PREVENTION OF SIGNIFICANT DETERIORATION PERMIT
FOR GREENHOUSE GAS EMISSIONS
ISSUED PURSUANT TO THE REQUIREMENTS AT 40 CFR § 52.21

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 6

PSD PERMIT NUMBER: PSD-TX-1322-GHG

PERMITTEE: South Texas Electric Cooperative, Inc.
P.O. Box 119
Nursery, TX 77976

FACILITY NAME: Red Gate Power Plant

FACILITY LOCATION: 3428 West FM 490
Edinburg, TX 78541

Pursuant to the provisions of the Clean Air Act (CAA), Subchapter I, Part C (42 U.S.C. Section 7470, *et seq.*), and the Code of Federal Regulations (CFR) Title 40, Section 52.21, and the Federal Implementation Plan at 40 CFR § 52.2305 (effective May 1, 2011 and published at 76 FR 25178), the U.S. Environmental Protection Agency, Region 6 is issuing a *Prevention of Significant Deterioration* (PSD) permit to South Texas Electric Cooperative, Inc. (STEC) for greenhouse gas (GHG) emissions. The permit authorizes the construction of the Red Gate Power Plant, located at 3428 West FM 490, Edinburg, Texas.

STEC is authorized to construct the Red Gate Power Plant as described herein, in accordance with the permit application (and plans submitted with the permit application), the federal PSD regulations at 40 CFR § 52.21, and other terms and conditions set forth in this PSD permit in conjunction with the corresponding Texas Commission on Environmental Quality (TCEQ) PSD Permit PSD-TX-1322. Failure to comply with any condition or term set forth in this PSD permit may result in enforcement action pursuant to Section 113 of the Clean Air Act (CAA). This PSD permit does not relieve STEC of the responsibility to comply with any other applicable provisions of the CAA (including applicable implementing regulations in 40 CFR Parts 51, 52, 60, 61, 72 through 75, and 98) or other federal and state requirements (including the state PSD program that remains under approval at 40 CFR § 52.2303).

In accordance with 40 CFR § 124.15(b), this PSD permit becomes effective 30 days after the service of notice of this final decision unless review is requested on the permit pursuant to 40 CFR § 124.19.

_____ _____

Wren Stenger, Director — Date
Multimedia Planning and Permitting Division

Red Gate Power Plant. (PSD-TX-1322-GHG)
Prevention of Significant Deterioration Permit
For Greenhouse Gas Emissions
Draft Permit Conditions

PROJECT DESCRIPTION

Pursuant to the conditions of this permit, STEC will construct the Red Gate Power Plant near Edinburg, Texas. The primary objective of the proposed project is to construct an electric generating station that will be used during periods of increased demand for electricity. Due to the fluctuations in power requirements, the twelve new 18.76 MW (each) natural gas-fired spark ignition reciprocating internal combustion engines are proposed to provide a fast ramp up for electricity generation. In addition, the project also includes the installation of an emergency generator, firewater pump engine, circuit breakers and fugitive emissions at their new facility.

EQUIPMENT LIST

The following devices are subject to this GHG PSD permit:

FIN	EPN	Description
ENG01 ENG02 ENG03 ENG04 ENG05 ENG06 ENG07 ENG08 ENG09 ENG10 ENG11 ENG12	ENG01 ENG02 ENG03 ENG04 ENG05 ENG06 ENG07 ENG08 ENG09 ENG10 ENG11 ENG12	Twelve 18.76 MW (each, nominal net) spark ignition reciprocating internal combustion engines fired with natural gas.
GEN01	GEN01	500 kW diesel-fired emergency black start generator. Total annual operation is limited to 100 hours per year.
FP01	FP01	Diesel fire pump (150 hp, not to exceed) engine. In addition to emergency fire suppression activities, the unit is limited to 100 hours per year for maintenance and testing.
CB-FUG01 CB-FUG02	CB-FUG01 CB-FUG02	Fugitive SF_6 circuit breaker emissions
NGFUG	NGFUG	Fugitive emissions from various piping components

I. GENERAL PERMIT CONDITIONS

A. PERMIT EXPIRATION

As provided in 40 CFR § 52.21(r), this PSD permit shall become invalid if construction:

1. is not commenced (as defined in 40 CFR § 52.21(b)(9)) within 18 months after the approval takes effect; or

2. is discontinued for a period of 18 months or more; or

3. is not completed within a reasonable time.

