

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



## EXAMPLE A

### NOTICE OF APPLICATION AND PRELIMINARY DECISION FOR AN AIR QUALITY PERMIT

#### AIR QUALITY PERMIT NUMBERS: 80289 AND PSDTX1082M1

**APPLICATION AND PRELIMINARY DECISION.** NRG Texas Power LLC, 1201 Fannin Street, Houston, Texas 77002-6929, has applied to the Texas Commission on Environmental Quality (TCEQ) for issuance of Air Quality Permit 80289 and Prevention of Significant Deterioration (PSD) Air Quality Permit PSDTX1082M1, which would authorize modification to the Cedar Bayou 4 Electric Generating Station at 7705 West Bay Road, Baytown, Chambers County, Texas 77523. This application was submitted to the TCEQ on July 9, 2014. The existing facility will emit the following air contaminant in a significant amount: carbon monoxide. In addition, the facility will emit the following air contaminants: organic compounds, nitrogen oxides, sulfur dioxide, particulate matter including particulate matter with diameters of 10 microns or less and 2.5 microns or less, sulfuric acid mist, ammonia and hazardous air pollutants.

The executive director has determined that the emissions of air contaminants from the proposed facility which are subject to PSD review will not violate any state or federal air quality regulations and will not have any significant adverse impact on soils, vegetation, or visibility. All air contaminants have been evaluated, and "best available control technology" will be used for the control of these contaminants.

The executive director has completed the technical review of the application and prepared a draft permit which, if approved, would establish the conditions under which the facility must operate. The permit application, executive director's preliminary decision, draft permit, and the executive director's preliminary determination summary and executive director's air quality analysis, will be available for viewing and copying at the TCEQ central office, the TCEQ Houston regional office, and at the West Chambers County Branch Library, 10616 Eagle Drive, Mont Belvieu, Chambers County, Texas, beginning the first day of publication of this notice. The facility's compliance file, if any exists, is available for public review at the TCEQ Houston Regional Office, 5425 Polk Street Suite H, Houston, Texas.

**INFORMATION AVAILABLE ONLINE.** These documents are accessible through the Commission's Web site at [www.tceq.texas.gov/goto/cid](http://www.tceq.texas.gov/goto/cid): the executive director's preliminary decision which includes the draft permit, the executive director's preliminary determination summary, the air quality analysis, and, once available, the executive director's response to comments and the final decision on this application. Access the Commissioners' Integrated Database (CID) using the above link and enter the permit number for this application. The public location mentioned above, the West Chambers County Branch Library, provides public access to the internet. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For exact location, refer to application.

<http://www.tceq.texas.gov/assets/public/hb610/index.html?lat=29.748333&lng=-94.927222&zoom=13&type=r>

**PUBLIC COMMENT/PUBLIC MEETING.** You may submit public comments or request a public meeting about this application. The purpose of a public meeting is to provide the opportunity to submit comment or to ask questions about the application. The TCEQ will hold a public meeting if the executive director determines that there is a significant degree of public interest in the application, if requested by an interested person, or if requested by a local legislator. A public meeting is not a contested case hearing. **You may submit additional written public comments within 30 days of the date of newspaper publication of this notice in the manner set forth in the AGENCY CONTACTS AND INFORMATION paragraph below.**

After the deadline for public comment, the executive director will consider the comments and prepare a response to all public comment. **The response to comments, along with the executive director's decision on the application will be mailed to everyone who submitted public comments or is on a mailing list for this application.**

**OPPORTUNITY FOR A CONTESTED CASE HEARING.** A contested case hearing is a legal proceeding similar to a civil trial in a state district court. **A person who may be affected by emissions of air contaminants from the facility is entitled to request a hearing. A contested case hearing request must include the following: (1) your name (or for a group or association, an official representative), mailing address, daytime phone number, and fax number, if any; (2) applicant's name and permit number; (3) the statement "I/we request a contested case hearing;" (4) a specific description of how you would be adversely affected by the application and air emissions from the facility in a way not common to the general public; (5) the location and distance of your property relative to the facility; and (6) a description of how you use the property which may be impacted by the facility. If the request is made by a group or association, then one or more members who have standing to request a hearing and the interests the group or association seeks to protect must also be identified. You may also submit your proposed adjustments to the application/permit which would satisfy your concerns. Requests for a contested case hearing must be submitted in writing within 30 days following this notice to the Office of the Chief Clerk, at the address provided in the information section below.**

A contested case hearing will only be granted based on disputed issues of fact that are relevant and material to the Commission's decisions on the application. Further, the Commission will only grant a hearing on issues raised by you or others during the public comment period that have not been withdrawn. Issues that are not raised in public comments may not be considered during a hearing.

**EXECUTIVE DIRECTOR ACTION.** If a timely contested case hearing request is not received or if all timely contested case hearing requests are withdrawn, the executive director may issue final approval of the application. The response to comments, along with the executive director's decision on the application will be mailed to everyone who submitted public comments or is on a mailing list for this application, and will be posted electronically to the CID. If any timely hearing requests are received and not withdrawn, the executive director will not issue final approval of the permit and will forward the application and requests to the Commissioners for their consideration at a scheduled commission meeting.

**MAILING LIST.** You may ask to be placed on a mailing list to obtain additional information on this application by sending a request to the Office of the Chief Clerk at the address below.

**AGENCY CONTACTS AND INFORMATION.** Public comments and requests must be submitted either electronically at [www.tceq.texas.gov/about/comments.html](http://www.tceq.texas.gov/about/comments.html), or in writing to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, P.O. Box 13087, Austin, Texas 78711-3087. If you communicate with the TCEQ electronically, please be aware that your email address, like your physical mailing address, will become part of the agency's public record. For more information about this permit application or

the permitting process, please call the Public Education Program toll free at 1-800-687-4040. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from NRG Texas Power LLC at the address stated above or by calling Ms. Lindsay W Little, Environmental Supervisor at (713) 357-5293.

