SOUTH TEXAS ELECTRIC COOPERATIVE, INC.

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January 2, 2013

U.S. Environmental Protection Agency, Region 6
Air Permits Section (6PD-R)
1445 Ross Avenue
Suite 1200
Dallas, Texas 75202-2733

Re: Greenhouse Gas PSD Application for Red Gate Power Plant, Hidalgo County, TX
South Texas Electric Cooperative, Inc.

Dear Sir or Madam:

South Texas Electric Cooperative, Inc. (STEC) is pleased to submit the enclosed application for a Greenhouse Gas (GHG) Prevention of Significant Deterioration (PSD) construction permit for a proposed power plant near Edinburg, Texas. STEC is a wholesale generation and transmission electricity provider serving eight member distribution cooperatives over a 44-county area in South Texas. STEC serves its member load with a diverse resource portfolio incorporating natural gas, wind, diesel, lignite, and hydro-electric power from both owned and purchased resources. The STEC system experienced strong growth in 2011 as a result of extreme weather conditions in both the summer and winter months, and strong growth is expected to continue with projected capacity additions required to serve the STEC member load by 2017. Also, an infusion of wind powered generation into the Energy Reliability Council of Texas (ERCOT) grid has introduced significant variability to the power supply and subsequently to the market clearing prices for energy and ancillary services. Despite the additional wind capacity, reserve margins in ERCOT as a whole are shrinking, putting additional upward pressure on market pricing. In order to meet demand, the scheduled commercial operation date for the Project is June 2014.

The proposed Red Gate Power Plant (Red Gate) is needed to meet the generation needs of South Texas to limit exposure of STEC member load to temporary price spikes. STEC conducted a technology assessment to evaluate various generation resource alternatives including simple-cycle combustion turbine, simple-cycle reciprocating engine, and combined-cycle combustion turbine based technologies. A simple-cycle reciprocating engine plant is composed of multiple smaller units whose dispatch can be optimized to maintain peak plant efficiency over a large operating load range. Also, a simple-cycle reciprocating engine plant offers the unique combination of high electrical efficiency and high operational flexibility. The rapid start capability, combined with the small dispatchable unit size, minimizes part load operation and results in greater overall plant efficiency and reduced emissions.

Red Gate will consist of 12 natural gas-fired spark ignition reciprocating internal combustion engines plus auxiliary equipment. The nominal generating capacity of the facility will be approximately 225 megawatts. A PSD Application for non-GHG pollutants is currently under review by the Texas Commission on Environmental Quality (an electronic copy of the application was provided on CD-ROM to your office). In addition to the use of energy-efficient natural gas-fired engines, add-on control devices include selective catalytic reduction and oxidation catalysts.

STEC is conducting the analyses in support of cross-cutting regulations, including the Endangered Species Act and National Historic Preservation Act. The Biological Assessment and Archaeological Survey reports associated will be submitted shortly. Based on site visits by qualified environmental professionals, STEC does not anticipate impacts to wetlands/waters of the U.S. or to historic properties.

We are eager to work with EPA Region 6 personnel to ensure the review of our application moves forward efficiently to meet the schedule. Please contact me at japackard@stec.org or 361.485.6320 if you have any questions or need additional information.

Sincerely,

John Packard
Manager of Generation

Enclosure

Cc: Mike Lehr, SAIC
Andrea Adams, SAIC

GREENHOUSE GAS

PREVENTION OF SIGNIFICANT DETERIORATION

PERMIT APPLICATION

Red Gate Power Plant

South Texas Electric Cooperative, Inc.

Submitted by:

South Texas Electric Cooperative, Inc.
2849 FM 447, P.O. Box 119
Nursery, TX 77976

Submitted to:

U.S. Environmental Protection Agency, Region 6
Air Permits Section (6PD-R)
1445 Ross Avenue
Suite 1200
Dallas, Texas 75202-2733

December 2012

Prepared by

SAIC

GHG PREVENTION OF SIGNIFICANT DETERIORATION PERMIT APPLICATION

STEC Red Gate Power Plant

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The South Texas Electric Cooperative, Inc. (STEC) is submitting this application for a Prevention of Significant Deterioration (PSD) construction permit for a proposed power plant near Edinburgh, Texas. The proposed Red Gate Power Plant (Red Gate) will consist 12 natural gas-fired spark ignition reciprocating internal combustion engines (SI RICE) plus auxiliary equipment. The nominal generating capacity of the facility will be approximately 225 megawatts. The new power plant is needed to meet the generation needs of South Texas. The scheduled commercial operation date for the Project is June 2014.

STEC is a wholesale generation and transmission electricity provider serving eight member distribution cooperatives over a 44-county area in South Texas. STEC's member cooperatives represent a combined retail load of over 214,745 wires and 21,062 non-wires customers. STEC serves its member load with a diverse resource portfolio incorporating lignite, natural gas, diesel, wind, and hydro-electric power from both owned and purchased resources. The STEC system experienced strong growth in 2011 as a result of extreme weather conditions in both the summer and winter months. In 2011, sales to member cooperatives increased 11.78% to 5,014,032 megawatt (MW) hours. System peak load was 1242 MW, up over 10% from the 1127 MW peak load realized in 2010. Strong growth is expected to continue with a projected 219 MW capacity additions required to serve the STEC member load by 2017.

An infusion of wind powered generation into the Energy Reliability Council of Texas (ERCOT) grid has introduced significant variability to the power supply and subsequently to the market clearing prices for energy and ancillary services. Despite the additional wind capacity, reserve margins in ERCOT as a whole are shrinking, putting additional upward pressure on market pricing. To incentivize construction of new generating units in the ERCOT region, pricing caps are currently at $4,500/MW with proposals being considered of up to $9,000/MW. This presents a significant risk to STEC members during peak periods when the member demand exceeds STEC's current resource capacity. To limit exposure of STEC member load to temporary price spikes, STEC is constructing the peaking generation facility detailed in this permit application.

STEC conducted a technology assessment to evaluate various generation resource alternatives including simple-cycle combustion turbine, simple-cycle reciprocating engine, and combined-cycle combustion turbine based technologies. Wind and solar resources were not considered due to the inability to control dispatch to meet the intermittent load requirements of STEC's system. Of the technologies evaluated, reciprocating engines were selected as the best combination of efficiency, flexibility, and cost. A simple-cycle reciprocating engine plant is composed of multiple smaller units whose dispatch can be optimized to maintain peak plant efficiency over a large operating load range. In the case of the plant proposed by this permit application, peak efficiencies can be achieved from approximately 8% to 100% plant output. In addition to maintaining high efficiency across a broad operating range, the reciprocating engines can be started and achieve full load in less than 10 minutes and achieve full emissions control in less than 30 minutes with no associated start-based maintenance penalty. This rapid start capability, combined with the small dispatchable unit size, minimizes part load operation and results in greater overall plant efficiency and reduced emissions.

The engines are proposed to allow for rapid start, as the power plant is designed as a peaking plant, but emissions for each engine are conservatively based on 8,760 hours of operation a year. The proposed operating load range is roughly 40% to 100%. Start-up emissions are based on two start-ups per day per engine.

As the proposed facility will be a major source and has emissions above the PSD threshold for greenhouse gases (GHG), per the requirements of the April 22, 2011 Federal Implementation Plan for Texas this application is submitted to Region 6 of the U.S. Environmental Protection Agency (EPA). A PSD Permit Application for nitrogen oxides, carbon monoxide, volatile organic compounds, and PM/PM_{10}/$PM_{2.5}$ (particulate matter (PM), PM less than 10 microns in diameter, and PM less than 2.5 microns in diameter) was submitted to the Texas Commission on Environmental Quality, including the appropriate ambient impact analyses. For GHGs, analyses under the PSD requirements include evaluation of control technologies following the guidance on determining the Best Available Control Technology (BACT). As there are no ambient air quality standards or PSD increments for CO_2/GHG the application does not include a National Ambient Air Quality Standard or PSD Class II Increment analysis. In addition, per EPA guidance, pre-construction monitoring or an assessment of impacts to soil, vegetation, visibility, and growth in the area are not necessary for GHGs.

Proposed BACT limitations are determined on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, but are to be lower than that allowed by any applicable standard under 40 CFR Parts 60 and 61. The proposed SI RICE are subject to emission standards under Subpart JJJJ of the New Source Performance Standards (NSPS) and Subpart ZZZZ of the National Emission Standards for Hazardous Air Pollutants regulations, however emission standards for CO_2/GHG are not included. In addition, proposed NSPS Subpart TTTT is not applicable to simple-cycle reciprocating engines. Emission reduction techniques for the SI RICE include the use of an energy efficient engine fired with natural gas, good combustion practices, and add-on control devices include selective catalytic reduction and oxidation catalysts. The diesel-fired emergency generator and fire pump engine will implement good combustion controls and have limited hours of operation.

There is no off-site water intake or discharge associated with the proposed facility. Engine cooling is provided by closed loop cooling radiators (initial fill and make-up from a water truck and/or on-site evaporation pond), so there will be no off-site source of cooling water required. Storm water will be routed to an on-site evaporation pond. Hence, no off-site water pipelines are required. Transmission lines and a substation will be on-site. The Biological Assessment and Archaeological Survey Reports associated with cross-cutting regulations will be submitted soon. Based on site visits by qualified environmental professionals, STEC does not anticipate impacts to wetlands/waters of the U.S. or to historic properties.

Section 1.0
INTRODUCTION

South Texas Electric Cooperative, Inc. (STEC) is submitting this Greenhouse Gas (GHG) Prevention of Significant Deterioration (PSD) permit application for the proposed Red Gate Power Plant (Red Gate) near Edinburg, TX. The U.S. Environmental Protection Agency (EPA) promulgated the rule for phased-in permitting of GHG-emitting sources on June 3, 2010, known as the "Tailoring Rule." After January 2, 2011, new PSD sources that also have potential to emit 75,000 tons per year (TPY) or more of GHGs are subject to PSD permitting requirements. EPA issued the Federal Implementation Plan for Texas as a final rule on April 22, 2011, under which EPA will be the permitting authority for major sources of GHG. As per 40 CFR 52.21(b)(49)(i), GHGs include the aggregate of carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Red Gate will consist of 12 spark ignition (SI) reciprocating internal combustion engines (SI RICE) fired with natural gas. The engines will have a nominal power output of roughly 18.75 megawatts (MW) each, for a total generation capability of approximately 225 MW. Auxiliary equipment will consist of a diesel-fired emergency fire water pump engine, a diesel-fired emergency generator, and circuit breakers insulated with SF_6. The scheduled commercial operation date for the Project is June 2014. As the project is a major source for at least one regulated pollutant and above the PSD thresholds for some criteria pollutants, a PSD application for non-GHG pollutants was submitted to the Texas Commission on Environmental Quality (TCEQ), and a copy submitted to EPA Region 6. For GHGs, analyses under the PSD requirements include evaluation of control technologies following the guidance on determining the Best Available Control Technology (BACT). As there are no ambient air quality standards or PSD increments for CO_2/GHG the application does not include a National Ambient Air Quality Standard (NAAQS) or PSD Class II Increment analysis. In addition, EPA does not consider pre-construction monitoring or an assessment of impacts to soil, vegetation, visibility, and growth in the area necessary for GHGs.

STEC is a wholesale generation and transmission electricity provider serving eight member distribution cooperatives over a 44-county area in South Texas. STEC's member cooperatives represent a combined retail load of over 214,745 wires and 21,062 non-wires customers. The eight member cooperatives include Karnes Electric Cooperative, Wharton County Electric Cooperative, Victoria Electric Cooperative, Jackson Electric Cooperative, San Patricio Electric Cooperative, Nueces Electric Cooperative, Magic Valley Electric Cooperative, and Medina Electric Cooperative. The first six of those were founding members of STEC in 1944. Magic Valley and Medina Electric Cooperative became STEC members in 2005, effectively doubling the size of the STEC's load. STEC serves its member load with a diverse resource portfolio incorporating lignite, natural gas, diesel, wind, and hydro-electric power from both owned and purchased resources.

The STEC system experienced strong growth in 2011 as a result of extreme weather conditions in both the summer and winter months. In 2011, sales to member cooperatives increased 11.78% to 5,014,032 megawatt hours. System peak load was 1242 MW, up over 10% from the 1127 MW peak load realized in 2010. Strong growth is expected to continue with a projected 219 MW capacity additions required to serve the STEC member load by 2017. Currently, owned resources consist of a 177 MW 3x1 dual-fuel combined-cycle located in Victoria County along with a 200 MW 24-unit spark ignition, natural gas fired reciprocating engine plant located in Frio County. Several smaller units totaling approximately 90 MW are also available to provide power during peak demand periods. An additional 848 MW of generation capacity is provided through long-term purchase power contracts.