Pursuant to 40 CFR § 52.21(r), EPA may extend the 18-month period upon a written satisfactory showing that an extension is justified.

B. PERMIT NOTIFICATION REQUIREMENTS

Permittee shall notify EPA Region 6 in writing or by electronic mail of the:

1. date construction is commenced, postmarked within 30 days of such date;

2. actual date of initial startup, as defined in 40 CFR § 60.2, postmarked within 15 days of such date; and

3. date upon which initial performance tests will commence, in accordance with the provisions of Section VI, postmarked not less than 30 days prior to such date. Notification may be provided with the submittal of the performance test protocol required pursuant to Condition VI.B.

C. FACILITY OPERATION

At all times, including periods of startup, shutdown, and malfunction, Permittee shall maintain and operate the facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to EPA, which may include, but is not limited to, monitoring results, review of operating maintenance procedures and inspection of the facility.

D. MALFUNCTION REPORTING

1. Permittee shall notify EPA by mail, or other means identified by EPA within 48 hours following the discovery of any failure of air pollution control equipment, process equipment, or of a process to operate in a normal manner, which results in an increase in GHG emissions above the allowable emission limits stated in Section II and III of this permit.

2. Within 10 days of the restoration of normal operations after any failure described in I.D.1.,

Permittee shall provide a written supplement to the initial notification that includes a description of the malfunctioning equipment or abnormal operation, the date of the initial malfunction, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those allowed in Section II and III, and the methods utilized to mitigate emissions and restore normal operations.

3. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violation of this permit or any law or regulation such malfunction may cause.

E. RIGHT OF ENTRY

EPA authorized representatives, upon the presentation of credentials, shall be permitted:

1. to enter the premises where the facility is located or where any records are required to be kept under the terms and conditions of this PSD permit;

2. during normal business hours, to have access to and to copy any records required to be kept under the terms and conditions of this PSD permit;

3. to inspect any equipment, operation, or method subject to requirements in this PSD permit; and,

4. to sample materials and emissions from the source(s).

F. TRANSFER OF OWNERSHIP

In the event of any changes in control or ownership of the facilities to be constructed, this PSD permit shall be binding on all subsequent owners and operators. Permittee shall notify the succeeding owner and operator of the existence of the PSD permit and its conditions by letter; a copy of the letter shall be forwarded to EPA Region 6 within thirty days of the letter signature.

G. SEVERABILITY

The provisions of this PSD permit are severable, and, if any provision of the PSD permit is held invalid, the remainder of this PSD permit shall not be affected.

H. ADHERENCE TO APPLICATION AND COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

Permittee shall construct and operate this project in compliance with this PSD permit, the application on which this permit is based, the TCEQ PSD Permit PSD-TX-1322 and all other applicable federal, state, and local air quality regulations. This PSD permit does not release the Permittee from any liability for compliance with other applicable federal, state and local environmental laws and regulations, including the Clean Air Act.

I. ACRONYMS AND ABBREVIATIONS

BACT	Best Available Control Technology
bbl	Barrel
Btu	British Thermal Unit
CAA	Clean Air Act
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CGA	Cylinder Gas Audit
CH_4	Methane
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DRE	Destruction and Removal Efficiency
dscf	Dry Standard Cubic Foot
EPN	Emission Point Number
FR	Federal Register
GHG	Greenhouse Gas
gr	Grains
HHV	High Heating Value
hp	Horsepower
Hr	Hour
IFR	Internal Floating Roof
LDAR	Leak Detection and Repair
LHV	Lower Heating Value
Lb	Pound
MMBtu	Million British Thermal Units
MMSCFD	Million Standard Cubic Feet per Day
MSS	Maintenance, Start-up and Shutdown
NGL	Natural Gas Liquids
N_2O	Nitrous Oxides
NSPS	New Source Performance Standards
PSD	Prevention of Significant Deterioration
QA/QC	Quality Assurance and/or Quality Control
RATA	Relative Accuracy Test Audit
RICE	Reciprocal Internal Combustion Engine
SCFH	Standard Cubic Feet per Hour
SCR	Selective Catalytic Reduction
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TO	Thermal Oxidizer
TPY	Tons per Year
VRU	Vapor Recovery Unit
USC	United States Code