Notice Issuance Date: January 27, 2015

Emission Sources - Maximum Allowable Emission Rates

Permit Number 80289, PSDTX1082M1, PAL9

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities, sources, and related activities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

Air Contaminants Data

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lbs/hour	TPY (4)
CBY41	Combustion Turbine 41	NO <sub>x</sub> (6)	28	--- (8)
		NO <sub>x</sub> (MSS) (6)	206	--- (8)
		SO <sub>2</sub>	17.7	11.6
		CO (6)	72.3	--- (8)
		CO (MSS) (6)	6675	--- (8)
		VOC (6)	5.5	--- (8)
		VOC (MSS) (6)	48	--- (8)
		PM/PM <sub>10</sub> /PM <sub>2.5</sub>	15.5	51
		H <sub>2</sub> SO <sub>4</sub>	2.7	1.8
		NH <sub>3</sub>	20.5	80.3
		H <sub>2</sub> CO (7)	0.47	1.8
CBY42	Combustion Turbine 42	NO <sub>x</sub> (6)	28	--- (8)
		NO <sub>x</sub> (MSS) (6)	206	--- (8)
		SO <sub>2</sub>	17.7	11.6
		CO (6)	72.3	--- (8)
		CO (MSS) (6)	6675	--- (8)
		VOC (6)	5.5	--- (8)
		VOC (MSS) (6)	48	--- (8)
		PM/PM <sub>10</sub> /PM <sub>2.5</sub>	15.5	51
		H <sub>2</sub> SO <sub>4</sub>	2.7	1.8
		NH <sub>3</sub>	20.5	80.3
		H <sub>2</sub> CO (7)	0.47	1.8

## Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lbs/hour	TPY (4)
CBY4CAP (8)	Combustion Turbines CBY41 and CBY42 CAP	NO <sub>x</sub>	---	186.33
		CO	---	1733.12
		VOC	---	22.96
CBY41-LOV	Combustion Turbine 41 Lube Oil Vent	PM/PM <sub>10</sub>	0.05	0.22
CBY42-LOV	Combustion Turbine 42 Lube Oil Vent	PM/PM <sub>10</sub>	0.05	0.22
U4ST-LOV	Unit 4 Steam Turbine Lube Oil Vent	PM/PM <sub>10</sub>	0.05	0.22
BS-GEN	Black Start Generator	NO <sub>x</sub>	11.8	2.95
		CO	0.53	0.13
		PM/PM <sub>10</sub> /PM <sub>2.5</sub>	0.05	0.01
		VOC	2.54	0.64
		SO <sub>2</sub>	0.38	0.09
C-Tower1	Cooling Tower 1	PM/PM <sub>10</sub>	0.14	0.62
FUG-NAS	Fugitives: Natural Gas (5)	VOC	0.17	0.74
FUG-SCR	Fugitives: SCR Piping (5)	NH <sub>3</sub>	0.02	0.1
MSSFUG	Miscellaneous Maintenance Activities (5)	VOC	32.65	0.61
		PM	2.31	0.05
		PM <sub>10</sub>	0.59	0.04
		PM <sub>2.5</sub>	0.57	0.04
		NO <sub>x</sub>	<0.01	<0.01
		CO	<0.01	<0.01
		SO <sub>2</sub>	<0.01	<0.01
		NH <sub>3</sub>	<0.01	<0.01

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lbs/hour	TPY (4)
(All Sitewide NO <sub>x</sub> EPNs at RN100825371)	Plantwide Applicability Limit (PAL)	NO <sub>x</sub>	---	2004.92

- (1) Emission point identification - either specific equipment designation or emission point number from plot plan.
- (2) Specific point source name. For fugitive sources, use area name or fugitive source name.
- (3) VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
- NO<sub>x</sub> - total oxides of nitrogen
- SO<sub>2</sub> - sulfur dioxide
- PM - total particulate matter, suspended in the atmosphere, including PM<sub>10</sub> and PM<sub>2.5</sub>, as represented
- PM<sub>10</sub> - total particulate matter equal to or less than 10 microns in diameter, including PM<sub>2.5</sub>, as represented
- PM<sub>2.5</sub> - particulate matter equal to or less than 2.5 microns in diameter
- CO - carbon monoxide
- H<sub>2</sub>SO<sub>4</sub> - sulfuric acid
- NH<sub>3</sub> - ammonia
- H<sub>2</sub>CO - formaldehyde
- MSS - maintenance, startup and shutdown
- (4) Compliance with annual emission limits (tons per year) is based on a 12 month rolling period.
- (5) Emission rate is an estimate and is enforceable through compliance with the applicable special condition(s) and permit application representations.
- (6) MSS lb/hr limits apply only during each clock hour that includes one or more minutes of MSS activities. During all other clock hours, the normal lb/hr limits apply.
- (7) The formaldehyde emission limits and initial demonstration of compliance become effective upon the EPA either lifting the stay that applies to lean premix gas-fired turbines and diffusion flame gas-fired turbines or taking final action declining to remove these subcategories from the source category list. (See 69 Fed. Reg. 51184 (August 18, 2004), available at: <http://www.epa.gov/ttn/atw/turbine/fr18au04.pdf>).
- (8) Emissions are included and represented under annual cap emission rates.