An infusion of wind powered generation into the Energy Reliability Council of Texas (ERCOT) grid has introduced significant variability to the power supply and subsequently to the market clearing prices for energy and ancillary services. Despite the additional wind capacity, reserve margins in ERCOT as a whole are shrinking, putting additional upward pressure on market pricing. To incentivize construction of new generating units in the ERCOT region, pricing caps are currently at $4,500/MW with proposals being considered of up to $9,000/MW. This presents a significant risk to STEC members during peak periods when the member demand exceeds STEC's current resource capacity. To limit exposure of STEC member load to temporary price spikes, STEC is constructing the peaking generation facility detailed in this permit application.

STEC conducted a technology assessment to evaluate various generation resource alternatives including simple-cycle combustion turbine, simple-cycle reciprocating engine, and combined-cycle combustion turbine based technologies. Wind and solar resources were not considered due to the inability to control dispatch to meet the intermittent load requirements of STEC's system. Of the technologies evaluated, reciprocating engines were selected as the best combination of efficiency, flexibility, and cost. A simple-cycle reciprocating engine plant is composed of multiple smaller units whose dispatch can be optimized to maintain peak plant efficiency over a large operating load range. In the case of the plant proposed by this permit application, peak efficiencies can be achieved from approximately 8% to 100% plant output. In addition to maintaining high efficiency across a broad operating range, the reciprocating engines can be started and achieve full load in less than 10 minutes and achieve full emissions control in less than 30 minutes with no associated start-based maintenance penalty. This rapid start capability, combined with the small dispatchable unit size, minimizes part load operation and results in greater overall plant efficiency and reduced emissions.

This GHG construction permit application is organized as follows, after this Introduction, Section 2.0 presents the Project Overview, including the plot plan and block flow diagram. Emissions of GHGs are summarized in Section 3.0 and regulatory requirements are discussed in Section 4.0. The applicable requirement of the PSD program for GHG review is presented in Section 5.0, Best Available Control Technology (BACT). The TCEQ application form is included in Appendix A. Emission calculations and assumptions are provided in Appendix B and documentation from the RACT/BACT/LAER Clearinghouse for the GHG BACT analysis is contained in Appendix C.

Section 2.0
PROCESS OVERVIEW

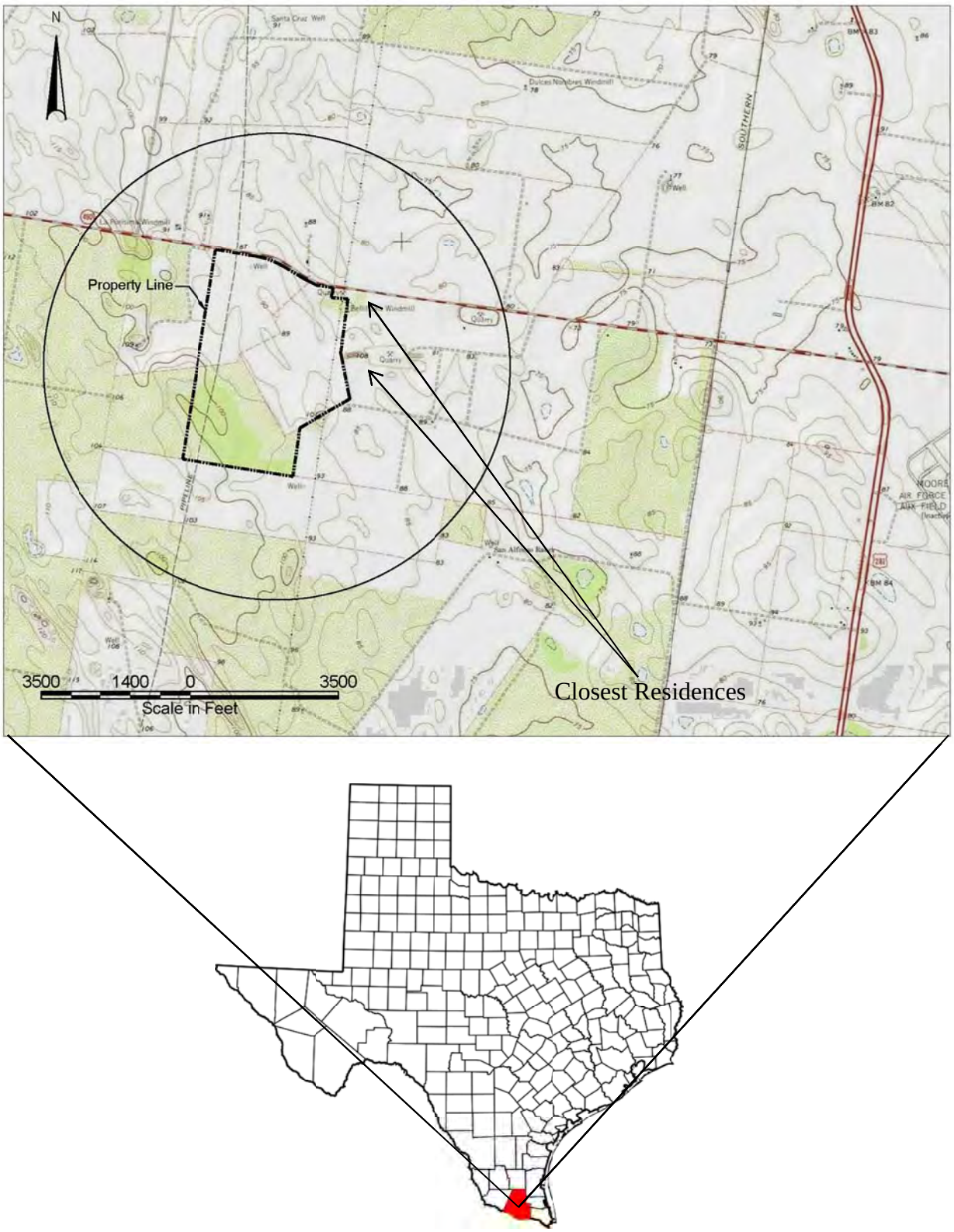
The proposed power plant will be located at a Greenfield site approximately 10 miles north of Edinburg in southern Texas, in Hidalgo County. This county is currently designated as attainment/unclassifiable for all criteria pollutants as per 40 CFR Part 81. The general location is shown in Figure 2-1. The site is approximately 2.5 miles west of Texas State Highway 281 (red highway running north-south on Figure 2-1), with Farm-to-Market Road 490 forming the northern border. The closest Class I area is Big Bend National Park, over 600 km from the site.

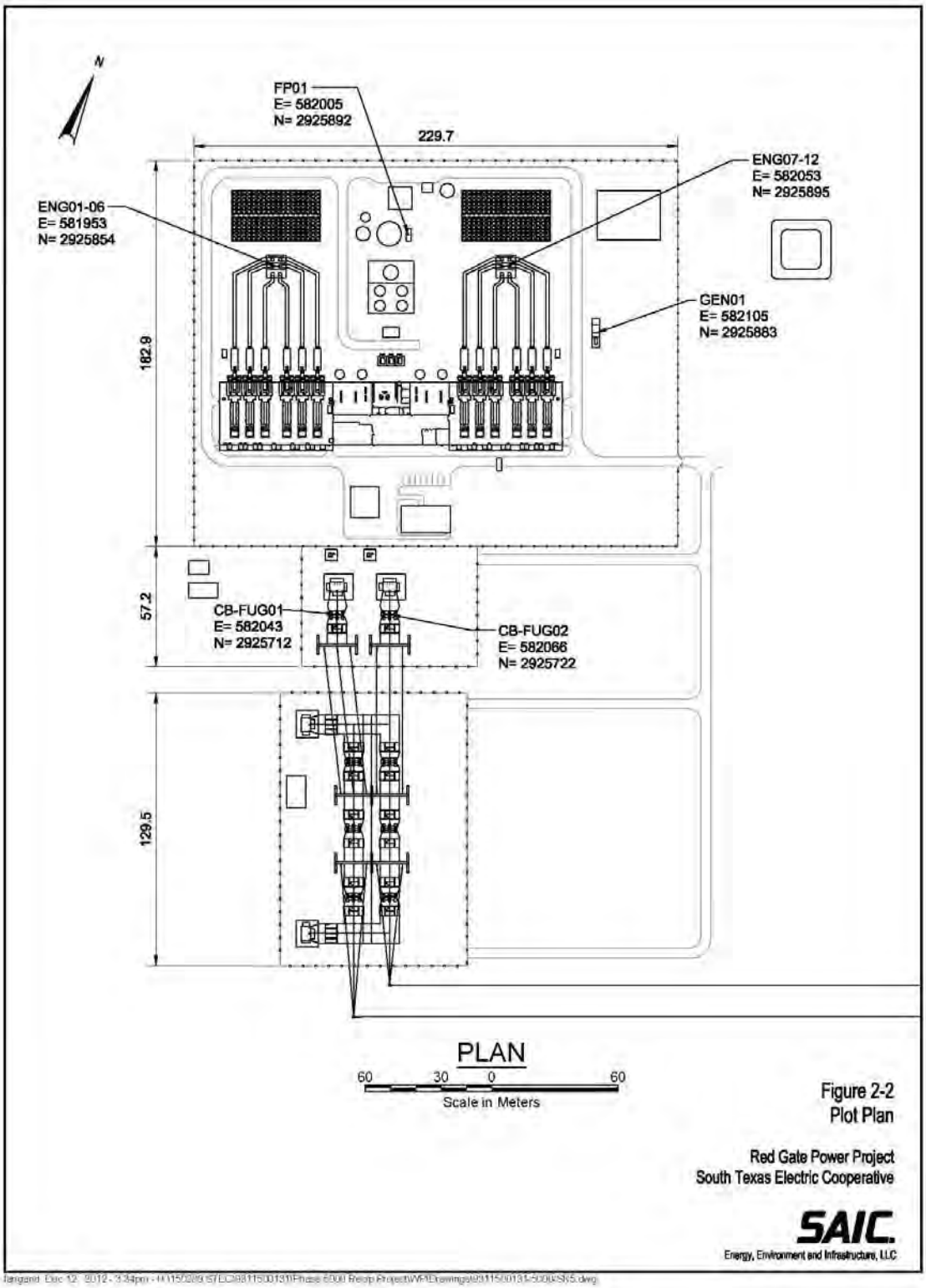
As stated previously, STEC conducted a technology assessment to evaluate various generation resource alternatives including simple-cycle combustion turbine, simple-cycle reciprocating engine, and combined-cycle combustion turbine based technologies. Wind and solar resources were not considered due to the inability to control dispatch to meet the intermittent load requirements of STEC's system. Of the technologies evaluated, reciprocating engines were selected as the best combination of efficiency, flexibility, and cost. Simple-cycle combustion turbines provide the flexibility needed to meet the demand, but have significantly lower thermal efficiency than reciprocating engines resulting in higher life-cycle costs to STEC's members. Combined-cycle combustion turbine based resources are capable of greater efficiencies, but only at much larger unit sizes than the current STEC load requirements and at the expense of some degree of flexibility. Longer start times to accommodate the heat recovery cycle and frequent partial loading to follow load and carry ancillary services combine to erode the efficiency advantage of a combined-cycle alternative.

In contrast, a simple-cycle reciprocating engine plant is composed of multiple smaller units whose dispatch can be optimized to maintain peak plant efficiency over a large operating load range. In the case of the plant proposed by this permit application, peak efficiencies can be achieved from approximately 8% to 100% plant output. In addition to maintaining high efficiency across a broad operating range, the reciprocating engines can be started and achieve full load in less than 10 minutes and achieve full emissions control in less than 30 minutes with no associated start-based maintenance penalty. This rapid start capability, combined with the small dispatchable unit size, minimizes part load operation and results in greater overall plant efficiency and reduced emissions.

In order to meet the peaking requirements of the proposed plant, the project includes SI RICE operated in simple-cycle mode. The four-stroke lean burn (4SLB) natural gas-fired engines being proposed is the Wartsila 18V50SG. In order to meet the plant nominal power output 12 engines will be required. Figure 2-2 presents the plot plan of the 12 engine configuration (emission points ENG01-ENG12). As shown, in addition to the SI RICE, GHG-emitting auxiliary equipment include an emergency diesel-fired fire pump (FP01) and black start generator (GEN01). The circuit breakers associated with the transformers will be insulated with SF_6 (CB-FUG01-02). Each is discussed in further detail below.