II. ANNUAL FACILITY EMISSION LIMITS

Annual emissions, in tons per year (TPY) on a 12-month rolling total, shall not exceed the following:

Table 1. Facility Emission Limits[1]

FIN	EPN	Description	GHG Mass Basis		TPY CO_2e[1,2]	BACT Requirements
				TPY[1]		
ENG01 ENG02 ENG03 ENG04 ENG05 ENG06 ENG07 ENG08 ENG09 ENG10 ENG11 ENG12	ENG01 ENG02 ENG03 ENG04 ENG05 ENG06 ENG07 ENG08 ENG09 ENG10 ENG11 ENG12	4 Stroke Lean Burn SI RICE	CO_2	86,271[3]	86,358.7[3]	- BACT limit of 1,145 lb CO_2/MW-hr (gross) on a 12-month rolling average basis. -See permit conditions III.A.
			CH_4	1.59[3]		
			N_2O	0.161[3]		
GEN01	GEN01	Diesel Black Start Emergency Generator	CO_2	13.94	13.98	- Not to exceed 100 hours of non-emergency operation on a 12-month rolling basis. - Use of Good Combustion Practices. See permit conditions III.B.
			CH_4	No Numerical Limit Established[4]		
			N_2O	No Numerical Limit Established[4]		
FP01	FP01	Firewater Pump Engine	CO_2	3.10	3.11	-Not to exceed 100 hours of operation on a 12-month rolling basis. - Use of Good Combustion Practices. See permit conditions III.C.
			CH_4	No Numerical Limit Established[4]		
			N_2O	No Numerical Limit Established[4]		
CB-FUG01 CB-FUG02	CB-FUG01 CB-FUG02	Fugitive SF_6 Circuit Breaker Emissions	SF_6	No Numerical Limit Established[5]	No Numerical Limit Established[5]	Work Practices. See permit conditions III.D.
NGFUG	NGFUG	Components Fugitive Leak Emissions	CO_2	No Numerical Limit Established[6]	No Numerical Limit Established[6]	Implementation of AVO LDAR Program. See permit conditions III.E.
			CH_4	No Numerical Limit Established[6]		

Totals[7]	**CO_2**	**1,035,269.36**	**1,036,615**	
	CH_4	**29.9**		
	N_2O	**1.93**		
	SF_6	**0.001**		

1. The TPY emission limits specified in this table are not to be exceeded for this facility and include emissions from the facility during all operations and include MSS activities.
2. Global Warming Potentials (GWP): CO_2=1, CH_4 = 25, N_2O = 298, SF_6=22,800
3. The GHG Mass Basis TPY limit and the CO2e TPY limit for the twelve (12) natural gas fired SI RICE applies to each engine and is not a combined limit.
4. These values indicated as "No Numerical Limit Established" are less than 0.01 TPY with appropriate rounding. The emission limit will be a design/work practice standard as specified in the permit.
5. SF_6 fugitive emissions from EPNs CB-FUG01 and CB-FUG02 are estimated to be 0.001 TPY of SF_6 and 22.8 TPY CO_2e. In lieu of an emission limit, the emissions will be limited by implementing a design/work practice standard as specified in the permit.
6. Fugitive Leak Emissions from EPN NGFUG are estimated to be 0.319 TPY CO_2, 10.824 TPY CH_4, and 270.9 TPY CO_2e. In lieu of an emission limit, the emissions will be limited by implementing a design/work practice standard as specified in the permit.
7. Total emissions include the PTE for fugitive emissions. Totals are given for informational purposes only and do not constitute emission limits.

