbine emissions are based on 75% operation in steady state and 25% operation in transitional state, with different NO_x emission rates in each mode.
The maximum daily emissions from the diesel fire pump operation are based on 1 hour/day of operation

PPM conversion to lb/mmcf

Molecular Weight (lb/lb-mole)		
CO	28	
NO_x	46	
VOC	16	
SO_x	64	
S	32	
Standard Molar Volume	385.5	scf/lb-mol
Dry Fd Factor	8710	dscf/MMBtu
turbine & generator oxygen basis	15	%
Fuel Gas HHV	1020	Btu/scf
Sulfur content of natural gas	0.2	grain/100scf
conversion	7000	grain/lb
conversion factor	453.592	g/lb
Diesel sulfur content	15	ppm
Density of diesel	7.05	lb/gal

Appendix J
Summary of Phase II Netting Analysis

Summary of Phase II Netting Analysis						
Equipment	Permit Numbers	Pollutant Emissions (tpy)				
		CO	NO_x	PM_{10}	SO_x	VOC
Historic Actual Emissions (HAE), 2015-2016 (24 months)						
Plant 1	*B004154*	12.40	68.13	1.35	0.02	4.21
Plant 2	*B004154*	51.04	280.48	5.55	0.09	17.35
Plant 3	*B008079, B008080*	0.35	51.17	0.16	0.04	10.96
Central Supporting	*B008081, B008082, B008083, B008084*	1.81	0.46	0.04	0.01	0.00
Auxiliary Bldg	*B004158, B004159*	8.33	5.38	0.02	0.00	0.07
SUM of HAE		73.91	405.62	7.12	0.16	32.60
Proposed Emissions: Post Phase II -Full Operation (tpy)						
Plant 2 (5 Clarks Refurbished)	*B013092, B013093, B013094, B013095, B013096*	38.65	169.80	14.02	0.22	17.52
Plant 4 (PTE for 3 Turbines)	*B012852, B012853, B012854, B012855*	16.92	31.27	6.23	0.56	5.20
Generator Bldg. (PTE for 5 Generators)	*B012864, B012865, B012866, B012867, B012868*	31.49	7.87	4.03	0.12	6.30
Fire Water Pump	*E013097*	0.01	0.04	0.00	0.00	0.00
SUM of New/Mod Sources		87.08	208.98	24.27	0.90	29.02
Difference PTE-HAE		13.16	-196.64	17.16	0.74	-3.59
With PM10 trades		**13.16**	**-162.33**	**0.00**	**0.74**	**-3.59**

There are 4 new turbines associated with Plant 4, but 1 is for backup, therefore 3 turbines are included in the total annual emissions.

Fire Water Pump assumed to operate 50 hr/yr or 1 hr/day.

Since Plant 3 was permitted in 2011, and the NOx and ROC emissions were completely offset with SERs at the time with the shutdown of seven of the compressor engines in Plant 1, the HAE is equal to the PTE values for NOx and ROC

Summary of Phase II Netting Analysis						
Equipment	Permit Numbers	Pollutant Emissions (lbs/day)				
		CO	NO_x	PM_{10}	SO_x	VOC
Historic Actual Emissions (HAE), 2015-2016 (24 months)						
Plant 1	*B004154*	67.93	373.32	7.39	0.12	23.09
Plant 2	*B004154*	279.65	1,536.88	30.42	0.48	95.06
Plant 3	*B008079, B008080*	1.90	280.38	0.86	0.21	60.08
Central Supporting	*B008081, B008082, B008083, B008084*	9.91	2.52	0.19	0.07	0.03
Auxiliary Bldg	*B004158, B004159*	45.62	29.50	0.12	0.01	0.38
SUM of HAE		405.01	2,222.59	38.99	0.87	178.65
Proposed Emissions: Post Phase II -Full Operation (lbs/day)						
Plant 2 (5 Clarks Refurbished)	*B013092, B013093, B013094, B013095, B013096*	211.80	930.40	76.80	1.20	96.00
Plant 4 (PTE for 3 Turbines)	*B012852, B012853, B012854, B012855*	92.72	171.37	34.13	3.04	28.48
Generator Bldg. (PTE for 5 Generators)	*B012864, B012865, B012866, B012867, B012868*	172.55	43.14	22.06	0.67	34.51
Fire Water Pump	*E013097*	0.47	1.41	0.05	0.00	0.06
SUM of New/Mod Sources		477.54	1,146.31	133.04	4.91	159.05
Difference PTE-HAE		72.53	-1,076.28	94.05	4.04	-19.60
With PM10 trades		**72.53**	**-888.176**	**0.00**	**4.04**	**-19.60**

Appendix K
Turbine Regulatory Review

Turbine Regulatory Review

40 CFR Part 60 Subpart KKKK Applicability

§60.4305(a) If you are the owner or operator of a stationary combustion turbine with a heat input at peak load equal to or greater than 10.7 gigajoules (10 MMBtu) per hour, based on the higher heating value of the fuel, which commenced construction, modification, or reconstruction after February 18, 2005, your turbine is subject to this subpart.