Figure 2-1. General Area Map with 3,000 Foot Radius





2.1 Internal Combustion Engines

As mentioned above, the Wartsila 18V50SG engine is being proposed for the project. Two other SI RICE were evaluated and Table 2-1 presents the engine specifications for comparison. The engine proposed depends on many factors including project cost, engine energy efficiency and emissions, as well as schedule. The internal combustion engines considered are nominally rated at approximately 10 to 18.7 MW each, thus the number of engines would vary depending on the vendor (either 12 or 24). The SI RICE will be natural gas-fired and assumed to operate 8,760 hours per year. As below, the operating load range is 25%/40% to 100%, depending on the engine manufacturer.

Table 2-1
Engine Specifications for Comparison

Specification	Wartsila 18V50SG	Caterpillar G20CM34	MAN 20V35/44G
Engine Rating (MW)	18.7	10	10.2
Number of Engines	12	24	24
MMBtu/hr at 100%	153.2	78.6	80.1
Heat Rate (Btu/kWh) (HHV at 100% Load)	8,302	8,512	8,450*
Electrical Efficiency (%)	48.6	45.7	47.3
Load Range	40-100%	25-100%	50-100%
* Converted from LHV provided by manufacturer.			

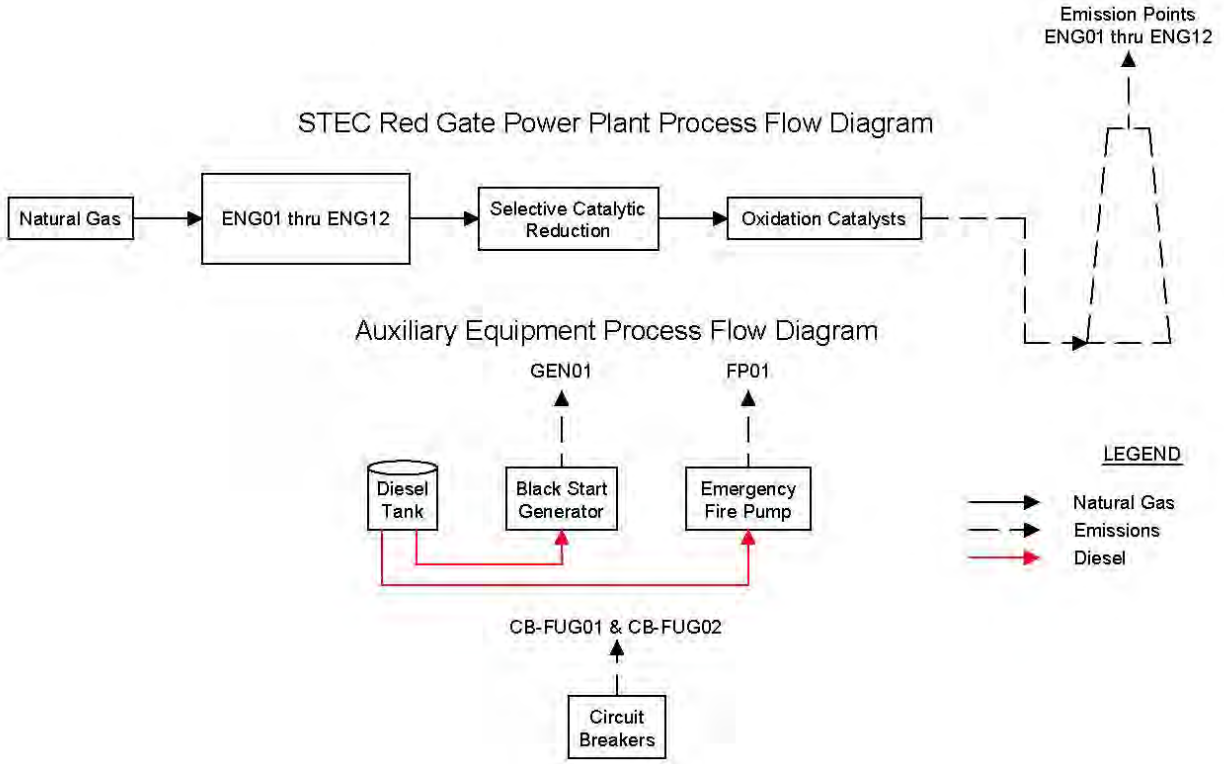
As shown in the block flow diagram in Figure 2-3, add-on emission controls include selective catalytic reduction (SCR) for NO_x reduction and an oxidation catalyst for CO and VOC control.

2.2 Auxiliary Equipment

Auxiliary equipment includes a 150 horsepower (hp) diesel-fired emergency fire pump engine and a 500 kW (670 hp) diesel-fired emergency black start generator. The emergency fire pump engine will supply water in the event of a fire at the facility. The hours of operation are limited to 100 hours per year for maintenance and required testing. The emergency black start generator is intended to provide black start capability for the ERCOT market; the function is to provide the plant with emergency back-up power in case of disconnection of the grid. Operation is assumed to be 500 hours per year.

High-voltage electrical equipment has been insulated with SF_6 for years because it is an efficient electrical insulator. The fluorinated compound is very stable and used in sealed systems, which under normal circumstances do not leak. The circuit breakers on the high-voltage side of the transformers associated with the project are insulated with SF_6. For the purposes of estimating emissions, two large circuit breakers are assumed with a capacity of 200 pounds each, thus the estimated SF_6 capacity is 400 pounds.

Figure 2-3. Process Flow Diagram



Section 3.0
SUMMARY OF EMISSIONS

Maximum annual GHG emissions are summarized in Table 3-1 as mass emissions and CO_2 equivalent (CO_2e), including maintenance, start-up and shutdown (MSS) emissions for the SI RICE. Detailed emission calculations are included in Appendix B for the proposed SI RICE. GHG emissions for the auxiliary equipment are also shown. Emissions of CO_2, N_2O and CH_4 from the emergency engines are based on emission factors from Tables C-1 and C-2 of 40 CFR Part 98 (Mandatory Greenhouse Gas Reporting Rule). Emissions of SF_6 from the circuit breakers are based on an annual leakage rate of 0.5% (by weight) from two circuit breakers.

Table 3-1
Annual Emissions [tons per year (TPY)][1]

Equipment	GHG	CO_2e[2]
SI RICE, ENG01-12	1,035,246	1,036,237
Generator, GEN01	69.5	69.7
Fire pump engine, FP01	3.1	3.1
Circuit Breakers, CB-FUG01&02	0.001	23.9
TOTAL	1,035,318	1,036,334

[1] Annual emissions are based on 8,760 hours of operation for the SI RICE, 500 hours per year for the generator, and 100 hours per year for the fire pump engine.

[2] Adjusted by the global warming potential for each relevant GHG as given in Table A-1 of 40 CFR Part 98.

Start-up emission estimates are included in Table 3-2 (start-up emissions are used to calculate emissions as they represent worst-case on an hourly basis for MSS). There is effectively no "cold" start from a stand-by perspective, because during start-up electric heaters are used to circulate warm water until the engine block reaches a temperature sufficient to allow start-up, which is roughly 125°F. The duration to reach the start-up permissive temperature depends on the amount of time in stand-by mode and the ambient temperature inside the engine hall. Once the engine block has been warmed enough to permit start-up, fuel is fired and the exhaust is used to bring the SCR and oxidation catalysts up to operational temperatures. In order to provide a conservative estimate of lb/hr emissions, a duration of 30 minutes is assumed for start-up (bringing the NO_x and CO/VOC control devices into the operational temperature windows) and the remaining 30 minutes at 100% load. Two start-ups per day are assumed for annual emissions.

Table 3-2
Start-up Emission Rates per SI Engine

Pollutant	Start-up Emissions		
	lb/start-up	lb/hr	TPY
CO_2/GHG	8,070	17,202	6,279

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Section 4.0
REGULATORY REQUIREMENTS

The proposed Red Gate emission sources are subject to various Federal and State regulatory requirements. This section discusses the applicable requirements, such as New Source Review (NSR), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP).

4.1 New Source Review

EPA issued the *"Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act"* as a final rule in December 2009. EPA found the six GHGs taken in combination (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) endanger public health and welfare, as well as the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare under Section 202(a) of the CAA. In announcing these findings, EPA stated they did not impose any requirements on industry or other entities, but did act as a prerequisite to finalizing the proposed GHG emissions standards for light-duty vehicles. Subsequent actions, including the light-duty vehicle rule, refined EPA's interpretation of "subject to regulation" in the PSD program with regards to GHGs. EPA stated that PSD permitting requirements apply to GHGs from stationary sources beginning January 2, 2011.

In June 2010 EPA issued the GHG "Tailoring Rule," which phase-in the major source applicability thresholds for GHGs under the federal PSD pre-construction permitting program. Beginning July 1, 2011, the requirements apply to new stationary sources that emit at least 100,000 TPY of GHGs. As the State of Texas does not cover GHG emissions in its regulations, EPA issued a final rule establishing a Federal Implementation Plan for Texas on April 22, 2011 (this action finalized the interim final rule from December 2010) to ensure sources could obtain the required construction permits. Consequently, EPA has been serving as the permitting authority for GHG-emitting sources in Texas since January 2, 2011.

In order to determine if a new source is subject to NSR permitting the first step is to determine if the proposed plant location is in an area designated as unclassifiable/attainment or nonattainment. The PSD program applies in areas designated as unclassifiable or attainment for the NAAQS, and the Nonattainment NSR program to those areas designated as nonattainment. As EPA has not established a NAAQS for GHGs, the nonattainment components do not apply. Thus, permits issued after January 2, 2011 must address certain PSD requirements (i.e., BACT) for GHG emissions.

Under PSD the project's potential emissions are compared to the major source threshold for determining applicability. A source is major if emissions for any one NSR regulated pollutant exceed 250 TPY, unless the source is categorized under one of the 28 listed source categories in which case the threshold is 100 TPY. Red Gate is not under a listed source category, thus the applicable major source threshold is 250 TPY. The proposed facility has emissions above the

PSD threshold for at least one NSR pollutant (it is an "anyway source"), thus potential GHG emissions from the facility must be compared to the applicability threshold. For GHGs "significant" is defined at 40 CFR 52.21(b)(49)(iii) as 75,000 TPY CO_2e, where CO_2e is the sum of emissions for each GHG multiplied by its global warming potential (given in Table A-1 of 40 CFR Part 98). As shown in Table 4-1, potential emissions of GHGs from Red Gate are over the PSD applicability threshold.

Table 4-1
Red Gate Potential Emissions (TPY) and PSD Applicability

Pollutant	Facility Annual Emissions	PSD Significant Emission Rates	PSD Applicable? (Yes/No)
CO_2e	1,036,334	75,000	Yes

The analyses under the PSD program applicable to GHGs are different than those for non-GHG pollutants. As stated in the Tailoring Rule and EPA's *"PSD and Title V Guidance for Greenhouse Gases,"* dated March 2011 (replaced November 2010 version), "There are currently no NAAQS or PSD increments established for GHGs, and therefore these PSD requirements would not apply for GHGs, even when PSD is triggered for GHGs." Furthermore the guidance states the following with regard to pre-construction monitoring, "…EPA does not consider it necessary for applicants to gather monitoring data to assess ambient air quality for GHGs…" Finally regarding an assessment of impacts to soil, vegetation, visibility, and growth in the area "EPA believes it is not necessary for applicants or permitting authorities to assess impacts from GHGs in the context of the additional impacts analysis…" Thus, the applicable analysis under the PSD requirements includes evaluation of control technologies following the guidance on determining the Best Available Control Technology (BACT).

4.2 New Source Performance Standards

Emission standards have been developed for various source categories under the NSPS regulations (40 CFR Part 60), including stationary internal combustion engines. Standards are broken out by compression ignition (CI) and spark ignition (SI) engines, thus the SI RICE and CI diesel-fired emergency black start and fire pump engines are potentially subject to separate NSPS subparts. NSPS Subpart IIII includes standards of performance for Stationary CI RICE that commence construction after certain dates (the date when the engine is ordered by the owner/operator), thus is potentially applicable to the emergency black start and fire pump engines. NSPS Subpart JJJJ includes standards of performance for Stationary SI RICE, thus is potentially applicable to the natural gas-fired SI RICE. However, neither NSPS Subpart includes emission standards for CO_2/GHGs.

