

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR RESOURCES

MAJOR SOURCE PERMIT

*RHODE ISLAND CENTRAL GENCO, LLC*

RI-PSD-8

Pursuant to the provisions of Air Pollution Control Regulation No. 9, this major source permit is issued to:

*Ridgewood Power Management LLC*

For the following:

*Installation of five Solar Taurus 60 combustion turbines, five heat recovery steam generators, one steam turbine, five selective catalytic reduction (SCR) systems to reduce NO<sub>x</sub> emissions prior to discharge to the atmosphere and a four cell cooling tower. Installation of a gas treatment plant and auxiliary cooling tower. Installation of a ULE flare and two enclosed flares.*

Located at: *65 Shun Pike, Johnston*

This permit shall be effective from the date of its issuance and shall remain in effect until revoked by or surrendered to the Department. This permit does not relieve *Rhode Island Central Genco, LLC* from compliance with applicable state and federal air pollution control rules and regulations. The design, construction and operation of this equipment shall be subject to the attached permit conditions and emission limitations.

*Douglas McVay*

Douglas McVay, Acting Chief  
Office of Air Resources

*5/12/09*

Date of issuance

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR RESOURCES

Permit Conditions and Emission Limitations

RHODE ISLAND CENTRAL GENCO, LLC

RI-PSD-8

A. Emission Limitations

1. Combustion Turbines

a. Nitrogen oxides (as nitrogen dioxide (NO<sub>2</sub>))

- (1) The concentration of nitrogen oxides discharged to the atmosphere from each combustion turbine shall not exceed 25 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (1-hour average).
- (2) The emission rate of nitrogen oxides discharged to the atmosphere from each combustion turbine shall not exceed 7.95 lbs/hr.

b. Carbon Monoxide (CO)

- (1) The concentration of carbon monoxide discharged to the atmosphere from each combustion turbine shall not exceed 100 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (1-hour average) at full load conditions and 200 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (1-hour average) at load conditions other than full load. Full load conditions shall mean 95-100% load.
- (2) The emission rate of carbon monoxide discharged to the atmosphere from each combustion turbine shall not exceed 34.86 lbs/hr.

c. Total nonmethane hydrocarbons (NMHC)

- (1) The concentration of total nonmethane hydrocarbons discharged to the atmosphere from each combustion turbine shall not exceed 10 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (1-hour average) at full load conditions and 20 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (1-hour average) at load conditions other than full load. Full load conditions shall mean 95-100% load.

- (2) The emission rate of total nonmethane hydrocarbons discharged to the atmosphere from each combustion turbine shall not exceed 1.99 lbs/hr.

d. Particulate Matter less than 10 microns ( $PM_{10}$ )

The emission rate of particulate matter less than 10 microns from each combustion turbine shall not exceed 0.024 lb/MMBTU or a maximum of 1.90 lbs per hour, whichever is more stringent.

e. Sulfur Dioxide ( $SO_2$ )

- (1) The owner/operator shall not burn in each combustion turbine any landfill gas which contains total potential sulfur emissions in excess of 0.034 lb  $SO_2$ /MMBtu heat input.

- (2) The emission rate of sulfur dioxide discharged to the atmosphere from each combustion turbine shall not exceed 2.70 lbs/hr.

f. Ammonia ( $NH_3$ )

- (1) The concentration of ammonia discharged to the atmosphere from each combustion turbine shall not exceed 20 ppmv, on a dry basis, corrected to 15 percent  $O_2$  (1-hour average).

- (2) The emission rate of ammonia discharged to the atmosphere from each combustion turbine shall not exceed 2.35 lbs/hr.

- g. Visible emissions from each combustion turbine shall not exceed 10% opacity except for a period or periods aggregating no more than three minutes in any one hour.