Date: XX, 2015

## Special Conditions

Permit Numbers 80289, PSDTX1082M1, and PAL9

1. This permit covers only those sources of emissions listed in the attached table entitled “Emission Sources - Maximum Allowable Emission Rates,” and those sources are limited to the emission limits and other conditions specified in that attached table. Compliance with the annual emission limits shall be based on throughput for a rolling 12-month year rather than the calendar year. This permit authorizes maintenance, start-up and shutdown (MSS) activities which comply with the emission limits in the maximum allowable emission rates table (MAERT). **(03/11)**
  
2. The following sources are authorized under Title 30 Texas Administrative Code Chapter 106 (30 TAC Chapter 106): **(03/11)**

Permit By Rule (PBR)	PBR No.	Activity
Comfort Heating	106.102	Comfort heating system maintenance and repair
Bench-Scale Laboratory Equipment	106.122	Bench-scale laboratory equipment
Brazing, Soldering and Welding	106.227	Brazing, soldering and welding
Routine Maintenance, Startup and Shutdown of Facilities, and Temporary Maintenance Facilities	106.263	Enclosed and outdoor dry abrasive blasting Miscellaneous surface coating
Hand-Held and Manually Operated Machines	106.265	Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic
Refrigeration Systems	106.373	Refrigeration system maintenance and repair
Degreasing Units	106.454	Solvent cleaning parts degreaser
Portable and Emergency Engines and Turbines	106.511	Portable engines
Water and Wastewater Treatment	106.532	Water and wastewater treatment

### Federal Applicability

3. These facilities shall comply with applicable requirements of the U.S. Environmental Protection Agency (EPA) regulations in Title 40 Code of Federal Regulations Part 60 (40 CFR Part 60) on Standards of Performance for New Stationary Sources promulgated for:
  - A. Applicable General Conditions, Subpart A.
  - B. The gas turbines are subject to the applicable requirements of Subpart KKKK titled, "Standards of Performance for Stationary Combustion Turbines."  
  
If any condition of this permit is more stringent than the regulations so incorporated, then for the purposes of complying with this permit, the permit shall govern and be the standard by which compliance shall be demonstrated.
4. These facilities shall comply with applicable requirements of the EPA regulations in 40 CFR Part 63 on National Emission Standards for Hazardous Air Pollutants for Source Categories promulgated for:
  - A. Applicable General Conditions, Subpart A.
  - B. The combustion turbines are subject to the requirements of Subpart YYYY titled, "National Emission Standard for Hazardous Air Pollutants for Stationary Combustion Turbines." However, the emission limits and initial demonstration of compliance become effective upon the EPA either lifting the stay that applies to lean premix gas-fired turbines and diffusion flame gas-fired turbines or taking final action declining to remove these subcategories from the source category list. (See 69 Fed. Reg. 51184, August 18, 2004, available at: <http://www.epa.gov/ttn/atw/turbine/fr18au04.pdf>) **(9/09)**
5. Any project to be authorized by permit amendment, permit by rule, or other Texas Commission on Environmental Quality (TCEQ) permitting mechanisms, including the modification of existing facilities or the addition of new facilities, shall not be subject to federal new source review for nitrogen oxides (NO<sub>x</sub>) provided the total plantwide emissions from the Cedar Bayou Power Plant do not exceed the plantwide Applicability Limit (PAL) of 2004.92 tons per year (tpy). **(9/09)**
6. If future actual NO<sub>x</sub> emission rates exceed the PAL thresholds listed above, the permittee shall be subject to federal new source review for that air pollutant. Only the changes that cause the new emission rates to exceed the PAL threshold are subject to federal new source review. The permittee shall submit to the TCEQ a federal new source review permit application for the changes that cause actual emissions to exceed the PAL.
7. Emission rates of NO<sub>x</sub> in tpy shall be calculated for each emission point number (EPN) at the Cedar Bayou Power Plant on a 12-month rolling average basis and then summed to demonstrate compliance with the NO<sub>x</sub> PAL specified in Special Condition No. 5. Emissions data from CEMS located in the exhaust from each facility listed below except Auxiliary Boiler 1 (Permit No. 52325, EPN AB1), and the Black Start Generator (EPN BS-



GEN) shall be used to calculate the emission rates. Emission rates from Auxiliary Boiler 1 and the Black Start Generator shall be calculated from records of fuel usage in each facility and the emission factors used as the basis of their permitted emission limits. **(03/11)**

EPN	SOURCE	PERMIT NUMBER
CBY1	Unit 1 Steam Boiler	1532
CBY2	Unit 2 Steam Boiler	1532
CBY3	Unit 3 Steam Boiler	45577
AB1	Auxiliary Boiler 1	53235
AB2N	Auxiliary Boiler 2	49590
AB3N	Auxiliary Boiler 3	49590
CBY41	Combustion Turbine 41	80289
CBY42	Combustion Turbine 42	80289
BS-GEN	Black Start Generator	80289

### Emissions Standards and Operating Specifications

8. The concentration of NO<sub>x</sub> in the stack gases from EPNs CBY41 and CBY42 shall not exceed a three-hour rolling average of 3.5 parts per million by volume (ppmvd) corrected to 15 percent oxygen (O<sub>2</sub>) and a 12-month rolling average of 3.0 parts per million by volume (ppmvd) corrected to 15 percent oxygen (O<sub>2</sub>). **(03/11)**
  - A. These concentration limits apply over each turbine's normal operating range of 70 to 100 percent of base load for CBY41 and CBY42, excluding periods of MSS.
  - B. The carbon monoxide (CO) and ammonia (NH<sub>3</sub>) mass emissions limits in the MAERT attached to this permit that apply during planned MSS activities constitute alternative case specific specifications for the CO and NH<sub>3</sub> concentration limits in 30 TAC § 117.1210 during planned MSS activities.
9. Reduced load operation below normal operating loads not associated with start-up, shutdown, upset, or maintenance is authorized up to 876 hours per year per turbine, provided the NO<sub>x</sub> and CO maximum pounds per hour (lb/hr) emission rates specified in the MAERT are not exceeded.
10. Fuel for the gas turbines shall be limited to firing pipeline-quality, sweet natural gas containing no more than 3.0 grains total sulfur per 100 dry standard cubic feet (dscf) on an hourly basis, and 0.5 grain total sulfur per 100 dscf on an annual basis. The sulfur content shall be monitored pursuant to 40 CFR 60 Subpart KKKK. **(03/11)**

The Black Start Generator (EPN BS-GEN) is authorized to fire diesel fuel containing no more than 0.05 weight percent sulfur and is limited to a maximum of 500 hours of operation annually.