§60.4305(b) Stationary combustion turbines regulated under this subpart are exempt from the requirements of subpart GG of this part.

The following discussion is an updated version of what was included in the air permit application:
6.1.4.2 Subpart KKKK – Standards of Performance for Stationary Combustion Turbines: This NSPS is applicable to the new turbines because they have a heat input at peak load equal to or greater than 10 MMBtu per hour, based on the higher heating value of the fuel. Units installed after February 18, 2005 must comply with this regulation, which contains emissions standards for NOx and sulfur dioxide (SO2), along with associated monitoring, reporting, recordkeeping, and testing requirements. Table 1 of the regulation gives the NOx emissions standards. For instance, there are different NOx standards for natural gas fired units less than or equal to 50 MMBtu/hr depending on whether they are mechanically driven or generate electricity. The mechanically driven turbines proposed for the BCR Project are 71.8 MMBtu/hr, and fall into the category of new turbines firing natural gas between 50 MMBtu/hr and 850 MMBtu/hr at peak load. New turbines in this size range have a NOx emissions limit of 25 ppm @ 15% O2 during normal operation, and a limit of 150 ppm when operating at less than 75% load, including startup and shutdown. The proposed BACT NOx limit for the BCS turbines is 8 ppm steady state and 12 ppm during transition, which is less than the 25 ppm or 150 ppm limits for NOx; thus, the BCS turbines will be in compliance with the NOx concentration limit of this regulation. Sulfur content of the natural gas purchased will be < 0.05% by weight, and SO2 emissions are expected to be well below 0.06 lb/MMBtu standard (emission rate of 0.0006 lb/MMBtu is assumed); thus, the turbines will be in compliance with the SOx emission requirements of this regulation.

40 CFR Part 63 Subpart YYYY Applicability

§63.6080 Subpart YYYY establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emissions from stationary combustion turbines located at major sources of HAP emissions, and requirements to demonstrate initial and continuous compliance with the emission and operating limitations.

§63.6095(d) Stay of standards for gas-fired subcategories. If you start up a new or reconstructed stationary combustion turbine that is a lean premix gas-fired stationary combustion turbine or diffusion flame gas-fired stationary combustion turbine as defined by this subpart, you must comply with the Initial Notification requirements set forth in §63.6145 but need not comply with any other requirement of this subpart until EPA takes final action to require compliance and publishes a document in the Federal Register.

Continued on next page

The following discussion is included in the air permit application (September 2017):
6.1.5.1 40 CFR Part 63, Subpart YYYY – National Emission Standards for Hazardous Air Pollutants for Stationary Gas Turbines: This regulation applies to gas turbines greater than 1.0 MW located at major sources of HAP emissions. EPA placed a stay on Subpart YYYY for lean premix gas-fired turbines on August 8, 2004. EPA specifically identified turbines for use in natural gas transmission (SIC Code 4922, NAICS 486210, Natural gas transmission), as subject to this stay. The EPA identified this stay as necessary to avoid wasteful and unwarranted expenditures on installation of emission controls which will not be required if the subcategories are delisted. Therefore, there are no Maximum Available Control Technology (MACT) emission limits required for the new turbines, although the new turbines must comply only with the Initial Notification pursuant to 40 CFR 63.6145. The permitting of the BCR Project as a Major Modification to the BCS Title V (Federal) Operating Permit, will serve as Initial Notification to EPA through the mandatory review and to MDAQMD as a delegated authority.

Facility-wide HAP Emissions Post-Phase 1

As calculated in the attachment (September 2018), the post-project Phase 1 PTE will be exceed the HAP major source thresholds of 10 tpy per formaldehyde and be below the 25 tpy total HAP threshold.

Facility-wide HAP Emissions Post-Phase 2

As calculated in the attachment (September 2018), the post-project Phase 2 PTE will be below the HAP major source thresholds (10 tpy per HAP and 25 tpy total HAP). This is consistent with the conclusion provided in the air permit application addendum (December 2017) Attachment 3. The September 2018 spreadsheet also includes emissions from gasoline dispensing to provide a complete facility-wide total. As shown in the attachment, the highest single HAP is 3.6 tpy of formaldehyde and 5.5 tpy for total HAP.

Turbine Equipment Details

With respect to the classification requested, the units are not diffusion flame turbines. The units can be described as lean premix stationary combustion turbines and are best described as dry-low NOx (DLN) turbines. The DLN technology uses pre-mixing and a spreading out of combustion (staged combustion) to achieve lower NOx.

Control Equipment Details

With respect to the control equipment details requested, Peerless is the packager. The SCR is manufactured by Cormetech and model Elite. Please see the enclosed specification sheet for the SCR. We plan to use the herringbone style.

The oxidation catalyst is manufactured by BASF and is model Camet. Please see the link below for details regarding the Oxidation Catalyst. As described on the website, the system performs effectively in a range of operating temperatures from 500°F to 1250°F.

https://catalysts.basf.com/products-and-industries/stationary-emissions/solutions-for-industrial-engines/camet-for-industrial-engines