In March 2012 EPA proposed NSPS Subpart TTTT *("Carbon Pollution Standard for New Power Plants"*) however, this proposed rule is not applicable to simple-cycle reciprocating engines.

4.3 National Emission Standards for Hazardous Air Pollutants

NESHAPs are established under 40 CFR Parts 61 and 63. There are no subparts under Part 61 applicable to the Red Gate project. Part 63 establishes NESHAPs for Source Categories and requires the maximum achievable control technology (MACT) be applied for HAPs regulated for the specific source category. Subpart ZZZZ, NESHAP for Stationary RICE, commonly referred to as the RICE MACT is applicable to Red Gate. Subpart ZZZZ applies to both major sources of HAP emissions (≥10 TPY for a single HAP or ≥25 TPY for all HAPs) and area sources (a stationary source of HAPs that is not a major source), but the requirements are different. The SI RICE, diesel-fired emergency fire pump engine, and diesel-fired emergency black start generator are affected sources under Subpart ZZZZ, however, CO_2/GHGs are not regulated under NESHAPs.

4.4 Acid Rain

As per 40 CFR 72.7(a) and (b)(1) the proposed SI RICE are exempt from the Acid Rain Program; while not affected units under the Acid Rain Program, the applicable provisions of 40 CFR 72.7, New Units Exemption, must be met. This includes the submittal of a new unit exemption statement as described in 40 CFR 72.7(b)(2).

Section 5.0
BEST AVAILABLE CONTROL TECHNOLOGY

The requirements for sources subject to PSD are contained in 40 CFR 52.21, including the requirement to apply BACT as in 40 CFR 52.21(j) and the definition of BACT at 40 CFR 52.21(b)(12). BACT is defined there as follows:

> *"Best available control technology* means an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology."

As per 40 CFR 52.21(j)(2), a new major stationary source is to apply BACT for each regulated NSR pollutant that it would have the potential to emit in significant amounts. Section 4.1 presents the comparison of emissions from Red Gate to the PSD threshold for GHGs, and concludes the project is subject to PSD review for GHGs. A BACT analysis is provided in this section for the RICE, diesel-fired emergency fire pump engine, diesel-fired black start generator, and circuit breakers.

5.1 BACT Procedure

Guidance has been established by EPA for conducting a BACT analysis. The "top-down" 5-step process established by EPA is outlined in a June 13, 1998 memorandum and the 1990 Draft NSR Workshop Manual. Following this guidance for GHGs is recommended in EPA's *"PSD and Title V Guidance for Greenhouse Gases."* A BACT analysis is to be conducted on a case-by-case basis, considering available control technologies for each PSD pollutant ranked by effectiveness, and evaluated for technical feasibility and economic impacts. As per EPA guidance, the steps are as follows:

1. Identify all available control technologies for application to the specific emission unit.
2. Eliminate technically infeasible control technologies.
3. Rank the remaining control technologies by control effectiveness.
4. Evaluate the most effective control technology considering energy, environmental, and economic impacts as appropriate. If the top option is not selected as BACT, evaluate the next most effective options.
5. Select BACT.

From the top-down analysis, the most stringent control technology that is not rejected due to technical, energy, environmental, and economic considerations should be selected. The BACT analysis below for GHGs from the SI RICE, diesel-fired generator, diesel-fired fire pump engine, and circuit breakers follows this outline.

5.2 Carbon Dioxide/GHG BACT for SI RICE

The SI RICE are a source of GHGs due to the chemical reactions of the combustion process, although unlike some pollutants GHGs are not formed due to incomplete combustion, therefore adjusting combustion conditions are not a control option. There are no commercially available add-on control devices to separate and capture GHGs from SI RICE flue gases. However, in its GHG Guidance EPA states carbon capture and storage (CCS) should be considered "available" for fossil fuel-fired power plants and listed in Step 1 of a GHG BACT analysis. Thus possible GHG control technologies include selecting an energy efficient process and reduction once generated (capture and sequestration). As in the definition, BACT levels cannot be less stringent than applicable NSPS and MACT emission standards; the proposed SI RICE are subject to NSPS and MACT requirements, however there are no emission standards for GHGs. The following presents the GHG BACT determination for the SI RICE following the 5-step process.

Step 1 - Identify all available control technologies.

Part of the BACT evaluation is to include inherently lower-emitting processes, practices, and designs as applicable. Generally a more energy efficient technology burns less fuel to produce the power output, thus in defining "available" controls, alternative technologies are to be considered in Step 1. As per the EPA GHG Guidance, "While Step 1 is intended to capture a broad array of potential options for pollution control, this step of the process is not without limits…BACT should generally not be applied to regulate the applicant's purpose or objective for the proposed facility." Consequently, while other generating technologies (e.g., combined cycle gas turbines) may be inconsistent with the purpose or objective, they are to be included in Step 1 and evaluated in later steps for feasibility.

The following GHG control technologies are potentially available for the project:

- Alternative generating technologies, such as combined-cycle gas turbines
- Carbon capture and storage
- Energy-efficient SI RICE using low carbon fuel

Step 2 - Eliminate technically infeasible control technologies.

Alternative Generating Technologies

Heat rate, the number of BTUs of heat energy required to produce a kilowatt-hour of electricity, is a measure of how efficiency a generator uses heat energy. Thus a lower heat rate is a measure of energy efficiency. Reciprocating internal combustion engines have low heat rates so are an energy efficient option, as are combined-cycle combustion turbines. Combined-cycle units recover waste heat from the exhaust gases using a heat recovery steam generator (HRSG) converting it to steam. Duct burning, firing additional fuel in the ducts to increase the temperature further, can also be used to produce supplementary steam.

As discussed in previous sections, the ability to control dispatch to meet the intermittent load requirements of STEC's system is of critical importance and one of the main drivers during evaluation of potential generating technologies for the project. Quick response to peak load demand from weather, as well as the ability to quickly come online to make up the lost grid capacity from the variability in output from wind and solar power generation, requires equipment specifically designed for cyclic operation. Key criteria for the generating technologies considered to support the business purpose for this Project were the ability to 1) be brought on-line quickly, even under "cold-start" conditions; 2) repeatedly start-up and shutdown in response to changing demand; 3) provide highly flexible power; and 4) support dispatch optimization (i.e., multiple smaller units versus one larger to minimize part load operation).

Combined-cycle combustion turbines are potentially capable of greater efficiencies, but only at much larger unit sizes than the current STEC load requirements, and at the expense of flexibility. Simple-cycle gas turbines provide the flexibility needed to meet the demand, but have significantly lower thermal efficiency than reciprocating engines resulting in higher life-cycle costs. Additionally, gas turbines used for peaking experience high levels of thermal mechanical fatigue due to the duty cycle. Even with faster-start technology, the time to achieve full load on new combined-cycle units is up to 3 hours, compared with the reciprocating engines ability to achieve full load in less than 10 minutes and achieve full emissions control in less than 30 minutes with no associated start-based maintenance penalty. The longer start times to accommodate the heat recovery cycle and frequent partial loading to follow load and carry ancillary services combine to erode any efficiency advantage of a combined-cycle alternative, and are incompatible with the purpose of the project.

The EPA GHG Guidance states "...the permitting authority can consider the intended function of an electric generating facility as a baseload or peaking unit in assessing the fundamental business purpose of a permit applicant." Alternative generating technologies have been evaluated but are inconsistent with STEC's stated needs and are technically infeasible to meet the key criteria to support the business purpose of the project. Of the technologies evaluated, reciprocating engines were selected as the best combination of efficiency, flexibility, and cost. The rapid start capability, combined with the small dispatchable unit size, minimizes part load operation and results in greater overall plant efficiency and reduced emissions. Therefore, alternative generating technologies have been eliminated as a control option from further consideration.

Carbon Capture and Storage

As in the EPA GHG Guidance document "…although CCS is not in widespread use at this time, EPA generally considers CCS to be an "available" add-on pollution control technology…" Based on this and guidance received from EPA Region 6, CCS has been included in this BACT evaluation. There are three main components to CCS, CO_2 capture and/or compression, transport, and storage. Recent research and pilot studies have resulted in some emerging technologies for capturing and separating CO_2 from flue gases, although many of these methods are still in development or not compatible with the characteristics of the exhaust gas stream. The most mature post-combustion capture technique potentially applicable to the SI RICE is amine absorption. The CO_2 concentration in the SI RICE exhaust is roughly 4.5 vol-%, this low dilute concentration presents a challenge for separating CO_2. Transport and storage challenges include a lack of existing infrastructure (e.g., pipelines) and sites for secure long-term CO_2 storage.

Typically amine solvents, such as monoethanolamine (MEA), are effective at absorbing CO_2 from exhaust streams, but the flue gas is cooled before contacting lean solvent in an absorber. The process of regenerating the rich solvent, in a stripper at elevated temperatures, is a highly energy-intensive process. In the *"Fact Sheet and Ambient Air Quality Impact Report"* for the Pio Pico Energy Center, June 2012 (a natural gas-fired simple-cycle combustion turbine facility), EPA Region 9 states the following regarding CCS for simple-cycle applications:

> "In 2003, Fluor and BP completed a joint study that examined the prospect of capturing CO_2 from eleven *simple cycle* gas turbines at a BP gas processing plant in Alaska known as the Central Gas Facility (CGF) (Hurst & Walker, 2005; Simmonds et al., 2003). Although this project was not actually implemented (S. Reddy, personal communication, December 13, 2011; available in EPA's administrative record for PPEC), the feasibility study provides valuable information about the design of a capture system for simple-cycle applications, particularly with respect to flue gas cooling and heat recovery. Absorption of CO_2 by MEA is a reversible exothermic reaction. Before entering the absorber, the turbine exhaust gas must be cooled to around 50°C to improve absorption and minimize solvent loss due to evaporation (Wang, 2011). In the case of the CGF design, the flue gas is cooled by feeding it first to a HRSG for bulk removal of heat energy and then to a direct contact cooler…After the MEA is loaded with CO_2 in the absorber, it is sent to a stripper where it is heated to reverse the reaction and liberate the CO_2 for compression. The heat for this regeneration stage comes from the high- and intermediate-pressure steam generated in the HRSG."
>
> "The integral nature of the HRSG to the overall process for the CGF is notable because it would essentially require conversion of the turbines from simple-cycle to combined-cycle operation. Therefore, based on this information, we conclude that while carbon capture with an MEA absorption process is feasible for a combined-cycle operation, it is not feasible for simple-cycle units (i.e., those without a HRSG)."

The Pio Pico Energy Center is also a peaking facility and EPA Region 9 determined that combined-cycle gas turbines were not technically feasible based on the operation being incompatible with the purpose of the project. Thus EPA Region 9 concludes "Given that combined-cycle gas turbines are not technically feasible…CCS is also technically infeasible for the proposed Project." EPA Region 9 goes on to further argue the case of technical infeasibility of CCS based on the Project's need for multiple start-ups and shutdowns, stating the transient operation "…is incompatible with current carbon capture systems, which are more suitable for steady-state operation." EPA Region 9 eliminated CCS from further consideration in the BACT analysis at Step 2 concluding "Consequently, even if the flue gas cooling and heat integration issues could be addressed through a combined-cycle design, CCS would still be technically infeasible for this project, given its non-steady state operation."

These conclusions by EPA Region 9 are directly applicable to the STEC Red Gate facility based on both facilities having the same business purpose as simple-cycle peaking facilities. Consistent with EPA's interpretation, STEC concludes CCS is technically infeasible for the proposed Red Gate facility.

Step 3 - Rank the remaining control technologies by control effectiveness.

After elimination of alternative generating technologies and CCS as potential GHG control technologies, the use of energy-efficient SI RICE is the remaining control method.

Step 4 – Economic, Energy, and Environmental Impacts

As other GHG control methods have been determined to be technically infeasible, the use of energy-efficient natural gas-fired SI RICE is the most-effective control option. This option is proposed for the project, so an evaluation of economic, energy, and environmental impacts is not necessary. Several models of larger SI RICE are available, however STEC is proposing to use the Wartsila 18V50SG, which has a lower heat rate than other models evaluated. For example the Wartsila 18V50SG has a proposed design-based heat rate at 100% Load (HHV) of 8,302 Btu/kWh. Also, due to the engine rating (18.7 MW) fewer engines are required to meet the nominal generating capacity. As mentioned previously, engine cooling is provided by closed loop cooling radiators so there will be no off-site source of cooling water required. The use of simple-cycle SI RICE reduce environmental impacts associated with water resources as there is no off-site water intake or discharge associated with the proposed facility.