Upon request by the Executive Director of the TCEQ or any air pollution control program having jurisdiction, the holder of this permit shall provide a sample and/or an analysis of the fuel-fired in the gas turbines or shall allow air pollution control agency representatives to obtain a sample for analysis.

11. Opacity of emissions from EPNs CBY41 and CBY42 shall not exceed 5 percent averaged over a six-minute period. During periods of MSS, the opacity shall not exceed 15 percent over a six-minute period. This determination shall be made by first observing for visible emissions while each facility is in operation. Observations shall be made at least 15 feet and no more than 0.25 miles from the emission point(s). If visible emissions are observed from an emission point, then the opacity shall be determined for that emission point by Title 40 Code of Federal Regulations Part 60 (40 CFR Part 60), Appendix A, Test Method 9. Contributions from uncombined water shall not be included in determining compliance with this condition. Observations shall be performed and recorded quarterly. **(03/11)**

#### **Aqueous Ammonia (NH<sub>3</sub>)**

12. Concentrations of NH<sub>3</sub> from EPNs CBY41 and CBY42 shall not exceed 7 ppmvd when corrected to 15 percent O<sub>2</sub> on a three-hour rolling average. **(03/11)**
13. The permit holder shall maintain prevention and protection measures for the NH<sub>3</sub> storage system including (but is not limited to) marking and securing the NH<sub>3</sub> storage tank area so as to protect the tank from accidents that could cause a rupture. **(03/11)**
14. The permit holder shall maintain the piping and valves in NH<sub>3</sub> service as follows: **(9/09)**
  - A. All operating practices and procedures relating to the handling and storage of NH<sub>3</sub> shall conform to the safety recommendations specified for that compound by guidelines of the American National Standards Institute and the Compressed Gas Association.
  - B. Audio, visual, and olfactory (AVO) checks for NH<sub>3</sub> leaks within the operating area shall be made once per day. **(03/11)**
  - C. As soon as practicable, following the detection of a leak, plant personnel shall take one or more of the following actions:
    - (1) Locate and isolate the leak, if necessary.
    - (2) Commence repair or replacement of the leaking component.
    - (3) Use a leak collection or containment system to control the leak until repair or replacement can be made if immediate repair is not possible.

### **Routine Maintenance, Startup, and Shutdown**

15. This permit authorizes emissions from planned maintenance, startup, and shutdown (MSS) activities listed in Attachment A, Attachment B, or the MAERT attached to this permit. Attachment A identifies inherently low emitting (ILE) planned maintenance activities and Attachment B identifies the planned maintenance activities that are non-ILE planned maintenance activities that are authorized by the permit to be performed. **(03/11)**
16. The holder of this permit shall operate the equipment and associated air pollution control equipment in accordance with good air pollution control practice to minimize emissions during planned maintenance, start-up and shutdown (MSS). The emissions from MSS activities are reflected in the MAERT. These emissions will be minimized by the following: **(03/11)**
  - A. Facility and air pollution control equipment will be operated in a manner consistent with good practices for minimizing emissions.
  - B. The duration of operation in MSS mode will be minimized and the applicable emissions monitoring systems will be kept in operation.
  - C. MSS activities are authorized provided that the emission rates in pounds per hour (lb/hr) do not exceed those specified in the MAERT and comply with the tons per year specified in the MAERT.
17. Vacuum trucks that are used to move liquids during planned maintenance activities as authorized by this permit shall utilize submerged loading. **(03/11)**
18. Emissions during planned startup and shutdown activities shall be minimized by limiting the duration of operation in startup and shutdown mode as follows: **(03/11)**
  - A. Cold start-up events for the combustion turbines (EPNs CBY41 and CBY42) shall not exceed 300 minutes in duration per unit. A cold start-up event is defined as a start-up that commences when the steam turbine high pressure turbine metal temperature is below 650° F.
  - B. Warm start-up events for the combustion turbines (EPNs CBY41 and CBY42) shall not exceed 180 minutes in duration per unit. A warm start-up event is defined as a start-up which is not a cold start-up.
  - C. Shutdown events for the combustion turbines (EPNs CBY41 and CBY42) shall not exceed 60 minutes in duration per unit.
19. Compliance with the emissions limits for planned MSS activities identified in the MAERT attached to this permit may be demonstrated as follows. **(03/11)**
  - A. Inherently low emitting (ILE) planned maintenance activities (see Attachment A to this permit):

- (1) The total emissions from all ILE planned maintenance activities shall be considered to be no more than the estimated potential to emit for those activities that are represented in the permit application.
    - (2) The permit holder shall annually confirm the continued validity of the estimated potential to emit represented in the permit application for all ILE planned maintenance activities.
  - B. Planned MSS activities that are not ILE planned maintenance activities (see Attachment B to this permit or the MAERT):

For each pollutant emitted during non-ILE planned MSS activities whose emissions are measured using a Continuous Emission Monitoring System (CEMS), the permit holder shall do the following for each calendar month:

    - (1) Compare the pollutant's hourly emissions during planned MSS activities as measured by the CEMS to the applicable hourly planned MSS emissions limit in the MAERT, and
    - (2) Once the pollutant's emissions during planned MSS activities have been measured by the CEMS for 12 months after the permit is issued, compare the rolling 12-month emissions of the pollutant, as determined using the CEMS data, to the applicable annual planned MSS emissions limit in the MAERT.
20. The permit holder shall determine the emissions during planned MSS activities for use in Special Condition No. 19 as follows. **(03/11)**
- A. For each pollutant whose emissions during normal facility operations are measured with a CEMS that is certified to measure the pollutant's emissions across the entire range of a planned MSS activity, the permit holder shall continue to measure the emissions of the pollutant during the planned MSS activity using the CEMS. If subsequent to the issuance of the permit, the permit holder installs a CEMS for the pollutant, the permit holder shall begin to measure the pollutant's emissions during planned MSS activities using the CEMS no later than 30 days after the CEMS has been certified in accordance 40 CFR Part 60 or Part 75, as applicable.
  - B. For each pollutant not described in Special Condition No. 20A, the permit holder shall calculate the pollutant's emissions during all occurrences of each type of planned MSS activity for each calendar month using the frequency of the planned MSS activity identified in work orders or equivalent records and the emissions of the pollutant during the planned MSS activity as represented in the planned MSS permit application. In lieu of using the emissions of the pollutant during the planned MSS activity as represented in the planned MSS permit application to calculate such emissions, the permit holder may determine the emissions of the pollutant during the planned MSS activity using an appropriate method, including but not limited to, any of the methods described in paragraphs 1 through 4 below, provided that the permit holder maintains appropriate records supporting such determination:
    - (1) Use of the emission factor(s), facility-specific parameter(s), and/or engineering knowledge of the facility's operations.

- (2) Use of emissions data measured (by a CEMS or during emissions testing) during the same type of planned MSS activity occurring at or on an identical or similar facility, and correlation of that data with the facility's relevant operating parameters, including, but not limited to, electric load, temperature, fuel input, and fuel sulfur content.
- (3) Use of emissions testing data collected during a planned MSS activity occurring at or on the facility, and correlation of that data with the facility's relevant operating parameters, including, but not limited to, electric load, temperature, fuel input, and fuel sulfur content.
- (4) Use of parametric monitoring system data applicable to the facility.

### **Initial Determination of Compliance**

21. Sampling ports and platforms shall be incorporated into the design of all exhaust stacks according to the specifications set forth in the attachment entitled "Chapter 2, Stack Sampling Facilities." Alternate sampling facility designs may be submitted for approval by the TCEQ Houston Regional Director. **(9/09)**
22. The holder of this permit shall perform stack sampling and other testing as required to establish the actual quantities of air contaminants being emitted into the atmosphere from EPNs CBY41 and CBY42. Sampling shall be conducted in accordance with the appropriate procedures of the TCEQ Sampling Procedures Manual and in accordance with the appropriate EPA Test Methods. **(03/11)**

Fuel sampling using the methods and procedures of 40 CFR § 60.334(h) may be conducted in lieu of stack sampling for SO<sub>2</sub>. If fuel sampling is used, compliance with New Source Performance Standards (NSPS), Subpart KKKK SO<sub>2</sub> limits shall be based on 100 percent conversion of the sulfur in the fuel to SO<sub>2</sub>. Any deviations from those procedures must be approved by the Executive Director of the TCEQ prior to sampling. The TCEQ Executive Director or his designated representative shall be afforded the opportunity to observe all such sampling.

The holder of this permit is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense.

- A. The TCEQ Houston Regional Office shall be contacted as soon as testing is scheduled but not less than 30 days prior to sampling to schedule a pretest meeting. The notice shall include:
  - (1) Date for pretest meeting.
  - (2) Date sampling will occur.
  - (3) Name of firm conducting sampling.
  - (4) Type of sampling equipment to be used.
  - (5) Method or procedure to be used in sampling.

- (6) Procedure used to determine turbine loads during and after the sampling period.

The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for submitting the test reports.

A written proposed description of any deviation from sampling procedures specified in permit conditions or TCEQ or EPA sampling procedures shall be made available to the TCEQ prior to the pretest meeting. The TCEQ Houston Regional Director shall approve or disapprove of any deviation from specified sampling procedures. **(9/09)**

Requests to waive testing for any air contaminant specified in this condition shall be submitted to the TCEQ Office of Permitting and Registration, Air Permits Division. Test waivers and alternate or equivalent procedure proposals for NSPS testing which must have EPA approval shall be submitted to the TCEQ Houston Regional Office. **(9/09)**

- B. Air contaminants and diluents from the turbines to be sampled and analyzed include (but are not limited to) NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, NH<sub>3</sub>, formaldehyde, opacity, and O<sub>2</sub>.

[As noted above, fuel sampling using the methods and procedures of 40 CFR § 60.334(h) may be conducted in lieu of stack sampling for SO<sub>2</sub>. Also, see Special Condition No. 4B regarding the emission limits and initial demonstration of compliance for formaldehyde.] **(9/09)**

- C. Each turbine shall be tested at a minimum and maximum load of the permitted operating range that is defined in Special Condition No. 8 for the atmospheric conditions which exist during testing. Each tested turbine load shall be identified in the sampling report. The permit holder shall present at the pretest meeting the manner in which stack sampling will be executed in order to demonstrate compliance with emission standards found in 40 CFR Part 60, Subpart KKKK.