2. ULE flare (Regen flare)

a. Nitrogen oxides (as Nitrogen dioxide ( $NO_2$ ))

The emission rate of nitrogen oxides discharged to the atmosphere from the ULE flare shall not exceed 0.025 lbs per million BTU or 0.52 lbs/hr, whichever is more stringent.

b. Carbon Monoxide (CO)

The emission rate of carbon monoxide discharged to the atmosphere from the ULE flare shall not exceed 0.060 lbs per million BTU or 1.25 lbs/hr, whichever is more stringent.

c. Non-methane Organic Compounds (NMOC)

The ULE flare shall reduce non-methane organic compound emissions by 99% unless the outlet non-methane organic compound concentration has been reduced to 5 ppmvd, or less, as hexane at 3% oxygen.

d. The ULE flare shall be operated with no visible emissions.

3. Enclosed flares (Backup flares)

a. Nitrogen oxides (as Nitrogen dioxide (NO<sub>2</sub>))

The emission rate of nitrogen oxides discharged to the atmosphere from each enclosed flare shall not exceed 0.06 lbs per million BTU or 5.94 lbs/hr, whichever is more stringent.

b. Carbon Monoxide (CO)

The emission rate of carbon monoxide discharged to the atmosphere from each enclosed flare shall not exceed 0.20 lbs per million BTU or 19.80 lbs/hr, whichever is more stringent.

c. Non-methane Organic Compounds (NMOC)

Each enclosed flare shall reduce non-methane organic compound emissions by 98% unless the outlet non-methane organic compound concentration has been reduced to 5 ppmvd, or less, as hexane at 3% oxygen.

d. Each enclosed flare shall be operated with no visible emissions.

B. Operating Requirements

1. Combustion turbines

- a. Landfill gas shall be the primary fuel for the combustion turbines. The use of propane as an auxiliary fuel shall be limited to startup only.

- b. The maximum heat input rate to each combustion turbine shall not exceed 80.04 million BTUs per hour at 0°F.
- c. The landfill gas shall be filtered, dewatered, and compressed prior to use in the turbines in accordance with the provisions of 40 CFR 60.752(b)(2)(iii)(C).
- d. The SCR system shall be operated at all times that the inlet temperature of the SCR catalyst is 600° F or greater.
- e. Ammonia shall be injected into the SCR system whenever the inlet temperature of the SCR catalyst is at or above 600°F.

2. ULE flare (regen flare)

- a. The minimum operating temperature of the ULE flare shall be 1500°F.
- b. The ULE flare shall be equipped with an interlock system that ensures ignition of the pilot flame before purge gas is discharged to the device.
- c. The ULE flare shall be equipped with a flame failure alarm that automatically shuts off the blowers which deliver landfill gas and purge gas to the flare.
- d. Landfill gas shall be the primary fuel for the ULE flare. The use of propane as an auxiliary fuel shall be limited to startup only.
- e. The ULE flare shall be operated at all times when purge gas is being vented to it.
- f. The ULE flare shall be operated according to its design specifications whenever purge gas is being routed to the device.
- g. The owner/operator shall not flare any landfill gas which contains hydrogen sulfide in excess of 100 ppmv, on a dry basis.

3. Enclosed flares (backup flares)

- a. The minimum operating temperature of each enclosed flare shall be 1500°F.
- b. Each enclosed flare shall be equipped with an interlock system that ensures ignition of the pilot flame before landfill gas or purge gas is discharged to the device.

- c. Each enclosed flare shall be equipped with a flame failure alarm that automatically shuts off the blowers which deliver landfill gas and purge gas to the flare.
- d. Landfill gas shall be the primary fuel for each enclosed flare. The use of propane as an auxiliary fuel shall be limited to startup only.
- e. The enclosed flare shall be operated at all times when landfill gas or purge gas is being vented to it.
- f. Each enclosed flare shall be operated according to its design specifications whenever the collected landfill gas or purge gas is being routed to the device.
- g. The owner/operator shall not flare any landfill gas which contains hydrogen sulfide in excess of 100 ppmv, on a dry basis.