Step 5 – Select BACT.

Based on the above, STEC is proposing the use of new energy-efficient SI RICE as BACT for GHGs. Several factors were evaluated in determining the SI RICE proposed, including project cost, engine energy efficiency and emissions, as well as schedule. In order to account for factors such as tolerances in manufacturing and construction of the equipment, ambient operating conditions and seasonal variation, as well as losses in efficiency over the life of the equipment a 9% margin has been applied. The proposed GHG BACT for the SI RICE is consistent with recently permitted simple-cycle projects. The proposed output-based emission limit of 1,193 lb CO_2/MWh on a 12-month calendar average is also consistent with the EPA GHG Guidance document that states for GHGs longer-term averaging periods are more appropriate.

Compliance will be demonstrated by determining CO_2 mass emissions using the Tier 1 Calculation Methodology from 40 CFR Part 98 with continuous monitoring of fuel metered to each engine. The gross output (MWh) will be continuously monitored for each engine by a power monitoring unit. The CO_2 mass emissions will be divided by the gross output to yield an output-based emission rate per engine for comparison to the emission limit. Recordkeeping will be accomplished by a data acquisition and handling system with a back-up data historian. STEC will comply with the applicable provisions of 40 CFR Part 98, including reporting.

In order to determine the emission reduction performance levels that have been recently permitted as BACT for larger size SI RICE, EPA's RACT/BACT/LAER Clearinghouse (RBLC) was consulted for recent determinations of GHG BACT for similar projects. One consideration to keep in mind when comparing to existing BACT emission levels is that the engines being proposed represent an increase in power output over currently installed engines (18 MW versus roughly 6.1-8.5 MW). In accordance with this, the entries in the RBLC under the category "17.130 – Internal Combustion Engines (>500 hp), natural gas combustion" are for much smaller engines and not comparable. The few entries for GHG BACT in the RBLC documentation are contained in Appendix C; non-related processes have been removed from RBLC entries.

5.3 Carbon Dioxide/GHG BACT for Generator

Auxiliary equipment for the proposed project include a 500 kW (670 hp) diesel-fired emergency black start generator. The emergency black start generator is intended to provide black start capability for the ERCOT market; the function is to provide the plant with emergency back-up power in case of disconnection of the grid. Operation is assumed to be 500 hours per year.

Step 1 - Identify all available control technologies.

The following GHG control technologies are potentially available for the emergency engine:

- Low carbon fuel
- Good combustion and maintenance practices (following manufacturer's specifications and recommendations for operation, maintenance, and periodic testing)
- Reduced hours of operation

Step 2 - Eliminate technically infeasible control technologies.

The control technologies proposed above are technically feasible with the exception of using the lowest carbon fuel. An electric or natural gas-fired engine would be lower in carbon emissions, however the proposed engine is to be used for emergency purposes, thus firing on a back-up fuel other than natural gas or electricity is necessary. Consequently, the potential fuel options include liquid fuels, such as gasoline or fuel oil. These fuels can be stored on-site and provide fuel on demand in the event of an emergency. As diesel fuel is less volatile than gasoline and has a longer storage life, it is the proposed fuel for the emergency engine.

Step 3 - Rank the remaining control technologies by control effectiveness.

Because of the purpose of the engine for use in emergencies the use of a lower carbon fuel (electric or natural gas-fired engine) is technically infeasible and not considered further. The remaining GHG control options are all being proposed as BACT, thus ranking the control technologies is not necessary.

Step 4 – Economic, Energy, and Environmental Impacts

The remaining most-effective control options are proposed for the emergency engine, so an evaluation of economic, energy, and environmental impacts is not necessary.

Step 5 – Select BACT.

Proposed BACT for the emergency generator is to operate according to manufacturer's recommendations and limit the hours of operation. Limiting the annual operation to 500 hours per year will significantly reduce potential emissions of GHGs from the emergency engine.

5.4 Carbon Dioxide/GHG BACT for Fire Pump Engine

Auxiliary equipment for Red Gate include a 150 hp diesel-fired emergency fire pump engine. The emergency fire pump engine will supply water in the event of a fire at the facility. The hours of operation are limited to 100 hours per year for maintenance and required testing.

Step 1 - Identify all available control technologies.

The following GHG control technologies are potentially available for the emergency engine:

- Low carbon fuel
- Good combustion and maintenance practices (following manufacturer's specifications and recommendations for operation, maintenance, and periodic testing)
- Reduced hours of operation

Step 2 - Eliminate technically infeasible control technologies.

The control technologies proposed above are technically feasible with the exception of using the lowest carbon fuel. An electric or natural gas-fired engine would be lower in carbon emissions, however the proposed engine is to be used for emergency purposes, thus firing on a back-up fuel other than natural gas or electricity is necessary. Consequently, the potential fuel options include liquid fuels, such as gasoline or fuel oil. These fuels can be stored on-site and provide fuel on demand in the event of an emergency. As diesel fuel is less volatile than gasoline and has a longer storage life, it is the proposed fuel for the emergency engine.

Step 3 - Rank the remaining control technologies by control effectiveness.

Because of the purpose of the engine for use in emergencies the use of a lower carbon fuel (electric or natural gas-fired engine) is technically infeasible and not considered further. The remaining GHG control options are all being proposed as BACT, thus ranking the control technologies is not necessary.

Step 4 – Economic, Energy, and Environmental Impacts

The remaining most-effective control options are proposed for the emergency engine, so an evaluation of economic, energy, and environmental impacts is not necessary.

Step 5 – Select BACT.

Proposed BACT for the emergency fire pump engine is to operate according to manufacturer's recommendations and limit the hours of operation. Limiting the annual operation to 100 hours per year will significantly reduce potential emissions of GHGs from the emergency engine.

5.5 Carbon Dioxide/GHG BACT for Circuit Breakers

Auxiliary equipment for Red Gate includes circuit breakers on the high-voltage side of the transformers insulated with SF_6. Due to potential leaks from this equipment, a GHG BACT analysis is provided below.

Step 1 - Identify all available control technologies.

The following GHG control technologies are potentially available for the circuit breakers:

- Non-GHG insulated circuit breakers (e.g., dielectric oil or compressed air)
- Enclosed-pressure SF_6 circuit breakers equipped with leak detection systems

High-voltage electrical equipment has been insulated with SF_6 for years because it is an efficient electrical insulator. The fluorinated compound is very stable and used in sealed systems, which under normal circumstances do not leak. In order to detect leaks before the bulk of the SF_6 has escaped, circuit breakers can be equipped with a leak detection system with an alarm at a specified loss percentage.

Step 2 - Eliminate technically infeasible control technologies.

SF_6 has been used for decades as an electrical insulator in high voltage equipment that transmits and distributes electricity because it is superior to alternatives, such as air and dielectric oil, as well as other gases. The National Institute of Standards and Technology (NIST) evaluated potential alternatives to SF_6 in electrical equipment in its 1997 Technical Note 1425 *"Gases for Electrical Insulation and Arc Interruption: Possible Present and Future Alternatives to Pure SF_6."* NIST states "For gas insulated circuit breakers there are still significant questions concerning the performance of gases other than pure SF_6." After evaluating research on SF_6 alternatives they conclude that while some have shown promise "…it is clear that a significant amount of research must be performed for any new gas or gas mixtures to be used in electrical equipment." In addition, with regards to land use and noise emissions SF_6-insulated equipment "…is clearly superior in performance to the air and oil insulated equipment which was used prior to the development of SF_6-insulated equipment." Consequently, SF_6-insulated circuit breakers are the only technically feasible option currently available.

Step 3 - Rank the remaining control technologies by control effectiveness.

The remaining GHG control option is being proposed as BACT, thus ranking the control technologies is not necessary.

Step 4 – Economic, Energy, and Environmental Impacts

The remaining most-effective control option is proposed for the circuit breakers, so an evaluation of economic, energy, and environmental impacts is not necessary.

Step 5 – Select BACT.

Proposed BACT includes enclosed-pressure SF_6 circuit breakers with an annual leakage rate of 0.5% by weight equipped with a leak detection system.

Appendix A
Texas Commission on Environmental Quality

APPLICATION FORM

Texas Commission on Environmental Quality
Form PI-1 General Application for
Air Preconstruction Permit and Amendment

Important Note: The agency **requires** that a Core Data Form be submitted on all incoming applications unless a Regulated Entity and Customer Reference Number have been issued *and* no core data information has changed. For more information regarding the Core Data Form, call (512) 239-5175 or go to www.tceq.texas.gov/permitting/central_registry/guidance.html.

I. Applicant Information		
A. Company or Other Legal Name: South Texas Electric Cooperative, Inc.		
Texas Secretary of State Charter/Registration Number (*if applicable*): 8314701		
B. Company Official Contact Name: John Packard		
Title: Manager of Generation		
Mailing Address: P.O. Box 119		
City: Nursery	State: TX	ZIP Code: 77976
Telephone No.: 361.485.6320	Fax No.: 361.485.6329	E-mail Address: japackard@stec.org
C. Technical Contact Name: John Packard		
Title: Manager of Generation		
Company Name: South Texas Electric Cooperative, Inc.		
Mailing Address: P.O. Box 119		
City: Nursery	State: TX	ZIP Code: 77976
Telephone No.: 361.485.6320	Fax No.: 361.485.6329	E-mail Address: japackard@stec.org
D. Site Name: Red Gate Power Plant		
E. Area Name/Type of Facility: Reciprocating Internal Combustion Engine Facility		☒ Permanent ☐ Portable
F. Principal Company Product or Business: Electric Generation		
Principal Standard Industrial Classification Code (SIC): 4911		
Principal North American Industry Classification System (NAICS): 221112		
G. Projected Start of Construction Date: June 2013		
Projected Start of Operation Date: June 2014		
H. Facility and Site Location Information (If no street address, provide clear driving directions to the site in writing.):		
Street Address: 3428 West FM 490; Approximately 2.5 miles west of State Highway 281 and FM 490 interchange		
City/Town: Edinburg	County: Hidalgo	ZIP Code: 78541
Latitude (nearest second): 26º 44’ 90”	Longitude (nearest second): -98º 17’ 80”	

Texas Commission on Environmental Quality
Form PI-1 General Application for
Air Preconstruction Permit and Amendment

I.	**Applicant Information (continued)**	
I.	Account Identification Number (leave blank if new site or facility):	
J.	Core Data Form.	
Is the Core Data Form (Form 10400) attached? If *No*, provide customer reference number and regulated entity number (complete K and L).		☒ YES ☐ NO
K.	Customer Reference Number (CN): 600131254	
L.	Regulated Entity Number (RN): N/A – new facility	
II.	**General Information**	
A.	Is confidential information submitted with this application? If *Yes*, mark each **confidential** page **confidential** in large red letters at the bottom of each page.	☐ YES ☒ NO
B.	Is this application in response to an investigation or enforcement action? If *Yes*, attach a copy of any correspondence from the agency.	☐ YES ☒ NO
C.	Number of New Jobs: 23	
D.	Provide the name of the State Senator and State Representative and district numbers for this facility site:	
Senator: Senator Juan Hinojosa		District No.: 20
Representative: Representative Aaron Pena		District No.: 40
III.	**Type of Permit Action Requested**	
A.	Mark the appropriate box indicating what type of action is requested.	
Initial ☒ Amendment ☐ Revision (30 TAC 116.116(e)) ☐ Change of Location ☐ Relocation ☐		
B.	Permit Number (if existing):	
C.	Permit Type: Mark the appropriate box indicating what type of permit is requested. *(check all that apply, skip for change of location)*	
Construction ☒ Flexible ☐ Multiple Plant ☐ Nonattainment ☐ Prevention of Significant Deterioration ☒		
Hazardous Air Pollutant Major Source ☒ Plant-Wide Applicability Limit ☐		
Other:_____		
D.	Is a permit renewal application being submitted in conjunction with this amendment in accordance with 30 TAC 116.315(c).	☐ YES ☒ NO