- D. Sampling as required by this condition shall occur within 60 days after achieving the maximum production but no later than 180 days after initial start-up of each unit. Additional sampling shall occur as may be required by the TCEQ or EPA.

- E. Within 60 days after the completion of the testing and sampling required herein, three copies of the sampling reports shall be distributed as follows: **(9/09)**

One copy to the EPA Region 6 Office, Dallas.

One copy to the TCEQ Houston Regional Office.

One copy to the TCEQ Air Permits Division, Austin.

### **Continuous Determination of Compliance**

23. The holder of this permit shall install, calibrate, maintain, and operate a continuous emission monitoring system (CEMS) to measure and record the concentrations of NO<sub>x</sub>, and CO from EPNs CBY41 and CBY42. Diluents to be measured include O<sub>2</sub> or CO<sub>2</sub>. The

CEMS data shall be used to determine continuous compliance with the NO<sub>x</sub> and CO emission limitations in Special Condition No. 8 and the attached MAERT. The CEMS shall be operated according to the methods and procedures as set out in 40 CFR § 60.4345. Reporting of monitoring data shall be in accordance with methods and procedures as set out in 40 CFR § 60.7. Compliance with the continuous emissions monitor requirements above can be demonstrated by meeting the requirements of 40 CFR Part 75 provided that the holder of this permit demonstrates compliance with all applicable NSPS regulations. **(03/11)**

24. The NH<sub>3</sub> concentration in each Exhaust Stack (EPNs CBY41 and CBY42) shall be tested or calculated according to one of the methods listed below and shall be tested or calculated according to frequency listed below. Testing for NH<sub>3</sub> slip is only required on days when the SCR unit is in operation. **(03/11)**
- A. The holder of this permit may install, calibrate, maintain, and operate a CEMS to measure and record the concentrations of NH<sub>3</sub>. The NH<sub>3</sub> concentrations shall be corrected and reported in accordance with Special Condition No. 12.
  - B. As an approved alternative, the NH<sub>3</sub> slip may be measured using a sorbent or stain tube device specific for NH<sub>3</sub> measurement in the 5 to 10 parts per million (ppm) range. The frequency of sorbent or stain tube testing shall be daily for the first 60 days of operation, after which, the frequency may be reduced to weekly testing if operating procedures have been developed to prevent excess amounts of NH<sub>3</sub> from being introduced in the SCR unit and when operation of the SCR unit has been proven successful with regard to controlling NH<sub>3</sub> slip. Daily sorbent or stain tube testing shall resume when the catalyst is within 30 days of its useful life expectancy. These results shall be recorded and used to determine compliance with Special Condition No. 12.
  - C. As an approved alternative to sorbent or stain tube testing or an NH<sub>3</sub> CEMS, the permit holder may install and operate a second NO<sub>x</sub> CEMS probe located upstream of the SCR, which may be used in association with the SCR efficiency and NH<sub>3</sub> injection rate to estimate NH<sub>3</sub> slip. This condition shall not be construed to set a minimum NO<sub>x</sub> reduction efficiency on the SCR unit. These results shall be recorded and used to determine compliance with Special Condition No. 12.
  - D. If the sorbent or stain tube testing indicates an ammonia slip concentration which exceeds 5 ppm at any time, the permit holder shall begin NH<sub>3</sub> testing by either the Phenol-Nitroprusside Method, the Indophenol Method, or EPA Conditional Test Method (CTM) 27 on a quarterly basis in addition to the weekly sorbent or stain tube testing. The quarterly testing shall continue until such time as the SCR unit catalyst is replaced; or if the quarterly testing indicates NH<sub>3</sub> slip is 4 ppm or less, the Phenol-Nitroprusside/Indophenol/CTM 27 tests may be suspended until sorbent or stain tube testing again indicate 5 ppm NH<sub>3</sub> slip or greater. These results shall be recorded and used to determine compliance with Special Condition No. 12.
  - E. As an approved alternative to sorbent or stain tube testing, NH<sub>3</sub> CEMS, or a second NO<sub>x</sub> CEMS, the permit holder may install and operate a dual stream system of NO<sub>x</sub> CEMS at the exit of the SCR. One of the exhaust streams would be routed, in an

unconverted state, to one NO<sub>x</sub> CEMS, and the other exhaust stream would be routed through a NH<sub>3</sub> converter to convert NH<sub>3</sub> to NO<sub>x</sub> and then to a second NO<sub>x</sub> CEMS. The NH<sub>3</sub> slip concentration shall be calculated from the delta between the two NO<sub>x</sub> CEMS readings (converted and unconverted). These results shall be recorded and used to determine compliance with Special Condition No. 12.

- F. Any other method used for measuring NH<sub>3</sub> slip shall require prior approval from the TCEQ Houston Regional Office. **(9/09)**
25. The Cooling Tower (EPN C-Tower1) shall not exceed a total dissolved solids (TDS) concentration of 2,500 parts per million by weight (ppmw). **(03/11)**

The holder of this permit shall perform sampling and other testing, as necessary, to establish the lb/hr and TPY of particulate matter (PM) being emitted to the atmosphere from the cooling tower associated with this permit and to establish the conductivity to TDS conversion factor that shall be used by the permit holder to demonstrate compliance in accordance with Special Condition No. 25. **(03/11)**