III. SPECIAL PERMIT CONDITIONS

A. Requirements for the Spark Ignition Reciprocating Internal Combustion Engines (EPNs: ENG01-ENG12)

1. Fuel Specifications: The fuel for each engine shall be pipeline quality natural gas.

2. SI RICE BACT Requirements:

a. The Permittee shall install twelve (12) 18.76-MW Wartsila (Model 18V50SG) lean burn natural gas-fired spark ignition reciprocating internal combustion engines or their equivalent.
b. The BACT limit of 1,145 lbs CO_2/MW-hr gross output applies to each engine.
c. Each engine (EPNs ENG01-ENG12) may operate up to 8,760 hours on a 12-month rolling basis, which shall include periods of startup and shutdown.
d. The engines shall have fuel metering for each fuel, and Permittee shall:
   i. Measure and record the fuel flow rate using an operational non-resettable elapsed flow meter or by recording the flow rate data in an electronic format with individual flow measurements being taken no less frequently than once every 15 minutes. Electronic data may be reduced to hourly averages for recordkeeping purposes.
   ii. Record the total fuel combusted for each fuel monthly.
   iii. The fuel flow of the fuel fired in the combustion engines shall be continuously monitored and recorded.
   iv. The gross energy output [MWh (gross)] for each engine shall be measured and recorded on an hourly basis.
d. Permittee shall calibrate and perform preventative maintenance check of the fuel gas flow meters and document annually.
e. All analyzers identified in this section III.A.2.d. shall achieve 95% on-stream time or greater.

3. Engine Work Practice and Operational Requirements:

a. Permittee shall calculate daily the amount of CO_2 emitted from combustion in tons/yr using equation C-1 in 40 CFR Part 98 Subpart C, converted to short tons. Compliance shall be based on a 12-month rolling basis to be updated by the last day of the following month.
b. Permittee shall calculate daily the CH_4 and N_2O emissions which shall be updated by the last day of the following month. Permittee shall determine compliance on a 12-month rolling basis with the CH_4 and N_2O emissions limits contained in this section using the default CH_4 and N_2O emission factors contained in Table C-2 and equation C-8a of 40 CFR Part 98 converted to short tons.
c. Permittee shall determine the CO_2e emissions on a 12-month rolling basis, based on the procedures and Global Warming Potentials (GWP) contained in Greenhouse Gas Regulations, 40 CFR Part 98, Subpart A, Table A-1. The record shall be updated by the last day of the following month.

4. **Startup and Shutdown Requirements for Engines (EPNs: ENG01-ENG12)**:

   a. Permitee shall minimize emissions during startup and shutdown activities by operating and maintaining the facility and associated air pollution control equipment in accordance with good air pollution control practices, safe operating practices, and protection of the facility.
   b. Emissions during each startup and shutdown activity as well as annual startup and shutdown activities shall be minimized by limiting the duration of operation in startup and shutdown mode
   c. Startups and shutdowns are limited to no more than 730 events per engine on a 12-month rolling basis.
   d. Permitee is still subject to the BACT limitation in III.A.2.b. during startup and shutdown.

B. Requirements for the Diesel Black Start Emergency Generator (EPN: GEN01)

1. The emergency generator engine shall be rated at 500 kW and shall be diesel fired.
2. The generator engine shall not exceed 100 hours of non-emergency operation on a 12-month rolling basis.
3. On or after initial startup, the Permittee shall not discharge or cause the discharge of emissions in excess of 13.98 tons CO_2e/year, based on a 12-month rolling average.
4. Permittee shall maintain a file of all records, data measurements, reports and documents related to the operation of the Emergency Generator, including but not limited to, the following: all records related to performance tests and monitoring; diesel fuel oil delivery; hours of operation; and all other information required by this permit recorded in a permanent form suitable for inspection. The file must be retained for not less than five years following the date of such measurements, maintenance, reports and records.
5. The Engine shall meet the requirements of 40 CFR Part 60 Subpart IIII.
6. Compliance with the Annual Emission Limit shall be demonstrated on a 12-month total, rolling monthly, calculated in accordance with 40 CFR § 98.33(a)(1)(i).