III. Type of Permit Action Requested (continued)			
E. Is this application for a change of location of previously permitted facilities? If Yes, complete III.E.1 - III.E.4.			☐ YES ☒ NO
1. Current Location of Facility (If no street address, provide clear driving directions to the site in writing.):			
Street Address:			
City:	County:	ZIP Code:	
2. Proposed Location of Facility (If no street address, provide clear driving directions to the site in writing.):			
Street Address:			
City:	County:	ZIP Code:	
3. Will the proposed facility, site, and plot plan meet all current technical requirements of the permit special conditions? If *No*, attach detailed information.			☐ YES ☐ NO
4. Is the site where the facility is moving considered a major source of criteria pollutants or HAPs?			☐ YES ☐ NO
F. Consolidation into this Permit: List any standard permits, exemptions or permits by rule to be consolidated into this permit including those for planned maintenance, startup, and shutdown.			
List: N/A			
G. Are you permitting planned maintenance, startup, and shutdown emissions? If *Yes*, attach information on any changes to emissions under this application as specified in VII and VIII.			☒ YES ☐ NO
H. Federal Operating Permit Requirements (30 TAC Chapter 122 Applicability)			
Is this facility located at a site required to obtain a federal operating permit? If *Yes*, list all associated permit number(s), attach pages as needed).			☐ YES ☐ NO ☐ To be determined N/A, new facility
Associated Permit No (s.):			
1. Identify the requirements of 30 TAC Chapter 122 that will be triggered if this application is approved. FOP Significant Revision ☐ FOP Minor ☐ Application for an FOP Revision ☐ To Be Determined ☐ Operational Flexibility/Off-Permit Notification ☐ Streamlined Revision for GOP ☐ None ☐			

III. Type of Permit Action Requested (continued)		
H. Federal Operating Permit Requirements (30 TAC Chapter 122 Applicability) *(continued)*		
2. Identify the type(s) of FOP(s) issued and/or FOP application(s) submitted/pending for the site. (check all that apply) N/A, new facility		
GOP Issued ☐	GOP application/revision application submitted or under APD review ☐	
SOP Issued ☐	SOP application/revision application submitted or under APD review ☐	
IV. Public Notice Applicability		
A. Is this a new permit application or a change of location application?		☒ YES ☐ NO
B. Is this application for a concrete batch plant? If Yes, complete V.C.1 – V.C.2.		☐ YES ☒ NO
C. Is this an application for a major modification of a PSD, nonattainment, FCAA 112(g) permit, or exceedance of a PAL permit?		☐ YES ☒ NO
D. Is this application for a PSD or major modification of a PSD located within 100 kilometers or less of an affected state or Class I Area?		☐ YES ☒ NO
If *Yes*, list the affected state(s) and/or Class I Area(s).		
E. Is this a state permit amendment application? If Yes, complete IV.E.1. – IV.E.3. N/A, new facility		
1. Is there any change in character of emissions in this application?		☐ YES ☐ NO
2. Is there a new air contaminant in this application?		☐ YES ☐ NO
3. Do the facilities handle, load, unload, dry, manufacture, or process grain, seed, legumes, or vegetables fibers (agricultural facilities)?		☐ YES ☐ NO
F. List the total annual emission increases associated with the application (*list* **all** *that apply and attach additional sheets as needed*):		
Volatile Organic Compounds (VOC): 808.4		
Sulfur Dioxide (SO_2): 23.5		
Carbon Monoxide (CO): 837.5		
Nitrogen Oxides (NO_x): 383.8		
Particulate Matter (PM): 184.6		
PM $_{10}$ microns or less (PM_{10}): 184.6		
PM $_{2.5}$ microns or less ($PM_{2.5}$): 184.6		
Lead (Pb): <0.1		
Hazardous Air Pollutants (HAPs): 336.8		
Other speciated air contaminants **not** listed above:		

V. Public Notice Information (complete if applicable)		
A. Public Notice Contact Name: John Packard		
Title: Manager of Generation		
Mailing Address: P.O. Box 119		
City: Nursery	State: TX	ZIP Code: 77976
Telephone No.: 361.485.6320		
B. Name of the Public Place: Edinburg Public Library		
Physical Address (No P.O. Boxes): 1906 South Closner Boulevard		
City: Edinburg	County: TX	ZIP Code: 78539
The public place has granted authorization to place the application for public viewing and copying.		☒ YES ☐ NO
The public place has internet access available for the public.		☒ YES ☐ NO
C. Concrete Batch Plants, PSD, and Nonattainment Permits		
1. County Judge Information (For Concrete Batch Plants and PSD and/or Nonattainment Permits) for this facility site.		
The Honorable: Ramon Garcia		
Mailing Address: P.O. Box 1356		
City: Edinburg	State: TX	ZIP Code: 78539
2. Is the facility located in a municipality or an extraterritorial jurisdiction of a municipality? *(For Concrete Batch Plants)*		☐ YES ☐ NO
Presiding Officers Name(s):		
Title:		
Mailing Address:		
City:	State:	ZIP Code:
3. Provide the name, mailing address of the chief executive of the city for the location where the facility is or will be located.		
Chief Executive: Mayor Richard H. Garcia		
Mailing Address: 415 W. University Drive		
City: Edinburg	State: TX	ZIP Code: 78539

V. Public Notice Information (complete if applicable) (continued)		
3. Provide the name, mailing address of the Indian Governing Body for the location where the facility is or will be located. *(continued)* N/A, > 100 km		
Name of the Indian Governing Body:		
Title:		
Mailing Address:		
City:	State:	ZIP Code:
D. Bilingual Notice		
Is a bilingual program **required** by the Texas Education Code in the School District?		☒ YES ☐ NO
Are the children who attend either the elementary school or the middle school closest to your facility eligible to be enrolled in a bilingual program provided by the district?		☒ YES ☐ NO
If *Yes,* list which languages are required by the bilingual program? Spanish		
VI. Small Business Classification (Required)		
A. Does this company (including parent companies and subsidiary companies) have fewer than 100 employees or less than $6 million in annual gross receipts?		☐ YES ☒ NO
B. Is the site a major stationary source for federal air quality permitting?		☒ YES ☐ NO
C. Are the site emissions of any regulated air pollutant greater than or equal to 50 tpy?		☒ YES ☐ NO
D. Are the site emissions of all regulated air pollutants combined less than 75 tpy?		☐ YES ☒ NO
VII. Technical Information		
A. The following information must be submitted with your Form PI-1 (this is just a checklist to make sure you have included everything)		
1. Current Area Map ☒		
2. Plot Plan ☒		
3. Existing Authorizations ☐ N/A		
4. Process Flow Diagram ☒		
5. Process Description ☒		
6. Maximum Emissions Data and Calculations ☒		
7. Air Permit Application Tables ☒		
a. Table 1(a) (Form 10153) entitled, Emission Point Summary ☒		
b. Table 2 (Form 10155) entitled, Material Balance ☒		
c. Other equipment, process or control device tables ☒		

VII. Technical Information				
B. Are any schools located within 3,000 feet of this facility?				☐ YES ☒ NO
C. Maximum Operating Schedule:				
Hours: 24	Day(s): 7	Week(s): 52	Year(s): 30	
Seasonal Operation? If Yes, please describe in the space provide below.				☐ YES ☒ NO
D. Have the planned MSS emissions been previously submitted as part of an emissions inventory?				☐ YES ☒ NO
Provide a list of each planned MSS facility or related activity and indicate which years the MSS activities have been included in the emissions inventories. Attach pages as needed.				
E. Does this application involve any air contaminants for which a *disaster review* is required?				☐ YES ☒ NO
F. Does this application include a pollutant of concern on the *Air Pollutant Watch List (APWL)*?				☐ YES ☒ NO
VIII. State Regulatory Requirements **Applicants must demonstrate compliance with all applicable state regulations to obtain a permit or amendment**. *The application must contain detailed attachments addressing applicability or non applicability; identify state regulations; show how requirements are met; and include compliance demonstrations.*				
A. Will the emissions from the proposed facility protect public health and welfare, and comply with all rules and regulations of the TCEQ?				☒ YES ☐ NO
B. Will emissions of significant air contaminants from the facility be measured?				☒ YES ☐ NO
C. Is the Best Available Control Technology (BACT) demonstration attached?				☒ YES ☐ NO
D. Will the proposed facilities achieve the performance represented in the permit application as demonstrated through recordkeeping, monitoring, stack testing, or other applicable methods?				☒ YES ☐ NO
IX. Federal Regulatory Requirements **Applicants must demonstrate compliance with all applicable federal regulations to obtain a permit or amendment** *The application must contain detailed attachments addressing applicability or non applicability; identify federal regulation subparts; show how requirements are met; and include compliance demonstrations.*				
A. Does Title 40 Code of Federal Regulations Part 60, (40 CFR Part 60) New Source Performance Standard (NSPS) apply to a facility in this application?				☒ YES ☐ NO
B. Does 40 CFR Part 61, National Emissions Standard for Hazardous Air Pollutants (NESHAP) apply to a facility in this application?				☐ YES ☒ NO
C. Does 40 CFR Part 63, Maximum Achievable Control Technology (MACT) standard apply to a facility in this application?				☒ YES ☐ NO

IX. Federal Regulatory Requirements **Applicants must demonstrate compliance with all applicable federal regulations to obtain a permit or amendment *The application must contain detailed attachments addressing applicability or non applicability; identify federal regulation subparts; show how requirements are met; and include compliance demonstrations.***		
D.	Do nonattainment permitting requirements apply to this application?	☐ YES ☒ NO
E.	Do prevention of significant deterioration permitting requirements apply to this application?	☒ YES ☐ NO
F.	Do Hazardous Air Pollutant Major Source [FCAA 112(g)] requirements apply to this application? *(Note: the facility is a major source, but not subject to case-by-case MACT)*	☐ YES ☒ NO
G.	Is a Plant-wide Applicability Limit permit being requested?	☐ YES ☒ NO
X. Professional Engineer (P.E.) Seal		
Is the estimated capital cost of the project greater than $2 million dollars?		☒ YES ☐ NO
If *Yes*, submit the application under the seal of a Texas licensed P.E.		
XI. Permit Fee Information		
Check, Money Order, Transaction Number, ePay Voucher Number: 113232		Fee Amount: $75,000
Company name on check: South Texas Electric Cooperative, Inc.		Paid online?: ☐ YES ☒ NO
Is a copy of the check or money order attached to the original submittal of this application?		☒ YES ☐ NO ☐ N/A
Is a Table 30 (Form 10196) entitled, Estimated Capital Cost and Fee Verification, attached?		☒ YES ☐ NO ☐ N/A

Texas Commission on Environmental Quality
Form PI-1 General Application for
Air Preconstruction Permit and Amendment

XII. Delinquent Fees and Penalties
This form **will not be processed** until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ is paid in accordance with the Delinquent Fee and Penalty Protocol. For more information regarding Delinquent Fees and Penalties, go to the TCEQ Web site at: www.tceq.texas.gov/agency/delin/index.html.
XIII. Signature
The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7, Texas Clean Air Act (TCAA), as amended, or any of the air quality rules and regulations of the Texas Commission on Environmental Quality or any local governmental ordinance or resolution enacted pursuant to the TCAA I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.
Name: John Packard, Manager of Generation
Signature: *Original Signature Required*
Date: October 16, 2012

Appendix B
EMISSION CALCULATIONS AND ASSUMPTIONS

STEC Emissions Summary
12/14/2012

Summary of Facility Emissions

Source	CO2	CH4	N2O	HFC	PFC	SF6	CO2e
Engines - 100%	959,903	17.7	1.8	--	--	--	960,826
Engines - SU	75,343	1.3	0.13	--	--	--	75,411
GEN01	69.5	2.8E-03	5.6E-04	--	--	--	69.7
FP01	3.1	1.3E-04	2.5E-05	--	--	--	3.1
Circuit Breakers	--	--	--	--	--	0.001	23.9
TOTAL	1,035,318	19.1	1.9	0.0	0.0	0.001	1,036,334

STEC Emissions Summary
Wartsila CO2

EPN	Name	CO2	
		lb/hr	TPY
Wartsila 18V50SG - emissions based on data from Wartsila			
100% Load			
ENG01 - ENG12	Engine 1 through 12	18,263	79,992
75% Load			
ENG01 - ENG12	Engine 1 through 12	14,255	--
50% Load			
ENG01 - ENG12	Engine 1 through 12	9,876	--
40% Load			
ENG01 - ENG12	Engine 1 through 12	8,123	--
Start-up - Data from Wartsila, duration 30 minutes - lb/hr is 30 minutes start-up, 30 minutes full load, 2 start-up/day			
ENG01 - ENG12	Engine 1 through 12	17,202	6,279