### C. Monitoring

#### 1. Combustion turbines

- a. Total landfill gas flow to the combustion turbines shall be continuously measured and recorded.
- b. Gross electrical power generation (kw-hrs) shall be continuously measured and recorded for each turbine individually and for the five turbines combined.
- c. Each combustion turbine shall be equipped with a non-resettable elapsed time meter to indicate, in cumulative hours, the elapsed turbine operating time.
- d. Inlet temperature to the SCR catalyst shall be continuously measured and recorded.
- e. The owner/operator shall conduct quarterly analyses of the landfill gas being used as a fuel. At a minimum, the landfill gas should be analyzed for the following compounds: acetone, acrylonitrile, benzene, bromodichloromethane, carbon disulfide, carbon tetrachloride, carbonyl sulfide, chlorobenzene, chlorodifluoromethane, chloroform, cyclohexane, cyclohexane, 1,4 dichlorobenzene, cis-1,2 dichloroethene, trans-1,2 dichloroethene, ethyl benzene, ethyl chloride, ethylene dibromide, ethylene dichloride, ethylidene dichloride, hexane, hydrogen sulfide, isopropanol, mercury, methyl chloride, methyl chloroform, methyl ethyl ketone, methyl

isobutyl ketone, methylene chloride, propylene dichloride, styrene, 1,1,2,2 tetrachloroethane, tetrachloroethylene, toluene, total chlorides, trichloroethylene, trichlorofluoromethane, vinyl chloride, vinylidene chloride and xylenes. The owner/operator shall keep records of these analyses and provide such records to the Office of Air Resources upon request.

f. Sulfur Dioxide (SO<sub>2</sub>)

- (1) The owner/operator shall monitor the total sulfur content of the landfill gas being fired in each combustion turbine daily. A representative sample of the landfill gas shall be collected following ASTM D5287. A single sample may be collected from a common header for the turbines rather than individually from each turbine. The total sulfur content of the landfill gas shall be determined using ASTM D1072 or alternatively D3246, D4084, D4468, D4810, D6228, D6667 or Gas Processors Association Standard 2377.
- (2) The analyses may be performed by the owner/operator, a service contractor retained by the owner/operator or any other qualified agency.
- (3) The owner/operator may develop a custom schedule for determination of the total sulfur content of the landfill gas following the requirements in 40 CR 60.4370(c).

g. The owner/operator shall measure the concentration, in parts per million (ppm), of nitrogen oxides at the inlet and outlet of the SCR system once per month. Testing shall be conducted using a portable analyzer in accordance with a protocol approved by the Office of Air Resources.

2. ULE flare (regen flare)

a. Temperature Monitoring

- (1) The owner/operator shall install, calibrate, operate, and maintain a temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of  $\pm 1$  percent of the temperature being measured expressed in degrees Celsius or  $\pm 0.5$  degrees Celsius, whichever is greater.
- (2) The thermocouple used to measure flare operating temperature shall be above the flame zone and at least three feet below the top of the flare shroud.