C. Requirements for the Firewater Pump Engine (EPN: FP01)

1. The firewater pump shall not exceed 100 hours of non-emergency operation on a 12-month rolling basis and shall be operated and maintained in accordance with the manufacturer's recommendations.
2. The Permitee shall install and maintain an operational non-resettable elapse time meter for the firewater pump.
3. The engine shall meet the requirements of 40 CFR Part 60 Subpart IIII.
4. The emergency firewater pump engine purchased will be certified to meet the applicable emission standards of 40 CFR § 60.4205(c).
5. Compliance with the Annual Emission Limit shall be demonstrated on a 12-month total, rolling monthly, calculated in accordance with 40 CFR § 98.33(a)(1)(i).

D. Requirements for the Fugitive SF_6 Circuit Breaker (EPNs: CB-FG01 and CB-FUG02)

1. SF_6 emissions shall be calculated annually (calendar year) in accordance with the mass balance approach provided in equation DD-1 of the Mandatory Greenhouse Gas Reporting Rule for Electrical Transmission and Distribution Equipment Use, 40 CFR Part 98, Subpart

DD.

2. The total SF_6 inventory of circuit breakers shall not exceed two, 200-pound enclosed-pressure circuit breaker units with leak detection.
3. The circuit breakers shall be equipped with a low pressure alarm and low pressure lockout. The SF_6 leak detection system shall be able to detect a leak of at least one pound per year.

E. Requirements for the Components Fugitive Leaks (EPN: NGFUG)

1. The Permittee shall implement an auditory/visual/olfactory (AVO) monitoring program for detecting leaking in fuel gas and natural gas piping components, including valves and flanges.
2. AVO monitoring shall be performed daily.
3. Any component found to be leaking during AVO monitoring shall be repaired within 15 days.
4. Records of the annual and monthly AVO monitoring results must be maintained on site.

IV. RECORDKEEPING REQUIREMENTS

A. In order to demonstrate compliance with the GHG emission rates, the Permittee will monitor the following parameters and summarize the data on a calendar month basis.
   1. Operating hours for all air emission sources;
   2. The fuel usage for all combustion sources, using continuous fuel flow monitors (a group of equipment can utilize a common fuel flow meter, as long as actual fuel usage is allocated to the individual equipment based upon actual operating hours and maximum firing rate);
   3. Annual fuel sampling for natural gas; and
   4. The daily throughput of natural gas.

B. For each calendar month, the Permittee will calculate the 12-month rolling GHG emission rates for comparison to Table 1.

C. The Permittee will also maintain site-specific procedures for best/optimum maintenance practices and vendor-recommended operating procedures and O&M manuals. These manuals must be maintained with the permit and located on-site.

D. Permittee shall maintain a file of all records, data, measurements, reports, and documents related to the operation of the facility, including, but not limited to, the following: all records or reports pertaining to significant maintenance performed on any system or device at the facility; the occurrence and duration of any startup, shutdown, or malfunction; all records relating to performance tests and monitoring of combustion equipment; calibrations, checks, duration of any periods during which a monitoring device is inoperative, and corresponding emission measurements; and all other information required by this permit recorded in a permanent form suitable for inspection. The file must be retained for not less than five years following the date of such measurements, maintenance, reports, and/or records.

E. Permittee shall maintain records and submit a written report of all excess emissions to EPA semi-annually, except when more frequent reporting is specifically required by an applicable subpart or the Administrator or authorized representative, on a case-by-case basis, determines that more frequent reporting is necessary to accurately assess the compliance status of the source. The report is due on the 30th day following the end of each semi-annual period and shall include the following:
   1. Time intervals, data and magnitude of the excess emissions, the nature and cause (if

known), corrective actions taken and preventive measures adopted;
2. Applicable time and date of each period during which the monitoring equipment was inoperative (monitoring down-time);
3. A statement in the report of a negative declaration; that is; a statement when no excess emissions occurred or when the monitoring equipment has not been inoperative, repaired or adjusted; and
4. Any failure to conduct any required source testing, monitoring, or other compliance activities.