STEC Emissions Summary
Wartsila GHG

EPN	Name	Maximum Heat Input	CO_2			CH_4			N_2O			CO_2e
			Emission Factor*	TPY	Global Warming Potential**	Emission Factor*	TPY	Global Warming Potential**	Emission Factor*	TPY	Global Warming Potential**	
		MMBtu/hr	kg/MMBtu			kg/MMBtu			kg/MMBtu			TPY
Wartsila 18V50SG - emissions based on data from Wartsila												
100% Load												
ENG01 - ENG12	Engine 1 through 12	153.2	--	79,992	1	1.0E-03	1.48	21	1.0E-04	0.15	310	80,069
Start-up - Data from Wartsila, duration 30 minutes - lb/hr is 30 minutes start-up, 30 minutes full load, 2 start-up/day												
ENG01 - ENG12	Engine 1 through 12	135.8	--	6,279	1	1.0E-03	0.11	21	1.0E-04	0.011	310	6,284
Auxiliary Equipment, Generator - 500 hours/year												
GEN01	Diesel Black start	1.71	73.96	69.5	1	3.0E-03	2.8E-03	21	6.0E-04	5.6E-04	310	69.7
Auxiliary Equipment, Emergency Fire Pump Engine - 100 hours/year												
FP01	Diesel Fire pump	0.38	73.96	3.1	1	3.0E-03	1.3E-04	21	6.0E-04	2.5E-05	310	3.1

* From 40 CFR Part 98, Table C-1 and C-2
** From 40 CFR Part 98, Table A-1

$$\frac{\text{Ton}}{\text{yr}} = \frac{\text{kg}}{\text{MMBtu}} \times \frac{\text{MMBTU}}{\text{hr}} \times \frac{\text{hr}}{\text{yr}} \times \frac{2.204\ \text{lb}}{\text{kg}} \times \frac{\text{Ton}}{2000\ \text{lb}}$$

$$CO_2e = \frac{\text{Ton}}{\text{year}} \times \text{Global Warming Potential}$$

STEC Red Gate 1 x Wärtsilä 18V50SG

Expected Emissions

Applicable to One 18V50SG unit (steady state) **Emission Summary & Conversion Tables**		100%	90%	75%	50%	40%
CO2	**g/kWhe**	442	448	460	480	497
CO2	**g/bhp-hr-e**	329	334	343	358	370
CO2 (Note 1, 2)	**lb/h**	18,263	16,660	14,255	9,876	8,123
CO2	**lb/MWh**	974	987	1013	1057	1095
	kWe defined at alternator					
Output	kWe-gross	18759	16883	14069	9341	7420

Note 1 Startup (based on 30 minute start) 8070 lb CO2
Note 2 Startup (based on 60 minute start) 17,202 lb CO2

SF_6-Insulated Circuit Breakers

Size:	400	pounds
Annual Leak Rate:	0.50%	by weight
SF_6 GWP:	23,900	From 40 CFR Part 98, Table A-1

	TPY
SF_6	0.001
CO_2e	23.9

$$\frac{\text{Ton}}{\text{yr}} = \frac{\text{lb}}{\text{CB}} \times \text{\% wt} \times \frac{\text{Ton}}{2000\ \text{lb}}$$

$$CO_2e = \frac{\text{Ton}}{\text{year}} \times \text{Global Warming Potential}$$

Appendix C
RACT/BACT/LAER CLEARINGHOUSE SUMMARY

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COMPREHENSIVE REPORT
Report Date:11/02/2012

Facility Information

RBLC ID:	FL-0330 (draft)	**Date Determination Last Updated:**	09/10/2012
Corporate/Company Name:		**Permit Number:**	DPA-EPA-R4001
Facility Name:	PORT DOLPHIN ENERGY LLC	**Permit Date:**	12/01/2011 (actual)
Facility Contact:		**FRS Number:**	110029520141
Facility Description:	Port Dolphin is a deepwater port designed to moor liquefied natural gas shuttle and regasification vessels 28 miles off the cost of Florida.	**SIC Code:**	4923
Permit Type:	A: New/Greenfield Facility	**NAICS Code:**	213112
Permit URL:			
EPA Region:	4	**COUNTRY:**	USA
Facility County:	HILLSBOROUGH		
Facility State:	FL		
Facility ZIP Code:	33616		
Permit Issued By:	EPA REGION IV (Agency Name) MS. KATY R. FORNEY(Agency Contact) (404) 562-9130 forney.kathleen@epa.gov		
Permit Notes:			

Process/Pollutant Information

PROCESS NAME: Power Generator Engines (3)
Process Type: 11.310 (Natural Gas (includes propane and liquefied petroleum gas))
Primary Fuel: natural gas
Throughput: 0
Process Notes: 2 - 11,400 kW dual fuel Wartsila engines and 1 - 5700 kW dual fuel Wartsila engine.

POLLUTANT NAME: Carbon Dioxide
CAS Number: 124-38-9
Test Method: EPA/OAR Mthd 3A
Pollutant Group(s): (Acid Gasses/Mist , Greenhouse Gasses (GHG) , InOrganic Compounds)
Emission Limit 1: 181.0000 G/KW-H 8-HOUR ROLLING AVERAGE
Emission Limit 2: 253.0000 G/KW-H 8-HOUR ROLLING AVERAGE
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (P) use of efficient engine design and use of primarily natural gas
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes: Emission limit 1 - natural gas; Emission limit 2 - low sulfur fuel oil

Process/Pollutant Information

PROCESS NAME: Fugitive GHG emissions
Process Type: 99.999 (Other Miscellaneous Sources)
Primary Fuel:
Throughput: 0
Process Notes: Process Piping fugitives

POLLUTANT NAME: Carbon Dioxide
CAS Number: 124-38-9
Test Method: Unspecified
Pollutant Group(s): (Acid Gasses/Mist , Greenhouse Gasses (GHG) , InOrganic Compounds)
Emission Limit 1:

Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (P) a gas and leak detection system will be used.
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

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COMPREHENSIVE REPORT
Report Date:11/02/2012

Facility Information

RBLC ID:	IA-0105 (draft)	**Date Determination Last Updated:**	11/02/2012
Corporate/Company Name:		**Permit Number:**	12-219
Facility Name:	IOWA FERTILIZER COMPANY	**Permit Date:**	10/26/2012 (actual)
Facility Contact:	KEVIN STRUVE +44 (0) 2074394801 KSTRUVE@ORASCOMCI.CO.UK	**FRS Number:**	
Facility Description:	Nitrogeneous Fertilizer Manufacturing	**SIC Code:**	2873
Permit Type:	A: New/Greenfield Facility	**NAICS Code:**	325311
Permit URL:	https://aqbweb.iowadnr.gov/airpermit/eepsdpermit.jsp		
EPA Region:	7	**COUNTRY:**	USA
Facility County:	LEE		
Facility State:	IA		
Facility ZIP Code:	52658		
Permit Issued By:	IOWA DEPARTMENT OF NATURAL RESOURCES AIR QUALITY (Agency Name) MR. GARY SMITH(Agency Contact) (515) 281-4635 GARY.SMITH@DNR.IOWA.GOV		
Other Agency Contact Info:	Christopher A. Roling, PE Environmental Engineer Senior (515) 242-6002 chris.roling@dnr.iowa.gov		
Permit Notes:			

Facility-wide Emissions:

Pollutant Name:	Facility-wide Emissions Increase:
Carbon Monoxide	111.0000 (Tons/Year)
Nitrogen Oxides (NOx)	95.7000 (Tons/Year)
Particulate Matter (PM)	84.6000 (Tons/Year)
Sulfur Oxides (SOx)	3.3000 (Tons/Year)
Volatile Organic Compounds (VOC)	59.7000 (Tons/Year)

Process/Pollutant Information

PROCESS NAME: Emergency Generator

Process Type: 17.110 (Fuel Oil (ASTM # 1,2, includes kerosene, aviation, diesel fuel))

Primary Fuel: diesel fuel

Throughput: 142.00 gal/hr

Process Notes: rated @ 2,000 KW

POLLUTANT NAME: Carbon Dioxide Equivalent (CO2e)

CAS Number: CO2e
Test Method: Other
Other Test Method: recordkeeping
Pollutant Group(s): (Greenhouse Gasses (GHG))
Emission Limit 1: 788.5000 TONS/YR ROLLING 12 MONTH TOTAL
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (P) good combustion practices
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Carbon Dioxide

CAS Number: 124-38-9
Test Method: EPA/OAR Mthd 3A
Pollutant Group(s): (Acid Gasses/Mist , Greenhouse Gasses (GHG) , InOrganic Compounds)
Emission Limit 1: 1.5500 G/KW-HR AVERAGE OF 3 STACK TEST RUNS
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (P) good combustion practices
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Methane

CAS Number: 74-82-8
Test Method: EPA/OAR Mthd 18
Pollutant Group(s): (Greenhouse Gasses (GHG) , Organic Compounds (all) , Organic Non-HAP Compounds)
Emission Limit 1: 0.0001 G/KW-HR AVERAGE OF 3 STACK TEST RUNS
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (P) good combustion practices
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

Process/Pollutant Information

PROCESS NAME: Fire Pump
Process Type: 17.210 (Fuel Oil (ASTM # 1,2, includes kerosene, aviation, diesel fuel))
Primary Fuel: diesel fuel
Throughput: 14.00 gal/hr
Process Notes: rated @ 235 KW

POLLUTANT NAME: Carbon Dioxide

CAS Number: 124-38-9
Test Method: EPA/OAR Mthd 3A
Pollutant Group(s): (Acid Gasses/Mist , Greenhouse Gasses (GHG) , InOrganic Compounds)
Emission Limit 1: 1.5500 G/KW-HR AVERAGE OF 3 STACK TEST RUNS
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (P) good combustion practices
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Methane

CAS Number: 74-82-8
Test Method: EPA/OAR Mthd 18
Pollutant Group(s): (Greenhouse Gasses (GHG) , Organic Compounds (all) , Organic Non-HAP Compounds)
Emission Limit 1: 0.0001 G/KW-HR AVERAGE OF 3 STACK TEST RUNS
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (P) good combustion practices
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Carbon Dioxide Equivalent (CO2e)
CAS Number: CO2e
Test Method: Other
Other Test Method: recordkeeping
Pollutant Group(s): (Greenhouse Gasses (GHG))
Emission Limit 1: 91.0000 TONS/YR ROLLING 12 MONTH TOTAL
Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (P) good combustion practices
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

Facility Information

RBLC ID: LA-0254 (final)
Date Determination Last Updated: 12/12/2011
Corporate/Company Name: ENTERGY LOUISIANA LLC
Permit Number: PSD-LA-752
Facility Name: NINEMILE POINT ELECTRIC GENERATING PLANT
Permit Date: 08/16/2011 (actual)
Facility Contact: CHRISTEE HERBERT (504) 576-5699 CHERBER@ENTERGY.COM
FRS Number: 110002049328
Facility Description: 1827 MW POWER PLANT (PRE-PROJECT). NATURAL GAS IS PRIMARY FUEL; NO. 2 & NO. 4 FUEL OIL ARE SECONDARY FUELS. PROJECT INVOLVES DECOMMISSIONING OF 2 BOILERS AND THE CONSTRUCTION OF 2 COMBINED CYCLE GAS TURBINES WITH DUCT BURNERS, A NATURAL GAS-FIRED AUXILIARY BOILER, A DIESEL GENERATOR, 2 COOLING TOWERS, A FUEL OIL STORAGE TANK, A DIESEL-FIRED FIREWASTER PUMP, AND AN ANHYDROUS AMMONIA TANK. FUELS FOR THE TURBINES INCLUDE NATURAL GAS, NO. 2 FUEL OIL, AND ULTRA LOW SULFUR DIESEL.
SIC Code: 4911
Permit Type: B: Add new process to existing facility
NAICS Code: 221112
Permit URL:
EPA Region: 6
COUNTRY: USA
Facility County: JEFFERSON
Facility State: LA
Facility ZIP Code: 70094
Permit Issued By: LOUISIANA DEPARTMENT OF ENV QUALITY (Agency Name)
MR. BRYAN D. JOHNSTON(Agency Contact) (225)219-3450 BRYAN.JOHNSTON@LA.GOV
Other Agency Contact Info: PERMIT WRITER: CHRIS SMITH, (225) 219-3417
Permit Notes: APPLICATION ACCEPTED RECEIVED DATE = DATE OF ADMINISTRATIVE COMPLETENESS BACT FOR GREENHOUSE GASES (CO2E) FROM THE COMBINED CYCLE TURBINE GENERATORS (UNITS 6A & 6B) IS OPERATING PROPERLY AND PERFORMING NECESSARY ROUTINE MAINTENANCE, REPAIR, AND REPLACEMENT TO MAINTAIN THE GROSS HEAT RATE AT OR BELOW 7630 BTU/KW-HR (HHV) (ANNUAL AVERAGE).