- (3) The owner/operator shall verify the accuracy of the temperature monitor once each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose). During accuracy checking, the probe of the reference device shall be at the same location as that of the temperature monitor being tested.
- b. The owner/operator shall install, calibrate and maintain a gas flow rate measuring device that shall record the flow of landfill gas to the ULE flare at least every fifteen minutes when the flare is in operation.
- c. The owner/operator shall monitor, at least daily, Monday through Saturday (excluding holidays), the methane content of the landfill gas being combusted by the ULE flare.
- d. The flare shall be equipped with a failure alarm with an automatic blower and landfill gas supply valve shut-off system to isolate the flare from the landfill gas supply line, to shut off the blower and to notify a responsible party of the shutdown.
- e. The owner/operator shall conduct quarterly analyses of the landfill gas being combusted in the ULE flare. At a minimum, the landfill gas should be analyzed for the following compounds: acetone, acrylonitrile, benzene, bromodichloromethane, carbon disulfide, carbon tetrachloride, carbonyl sulfide, chlorobenzene, chlorodifluoromethane, chloroform, cyclohexane, cyclohexane, 1,4 dichlorobenzene, cis-1,2 dichloroethene, trans-1,2 dichloroethene, ethyl benzene, ethyl chloride, ethylene dibromide, ethylene dichloride, ethylidene dichloride, hexane, hydrogen sulfide, isopropanol, mercury, methyl chloride, methyl chloroform, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, propylene dichloride, styrene, 1,1,2,2 tetrachloroethane, tetrachloroethylene, toluene, total chlorides, trichloroethylene, trichlorofluoromethane, vinyl chloride, vinylidene chloride and xylenes. The owner/operator shall keep records of these analyses and provide such records to the Office of Air Resources upon request.
3. Enclosed flares (backup flares)
- a. Temperature Monitoring
- (1) The owner/operator shall install, calibrate, operate, and maintain a temperature monitoring device equipped with a continuous recorder



and having a minimum accuracy of  $\pm 1$  percent of the temperature being measured expressed in degrees Celsius or  $\pm 0.5$  degrees Celsius, whichever is greater.

- (2) The thermocouple used to measure flare operating temperature shall be above the flame zone and at least three feet below the top of the flare shroud.
  - (3) The owner/operator shall verify the accuracy of the temperature monitor once each calendar year with a reference temperature monitor (traceable to National Institute of Standards and Technology (NIST) standards or an independent temperature measurement device dedicated for this purpose). During accuracy checking, the probe of the reference device shall be at the same location as that of the temperature monitor being tested.
- b. The owner/operator shall install, calibrate and maintain a gas flow rate measuring device that shall record the flow of landfill gas to each enclosed flare at least every fifteen minutes when the flare is in operation.
  - c. The owner/operator shall monitor, at least daily, Monday through Saturday (excluding holidays), the methane content of the landfill gas being combusted by each enclosed flare.
  - d. Each enclosed flare shall be equipped with a failure alarm with an automatic blower and landfill gas supply valve shut-off system to isolate the flare from the landfill gas supply line, to shut off the blower and to notify a responsible party of the shutdown.
  - e. The owner/operator shall conduct quarterly analyses of the landfill gas being combusted in each enclosed flare. At a minimum, the landfill gas should be analyzed for the following compounds: acetone, acrylonitrile, benzene, bromodichloromethane, carbon disulfide, carbon tetrachloride, carbonyl sulfide, chlorobenzene, chlorodifluoromethane, chloroform, cyclohexane, cyclohexane, 1,4 dichlorobenzene, cis-1,2 dichloroethene, trans-1,2 dichloroethene, ethyl benzene, ethyl chloride, ethylene dibromide, ethylene dichloride, ethylidene dichloride, hexane, hydrogen sulfide, isopropanol, mercury, methyl chloride, methyl chloroform, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, propylene dichloride, styrene, 1,1,2,2 tetrachloroethane, tetrachloroethylene, toluene, total chlorides, trichloroethylene, trichlorofluoromethane, vinyl chloride, vinylidene chloride and xylenes. The owner/operator shall keep records of these analyses and provide such records to the Office of Air Resources upon request.

D. Compliance Demonstration/Stack Testing

1. Combustion turbines

- a. Within 180 days of start-up, initial performance testing shall be conducted on the combustion turbines. Performance testing shall be conducted for nitrogen oxides, carbon monoxide and total non-methane hydrocarbons. Start-up shall mean when a combustion turbine goes on-line to produce power for sale.

Thereafter, performance testing shall be conducted annually to determine compliance with the nitrogen oxide emission limitation.