F. Excess emissions shall be defined as any period in which the facility emission exceeds a maximum emission limit set forth in this permit.
G. Excess emissions indicated by GHG emission source certification testing or compliance monitoring shall be considered violations of the applicable emission limit for the purpose of this permit.
H. All records required by this PSD permit shall be retained for not less than 5 years following the date of such measurements, maintenance, and reports.

V. SHAKEDOWN PERIODS

The SI RICE emission limits and requirements in conditions II. and III.A. shall not apply during combustion shakedown periods. Shakedown is defined as the period beginning with initial startup and ending no later than initial performance testing, during which the Permittee conducts operational and contractual testing and tuning to ensure the safe, efficient and reliable operation of the plant. The shakedown period shall not exceed the time period for performance testing as specified in 40 CFR § 60.8. The requirement of special condition I.C. of this permit shall apply at all times.

VI. PERFORMANCE TESTING REQUIREMENTS:

A. The holder of this permit shall perform an initial stack test to establish the actual quantities of air contaminants being emitted into the atmosphere from emission units the 12 engines (EPN ENG01-ENG12) to determine the initial compliance with the CO_2 emission limits established in this permit. Sampling shall be conducted in accordance with 40 CFR § 60.8 and EPA Method 3a or 3b for the concentration of CO_2.
    1. Multiply the CO_2 hourly average emission rate determined under maximum operating test conditions by 8,760 hours.
    2. If the above calculated CO_2 emission total does not exceed the tons per year (TPY) specified on Table 1, no compliance strategy needs to be developed.
    3. If the above calculated CO_2 emission total exceeds the tons per year (TPY) specified in Table 1, the facility shall:
        a. Document the exceedance in the test report; and
        b. Explain within the report how the facility will assure compliance with the CO_2 emission limit listed in Table 1.
B. Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of the facility, performance tests(s) must be conducted and a written report of the performance testing results furnished to the EPA. Additional sampling may be required by TCEQ or EPA.
C. Permittee shall submit a performance test protocol to EPA no later than 30 days prior to the test to allow review of the test plan and to arrange for an observer to be present at the test. The performance test shall be conducted in accordance with the submitted protocol, and any changes required by EPA.

D. Performance testing must be conducted using a representative rate of operation.
E. Performance tests must be conducted under such conditions to ensure representative performance of the affected facility. The owner or operator must make available to EPA such records as may be necessary to determine the conditions of the performance tests.
F. The owner or operator must provide the EPA at least 30 days prior notice of any performance test, except as specified under other subparts, to afford the EPA the opportunity to have an observer present and/or to attend a pre-test meeting. If there is a delay in the original test date, the facility must provide at least 7 days prior notice of the rescheduled date of the performance test.
G. The owner or operator shall provide, or cause to be provided, performance testing facilities as follows:
    1. Sampling ports adequate for test methods applicable to this facility,
    2. Safe sampling platform(s),
    3. Safe access to sampling platform(s), and
    4. Utilities for sampling and testing equipment.
H. Unless otherwise specified, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For purposes of determining compliance with an applicable standard, the arithmetic mean of the results of the three runs shall apply.
I. Emissions testing, as outlined above, shall be performed every three years, or more frequently if identified above, to verify continued performance at permitted emission limits.
J. Emission testing for the emergency engine, shall be performed every 8760 hours or three years whichever comes first to verify continued performance at permitted emission limits. The performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For purposes of determining compliance with an applicable standard, the arithmetic mean of the results of the three runs shall apply.

VII. AGENCY NOTIFICATIONS

Permittee shall submit GHG permit applications, permit amendments, and other applicable permit information to:

Multi Media Planning and Permitting Division
EPA Region 6
1445 Ross Avenue (6 PD-R)
Dallas, TX 75202
Email: Group R6AirPermits@EPA.gov

Permittee shall submit a copy of all compliance and enforcement correspondence as required by this Approval to Construct to:

Compliance Assurance and Enforcement Division
EPA Region 6
1445 Ross Avenue (6EN)
Dallas, TX 75202