- A. A conservative default conversion factor of 0.80 (conductivity to TDS) may be used initially until a site specific demonstrated value is determined.
- B. A cooling water sample shall be collected in each of the three-calendar months following the start of commercial operation of the turbine and a conductivity and TDS analysis performed for each of the three samples in order to establish the actual cooling water conductivity to TDS conversion factor. The conductivity and TDS analyses shall be performed in accordance with "Standard Methods for the Examination of Water and Wastewater" Method 2510 (Conductivity) and Method 2540 (Solids). An average conversion factor and standard deviation based on the three values shall be determined from the cooling water sample results.
- C. Within 30 days after completion of the sampling, copies of the sampling report shall be submitted to the TCEQ Austin Office of Permitting and Registration, Air Permits Division; and the TCEQ Houston Regional Office. **(9/09)**
- D. Continuous compliance with the lb/hr and TPY particulate matter emission rates for the cooling tower in the MAERT shall be demonstrated by the holder of this permit by monitoring the conductivity of the cooling water at a monitoring point in the recirculating water of the cooling tower, and recording these conductivity readings on a no less than weekly basis. Each conductivity measurement shall be converted to TDS concentration in ppmw using the conductivity to TDS conversion factor established in accordance with Special Condition No. 25B. **(03/11)**

The monitoring data required by this special condition shall be kept for at least five years from the date monitoring is done, and the data shall be made available immediately upon request to the U.S. Environmental Protection Agency (EPA) or TCEQ personnel. These records shall include:

- (1) Location of the monitoring point for the cooling tower recirculating water and date and time of monitoring.



- (2) Weekly measured conductivity in ohms and the equivalent TDS in parts per million in the recirculating water of the cooling tower.

### Recordkeeping Requirements

26. The following records shall be kept at the plant for the life of the permit. All records required in this permit shall be made available at the request of personnel from the TCEQ, EPA, or any air pollution control agency with jurisdiction.
  - A. A copy of this permit.
  - B. Permit application dated November 1, 2006, and subsequent representations submitted to the TCEQ.
  - C. A complete copy of the testing reports and records of the initial performance testing completed pursuant to Special Condition No. 22 to demonstrate initial compliance.
  - D. Stack sampling results or other air emissions testing (other than CEMS data) that may be conducted on units authorized under this permit after the date of issuance of this permit.
  
27. The following information shall be maintained by the holder of this permit in a form suitable for inspection for a period of five years after collection and shall be made immediately available upon request to representatives of the TCEQ, EPA, or any local air pollution control program having jurisdiction:
  - A. The NO<sub>x</sub>, CO, and dilutant gases, O<sub>2</sub> or CO<sub>2</sub>, CEMS emissions data to demonstrate compliance with the emission rates listed in the MAERT.
  - B. Raw data files of all CEMS data including calibration checks and adjustments and maintenance performed on these systems.
  - C. Records of the hours of operation of the black start generator.
  - D. Records of sulfur analysis of natural gas pursuant to Special Condition No. 10. **(03/11)**
  - E. Records of fuel sampling conducted pursuant to 40 CFR Part 60, Subpart KKKK.
  - F. Field records of visible emissions observations as specified in Special Condition No. 11. **(03/11)**
  - G. Records of NH<sub>3</sub> emissions sampling and calculations pursuant to Special Condition No. 24.
  - H. Written records of any accidental releases, spills, or venting of NH<sub>3</sub> and the corrective action taken.
  - I. Written records of maintenance performed to any piping and valves in NH<sub>3</sub> service pursuant to Special Condition No. 14.

- J. Records to identify the times when emissions data have been excluded from the calculation of average concentration because of MSS pursuant to Special Condition No. 8 along with the justification for excluding data. The records will list maintenance activities that are performed, if applicable.
- K. Monthly records of TDS concentrations and circulation rates from the cooling tower pursuant to Special Condition No. 25. **(03/11)**
- L. Information and data supporting a site-specific cooling water conductivity to TDS conversion factor.

### **Reporting**

- 28. The holder of this permit shall submit to the TCEQ Houston Regional Office and the Air Enforcement Branch of the EPA in Dallas semiannual reports as described in 40 CFR § 60.7. Such reports are required for each emission unit which is required to be continuously monitored pursuant to this permit.

Dated: XX, 2015

ATTACHMENT A  
 Permit Numbers 80289, PSDTX1082M1, and PAL 9  
 Inherently Low Emitting (ILE) Maintenance Activities

Activity	Emissions					
	NH <sub>3</sub> / urea	VOC	NO <sub>x</sub>	CO	PM	SO <sub>2</sub>
Water-based washing		X				
Miscellaneous particulate filter maintenance <sup>1</sup>					X	
Catalyst handling and maintenance <sup>2</sup>					X	
Management of sludge from pits, ponds, sumps, and water conveyances <sup>3</sup>		X				
Inspection, repair, replacement, adjusting, testing, and calibration of analytical equipment, process instruments including sight glasses, meters, gauges, CEMS, PEMS.		X	X	X		X
Small equipment and fugitive component repair/replacement in VOC and NH <sub>3</sub> service <sup>4</sup>	X	X				
Storage vessel maintenance (<0.5 psia VP)		X				
Organic chemical usage not covered by “manual surface coating or solvent cleaning operations” or by “use and disposal of aerosol productions”		X				
Outdoor/unenclosed dry abrasive blasting					X	
Gaseous fuel venting		X				
Online turbine washing					X	

Notes:

1. Includes, but is not limited to, baghouse filters, ash silo/transfer filters, coal handling filters, process-related building air filters, and combustion turbine air intake filters.
2. Includes, but is not limited to, replacement, cleaning, activation, and deactivation of SCR and oxidation catalysts.
3. Includes, but is not limited to, management by vacuum truck/dewatering of materials in open pits and ponds, and sumps, tanks and other closed or open vessels. Materials managed include water and sludge mixtures containing miscellaneous VOCs such as diesel, lube oil, and other waste oils.
4. Includes, but is not limited to, (i) repair/replacement of pumps, compressors, valves, pipes, flanges, transport lines, filters and screens in natural gas, fuel oil, diesel oil, ammonia, lube oil, and gasoline service, (ii) vehicle and mobile equipment maintenance that may involve small VOC emissions, such as oil changes, transmission service, and hydraulic system service, and (iii) off-line NO<sub>x</sub> control device maintenance (including maintenance of the anhydrous ammonia systems and aqueous ammonia systems associated with SCR systems.)