Process/Pollutant Information

PROCESS NAME: EMERGENCY DIESEL GENERATOR
Process Type: 17.110 (Fuel Oil (ASTM # 1,2, includes kerosene, aviation, diesel fuel))
Primary Fuel: DIESEL
Throughput: 1250.00 HP
Process Notes:

POLLUTANT NAME: Carbon Dioxide
CAS Number: 124-38-9
Test Method: Unspecified
Pollutant Group(s): (Acid Gasses/Mist , Greenhouse Gasses (GHG) , InOrganic Compounds)
Emission Limit 1: 163.0000 LB/MMBTU
Emission Limit 2:
Standard Emission: 163.0000 LB/MMBTU

Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements: OPERATING PERMIT
Control Method: (P) PROPER OPERATION AND GOOD COMBUSTION PRACTICES
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Methane
CAS Number: 74-82-8
Test Method: Unspecified
Pollutant Group(s): (Greenhouse Gasses (GHG) , Organic Compounds (all) , Organic Non-HAP Compounds)
Emission Limit 1: 0.0061 LB/MMBTU
Emission Limit 2:
Standard Emission: 0.0061 LB/MMBTU
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements: OPERATING PERMIT
Control Method: (P) PROPER OPERATION AND GOOD COMBUSTION PRACTICES
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Nitrous Oxide (N2O)
CAS Number: 10024-97-2
Test Method: Unspecified
Pollutant Group(s): (Greenhouse Gasses (GHG) , InOrganic Compounds , Oxides of Nitrogen (NOx) , Particulate Matter (PM))
Emission Limit 1: 0.0014 LB/MMBTU
Emission Limit 2:
Standard Emission: 0.0014 LB/MMBTU
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements: OPERATING PERMIT
Control Method: (P) PROPER OPERATION AND GOOD COMBUSTION PRACTICES
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

Process/Pollutant Information

PROCESS NAME: EMERGENCY FIRE PUMP
Process Type: 17.210 (Fuel Oil (ASTM # 1,2, includes kerosene, aviation, diesel fuel))
Primary Fuel: DIESEL
Throughput: 350.00 HP
Process Notes:

POLLUTANT NAME: Carbon Dioxide
CAS Number: 124-38-9
Test Method: Unspecified
Pollutant Group(s): (Acid Gasses/Mist , Greenhouse Gasses (GHG) , InOrganic Compounds)
Emission Limit 1: 163.0000 LB/MMBTU
Emission Limit 2:
Standard Emission: 163.0000 LB/MMBTU
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements: OPERATING PERMIT
Control Method: (P) PROPER OPERATION AND GOOD COMBUSTION PRACTICES
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Methane

CAS Number: 74-82-8
Test Method: Unspecified
Pollutant Group(s): (Greenhouse Gasses (GHG) , Organic Compounds (all) , Organic Non-HAP Compounds)
Emission Limit 1: 0.0061 LB/MMBTU
Emission Limit 2:
Standard Emission: 0.0061 LB/MMBTU
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements: OPERATING PERMIT
Control Method: (P) PROPER OPERATION AND GOOD COMBUSTION PRACTICES
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

POLLUTANT NAME: Nitrous Oxide (N2O)

CAS Number: 10024-97-2
Test Method: Unspecified
Pollutant Group(s): (Greenhouse Gasses (GHG) , InOrganic Compounds , Oxides of Nitrogen (NOx) , Particulate Matter (PM))
Emission Limit 1: 0.0014 LB/MMBTU
Emission Limit 2:
Standard Emission: 0.0014 LB/MMBTU
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements: OPERATING PERMIT
Control Method: (P) PROPER OPERATION AND GOOD COMBUSTION PRACTICES
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes:

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Facility Information

RBLC ID: MD-0040 (final)
Date Determination Last Updated: 02/20/2009
Corporate/Company Name: COMPETITIVE POWER VENTURES, INC./CPV MARYLAND, LLC
Permit Number: CPCN CASE NO. 9129
Facility Name: CPV ST CHARLES
Permit Date: 11/12/2008 (actual)
Facility Contact: SHARON K SEGNER 2407232300 SSEGNER@CPV.COM
FRS Number: UNKNOWN
Facility Description: 640 MW GENERATING FACILITY
SIC Code: 1731
Permit Type: A: New/Greenfield Facility
NAICS Code: 221122
Permit URL:
EPA Region: 3
COUNTRY: USA
Facility County: CHARLES
Facility State: MD
Facility ZIP Code:
Permit Issued By: MARYLAND DEPARTMENT OF THE ENVIRONMENT (Agency Name)
MR. WILLIAM PAUL(Agency Contact) (410)537-3230 bpaul@mde.state.md.us
Other Agency Contact Info: WILLIAM PAUL
410-537-3230
BPAUL@MDE.STATE.US
Permit Notes:
Affected Boundaries:

Boundary Type:	Class 1 Area State:	Boundary:	Distance:
CLASS1	NJ	Brigantine	100km - 50km
CLASS1	WV	Dolly Sods	100km - 50km
CLASS1	WV	Otter Creek	100km - 50km
CLASS1	VA	Shenandoah NP	100km - 50km

Process/Pollutant Information

PROCESS NAME: INTERNAL COMBUSTION ENGINE - EMERGENCY FIRE WATER PUMP

Process Type: 17.210 (Fuel Oil (ASTM # 1,2, includes kerosene, aviation, diesel fuel))

Primary Fuel: DIESEL

Throughput: 300.00 HP

Process Notes:

POLLUTANT NAME: Methane

CAS Number: 74-82-8

Test Method: Unspecified

Pollutant Group(s): (Greenhouse Gasses (GHG) , Organic Compounds (all) , Organic Non-HAP Compounds)

Emission Limit 1: 3.0000 G/HP-H

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements: NSPS

Control Method: (N)

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: COMBINED LIMIT OF NOX AND NON-METHANE HYDROCARBON

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COMPREHENSIVE REPORT
Report Date:11/02/2012

Facility Information

RBLC ID:	AK-0076 (draft)	**Date Determination Last Updated:**	09/14/2012
Corporate/Company Name:	EXXON MOBIL CORPORATION	**Permit Number:**	AQ1201CPT01
Facility Name:	POINT THOMSON PRODUCTION FACILITY	**Permit Date:**	08/20/2012 (actual)
Facility Contact:	MATT REILLE 907 929 4108 MATTHEW.R.REILE@EXXONMOBIL.COM	**FRS Number:**	
Facility Description:	Oil Gas exploration and production facility	**SIC Code:**	1382
Permit Type:	A: New/Greenfield Facility	**NAICS Code:**	211111
Permit URL:			
EPA Region:	10	**COUNTRY:**	USA
Facility County:	NORTH SLOPE		
Facility State:	AK		
Facility ZIP Code:			
Permit Issued By:	ALASKA DEPT OF ENVIRONMENTAL CONS (Agency Name) MR. JOHN KUTERBACH(Agency Contact) (907) 465-5103 JOHN.KUTERBACH@ALASKA.GOV		
Permit Notes:	Establish a new facility in the North Slope of Alaska		

Affected Boundaries:

Boundary Type:	Class 1 Area State:	Boundary:	Distance:
INTL BORDER		US/Canada Border	< 100 km
INTL BORDER		US/Canada Border	< 100 km

Facility-wide Emissions:

Pollutant Name:	Facility-wide Emissions Increase:
Carbon Monoxide	119.0000 (Tons/Year)
Nitrogen Oxides (NOx)	168.0000 (Tons/Year)
Particulate Matter (PM)	15.0000 (Tons/Year)
Sulfur Oxides (SOx)	24.0000 (Tons/Year)
Volatile Organic Compounds (VOC)	26.0000 (Tons/Year)

Process/Pollutant Information

PROCESS NAME: Combustion of Diesel by ICEs

Process Type: 17.110 (Fuel Oil (ASTM # 1,2, includes kerosene, aviation, diesel fuel))

Primary Fuel: ULSD

Throughput: 1750.00 kW

Process Notes: Diesel-fired generators

POLLUTANT NAME: Carbon Dioxide

CAS Number: 124-38-9

Test Method: Unspecified

Pollutant Group(s): (Acid Gasses/Mist , Greenhouse Gasses (GHG) , InOrganic Compounds)

Emission Limit 1:

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) Good Combustion Practices and 40 CFR 60 Subpart IIII requirements

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes:

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Facility Information

RBLC ID:	FL-0328 (draft)	**Date Determination Last Updated:**	09/10/2012
Corporate/Company	ENI U.S. OPERATING COMPANY, INC.	**Permit**	OCS-EPA-R4007

Name:

Number:

Facility Name:	ENI - HOLY CROSS DRILLING PROJECT	**Permit Date:**	10/27/2011 (actual)
Facility Contact:		**FRS Number:**	Not Available
Facility Description:	The project, known as the Holy Cross Drilling Project, will mobilize the Pathfinder drillship, and support vessels to drill in the Gulf of Mexico, Lloyd Ridge lease block 411, to determine the presence of natural gas. The exploratory drilling activity will consist of two phases: the initial drilling phase and the well completion phase; the Pathfinder will complete both phases. The operation will last up to two years, and based on applicable permitting regulations, is a â€œtemporary sourceâ€ for PSD permitting purposes.	**SIC Code:**	1382
Permit Type:	A: New/Greenfield Facility	**NAICS Code:**	211112
Permit URL:	http://www.epa.gov/region4/air/permits/OCSPermits/EniOCS.html		
EPA Region:	4	**COUNTRY:**	USA
Facility County:			
Facility State:	FL		
Facility ZIP Code:			
Permit Issued By:	EPA REGION IV (Agency Name) MS. KATY R. FORNEY(Agency Contact) (404) 562-9130 forney.kathleen@epa.gov		
Permit Notes:			

Facility-wide Emissions:

Pollutant Name:	Facility-wide Emissions Increase:
Carbon Monoxide	482.2500 (Tons/Year)
Nitrogen Oxides (NOx)	2055.3700 (Tons/Year)
Particulate Matter (PM)	61.9200 (Tons/Year)
Sulfur Oxides (SOx)	0.9100 (Tons/Year)
Volatile Organic Compounds (VOC)	74.3500 (Tons/Year)

Process/Pollutant Information

PROCESS NAME: Emergency Engine

Process Type: 17.110 (Fuel Oil (ASTM # 1,2, includes kerosene, aviation, diesel fuel))

Primary Fuel: Diesel

Throughput: 0

Process Notes: MAN D-2842 LE model engine

POLLUTANT NAME: Carbon Dioxide

CAS Number: 124-38-9

Test Method: Unspecified

Pollutant Group(s): (Acid Gasses/Mist , Greenhouse Gasses (GHG) , InOrganic Compounds)

Emission Limit 1: 14.6000 TONS PER YEAR 12-MONTH ROLLING

Emission Limit 2:

Standard Emission:

Did factors, other then air pollution technology considerations influence the BACT decisions: U

Case-by-Case Basis: BACT-PSD

Other Applicable Requirements:

Control Method: (N) Use of good combustion practices, based on the current manufacturerâ€™s specifications for this engine

Est. % Efficiency:

Compliance Verified: Unknown

Pollutant/Compliance Notes: CO2-equivalent (CO2e)

Process/Pollutant Information

PROCESS NAME: Emergency Fire Pump Engine

Process Type: 17.110 (Fuel Oil (ASTM # 1,2, includes kerosene, aviation, diesel fuel))

Primary Fuel: Diesel

Throughput: 0

Process Notes: Detroit 8V-92 TA model engine

POLLUTANT NAME: Carbon Dioxide

CAS Number: 124-38-9

Test Method: Unspecified

Pollutant Group(s): (Acid Gasses/Mist , Greenhouse Gasses (GHG) , InOrganic Compounds)

Emission Limit 1: 2.4000 TONS PER YEAR 12-MONTH ROLLING

Emission Limit 2:
Standard Emission:
Did factors, other then air pollution technology considerations influence the BACT decisions: U
Case-by-Case Basis: BACT-PSD
Other Applicable Requirements:
Control Method: (N) Use of good combustion practices, based on the current manufacturerâ€™s specifications for this engine
Est. % Efficiency:
Compliance Verified: Unknown
Pollutant/Compliance Notes: CO2-equivalent (CO2e)

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