Dated: XX, 2015

ATTACHMENT B  
Permit Numbers 80289, PSDTX1082M1, and PAL 9  
NON-ILE MAINTENANCE ACTIVITIES

Activity	EPN	Emissions					
		NH <sub>3</sub> / urea	VOC	NO <sub>x</sub>	CO	PM	SO <sub>2</sub>
Combustion unit tuning and maintenance reliability testing <sup>1</sup>	CBY41 and CBY42		x	x	x	x	x

Notes:

1. Includes, but is not limited to, leak and operability checks (e.g., turbine overspeed tests, troubleshooting), seasonal tuning, and balancing.

Dated: XX, 2015

# **Preliminary Determination Summary**

Permit Numbers 80289 , PAL9, and PSDTX1082M1

## **I. Applicant**

NRG Texas Power LLC  
1201 Fannin Street  
Houston, TX 77002

## **II. Project Location**

Cedar Bayou 4 Electric Generating Station  
7705 West Bay Road  
Chambers County  
Baytown, TX 77523

## **III. Project Description**

NRG operates the Cedar Bayou 4 Electric Generating Station in Chambers County, consisting of two natural gas-fired combustion turbines, Emission Point Numbers (EPNs) CBY41 and CBY42, and associated ancillary equipment. NRG's amendment application requests an increase in the annual carbon monoxide (CO) and a small increase in the volatile organic compounds (VOC) emission rates for both turbines, due to an increase in the number of startups per year. NRG requests to install oxidation catalysts to each unit and replace the individual unit CO, VOC, and nitrogen oxides (NO<sub>x</sub>) emission limits with an annual emissions cap that covers both units.

## **IV. Emissions**

Emission sources for the proposed project consist of two natural gas-fired combustion turbines, Emission Point Numbers (EPNs) CBY41 and CBY42, and associated ancillary equipment.

## **V. Federal Applicability**

Cedar Bayou is located in Chambers County which is classified as a severe ozone nonattainment county. The site is currently considered to be a named major stationary source with respect to the Prevention of Significant Deterioration (PSD) program. The new project will have the potential to emit emissions greater than the major modification significance level for the pollutants identified below.

The following table illustrates the annual project emissions for each pollutant and whether this pollutant triggers PSD review. These totals include maintenance, startup, and shutdown (MSS) emissions.

The Cedar Bayou Electric Generating Station has an existing Plantwide Applicability Limit (PAL) for NOx. NRG Texas represented that NOx emissions from this project along with existing sources at the site will not exceed the existing PAL; therefore, a PSD and NA review is not triggered. A review of Environmental Protection Agency's acid rain database confirms that actual NOx emissions are substantially below the existing PAL and that NRG's proposed project would not be expected to exceed the existing PAL.

Pollutant	Project Emission Increases (tpy)	NA Netting Trigger (tpy)	NA Triggered Y/N	Major Mod Trigger (tpy)	NA Triggered Y/N	PSD Triggered Y/N
VOC	1.36	5	N	25 for NA 40 for PSD	N	N
CO	1115.21	-	N	100	N	Y

VOC project increases were below the PSD and NA major modification significance levels; therefore, a PSD and NA review were not required for this pollutant. CO project increases were above the PSD major modification significance levels; therefore, a PSD review was required for this pollutant.

## VI. Control Technology Review

The gas turbines currently employ a dry low NOx combustion system as the primary method to control emissions. The dry low NOx system uses lean premix gas nozzle technology and multiple staged fuel nozzles to control flame temperature and promote thorough combustion from full load down to 70% load. A SCR system is installed at each HRSG to further reduce NOx emissions from the turbines. CO emissions are currently minimized using pre-mix combustors. With this project, CO emissions will be further controlled through oxidation catalysts installed at each HRSG.

During planned MSS, the turbines are operating outside the design optimal temperature range for the catalytic oxidation to be effective and it is technically infeasible to meet the primary BACT emission rates. Therefore, secondary BACT limits have been established to minimize emissions during MSS scenarios. The secondary BACT established for this project includes limiting the number and duration of startup and shutdown events for the turbines, which minimizes the amount of time they are outside the optimal performance mode (in which the process units and controls were designed to work most effectively).

## **VII. Air Quality Analysis**

The amendment will increase the annual CO emissions from 618.03 tpy to 1733.12 tpy; however, the hourly CO emission rate (both MSS and steady-state) will not change as a result of this permit amendment. Increasing the annual CO emission rate will not pose a threat to the NAAQS, since there is no annual NAAQS for CO. Modeling performed in the last permit amendment authorized in April 2011 evaluated CO emissions at the permitted hourly emission rates. Predicted emission concentration were below the PSD CO de minimis levels.

The amendment will also result in an annual increase of VOC emissions. Annual VOC emission rates will increase from 23.59 tpy to 24.95 tpy. Per Appendix B of the Modeling and Effects Review Applicability (MERA) guidance the VOC emissions associated with startup of units firing natural gas do not require evaluation.

## **VIII. Conclusion**

NRG has demonstrated that this project meets all applicable rules, regulations and requirements of the Texas and Federal Clean Air Acts. The proposed project will not violate the NAAQS, or have any adverse impacts on soils, vegetation, or Class I Areas.

The Executive Director of the TCEQ proposes a preliminary determination of issuance of this permit for NRG to amend the electric power generating facilities as proposed.