- b. A stack testing protocol shall be submitted to the Office of Air Resources at least 60 days prior to the performance of any stack tests. The owner/operator shall provide the Office of Air Resources at least 60 days prior notice of any performance test.
- c. All test procedures used for stack testing shall be approved by the Office of Air Resources prior to the performance of any stack tests. Performance testing for nitrogen oxides shall be conducted using the methodologies in 40 CFR 60.4400
- d. The owner/operator shall install any and all test ports or platforms necessary to conduct the required stack testing, provide safe access to any platforms and provide the necessary utilities for sampling and testing equipment.
- e. All testing shall be conducted under operating conditions deemed acceptable and representative for the purpose of assessing compliance with the applicable emission limitation.
- f. A final report of the results of stack testing shall be submitted to the Office of Air Resources no later than 60 days following completion of the testing.
- g. All stack testing must be observed by the Office of Air Resources or its authorized representatives to be considered acceptable, unless the Office of Air Resources provides authorization to the owner/operator to conduct the testing without an observer present.

2. ULE flare (regen flare)

- a. Compliance with the emission limitation in specified in Conditions A.2.a-c shall be demonstrated within 180 days of start up of the ULE flare. Testing

shall be conducted in accordance with the test methods in 40 CFR 60 as amended or another EPA approved method which has been accepted by the Director.

During the initial compliance test, the owner/operator shall also measure PM-10 emissions for the purpose of developing an emission factor to calculate annual emissions from the ULE flare.

Thereafter, testing shall be conducted every three years for nitrogen oxides.

- b. During each performance test, the owner/operator shall determine the average operating temperature of the ULE flare. The average operating temperature is the temperature monitored, averaged over the course of the performance test.
  - c. The owner/operator shall provide the Office of Air Resources at least 30 days prior notice of any stack test.
  - d. All testing shall be conducted under operating conditions deemed acceptable and representative for the purpose of assessing compliance with the applicable emissions limitation.
  - e. A final report of the results of stack testing shall be submitted to the Office of Air Resources no later than 60 days following completion of testing.
3. Enclosed flares (backup flares)
- a. Compliance with the emission limitation in specified in Conditions A.3.a-c shall be demonstrated within 180 days of start up of each enclosed flare. Testing shall be conducted in accordance with the test methods in 40 CFR 60 as amended or another EPA approved method which has been accepted by the Director.

During the initial compliance test, the owner/operator shall also measure PM-10 emissions for the purpose of developing an emission factor to calculate annual emissions from each enclosed flare.

Thereafter, testing shall be conducted every three years for nitrogen oxides.

- b. During each performance test, the owner/operator shall determine the average operating temperature of each enclosed flare. The average operating temperature is the temperature monitored, averaged over the course of the performance test.

- c. The owner/operator shall provide the Office of Air Resources at least 30 days prior notice of any stack test.
- d. All testing shall be conducted under operating conditions deemed acceptable and representative for the purpose of assessing compliance with the applicable emissions limitation.
- e. A final report of the results of stack testing shall be submitted to the Office of Air Resources no later than 60 days following completion of testing.

E. Recordkeeping and Reporting

1. The owner/operator shall maintain the following records on a monthly basis:
  - a. The hours of operation of each combustion turbine, including any start-up, shutdown or malfunction in the operations of the facility.
  - b. The total landfill gas flow to each combustion turbine.
  - c. Gross electrical power generation in kw-hr for each turbine and for the five turbines combined.
  - d. Any malfunction of the air pollution control system.
  - e. Inlet temperature to the SCR catalyst
2. The owner/operator shall continuously measure and record the operating temperature of the ULE flare and each enclosed flare.
3. The owner/operator shall notify the Office of Air Resources, in writing, within 15 days after the end of the calendar quarter, if the quarterly analyses of the landfill gas being used as a fuel show that the concentration of any compound exceeds the reportable concentrations in Table 1.
4. The owner/operator shall maintain records of the landfill gas flow rate and daily methane content of the landfill gas being combusted in the ULE flare and each enclosed flare.
5. The permittee shall maintain up-to-date, readily accessible records for the life of each flare, the data listed below, as measured during the initial performance test. Records of subsequent tests or monitoring shall be maintained for a minimum of 5 years. Records of vendor specifications for each flare shall be maintained until removal:

- a. The average combustion temperature measured at least every 15 minutes and averaged over the same time period of the performance test; and
  - b. The percent reduction of NMOC determined as specified in 40 CFR 60.752(b)(2)(iii)(B) achieved by each flare.
6. The owner/operator shall notify the Office of Air Resources, in writing, of the date of actual start-up of the combustion turbines no later than fifteen days after such date.
7. The owner/operator shall submit excess emissions and monitoring systems performance report and/or summary report form for the combustion turbines to the Office of Air Resources and the USEPA semiannually. All reports shall be postmarked by the 30th day following the end of each six-month period.
- a. The excess emissions and monitoring systems performance report shall include the following information:
    - (1) The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions. The process operating time during the reporting period.
    - (2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.
    - (3) The date and time identifying each period of monitor downtime and the nature of any corrective action.
    - (4) When no excess emissions have occurred or the monitoring system has not been down, such information shall be stated in the report.
  - b. The summary report form shall contain the information and be in the format shown in figure 1 in 40 CFR 60.7(d). One summary report form shall be submitted for sulfur dioxide.
    - (1) If the total duration of excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and CMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report form shall be submitted and the excess emission



A copy of each report shall be kept at the facility.

10. The owner/operator shall, on a monthly basis, no later than 15 days after the first of each month, determine the an average monthly BTU/scf value for landfill gas combusted by the ULE flare and each enclosed flare using daily methane values and the following equation:

$$\text{Heating Value of Landfill Gas (BTU/scf)} = \text{Methane Content (\%)} \times 1012 \text{ BTU/scf}$$

11. The owner/operator shall prepare an annual emissions report of total emissions of nitrogen oxides, carbon monoxide, sulfur dioxide and PM-10 from the ULE flare and each enclosed flare for the previous calendar year. This report shall be submitted to the Office of Air Resources with the annual emission report required by Air Pollution Control Regulation No. 14.
12. The owner/operator shall notify the Office of Air Resources in writing of any planned physical or operational change to any equipment that would:
- a. Change the representation of the facility in the application.
  - b. Alter the applicability of any state or federal air pollution rules or regulations.
  - c. Result in the violation of any terms or conditions of this permit.
  - d. Qualify as a modification under APC Regulation No. 9.

Such notification shall include:

- Information describing the nature of the change.
- Information describing the effect of the change on the emission of any air contaminant.
- The scheduled completion date of the planned change.

Any such change shall be consistent with the appropriate regulation and have the prior approval of the Director.

13. The owner/operator shall notify the Office of Air Resources of any anticipated noncompliance with the terms of this permit or any other applicable air pollution control rules and regulations.

14. Deviations from permit conditions, including those attributable to upset conditions as defined in this permit, shall be reported, in writing, within five (5) business days of the deviation, to the Office of Air Resources. A copy of any such report shall be sent to the USEPA Region I. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.
15. All records required as a condition of this permit must be made available to the Office of Air Resources or its representative upon request. These records must be maintained for a minimum of five years after the date of each record.

F. Other Permit Conditions

1. To the extent consistent with the requirements of this permit and applicable federal and state laws, the facility shall be designed, constructed and operated in accordance with the representation of the facility in the permit application dated December 2007, prepared by GZA GeoEnvironmental, Inc and the addendum to the permit application dated August 2008, prepared by GZA GeoEnvironmental.
2. Employees of the Office of Air Resources and its authorized representatives shall be allowed to enter the facility at all times for the purpose of inspecting any air pollution source, investigating any condition it believes may be causing air pollution or examining any records required to be maintained by the Office of Air Resources.
3. Operation of this equipment shall not result in the release of raw landfill gas to the atmosphere.
4. The owner/operator shall install and maintain an automatic fail-safe block valve on each combustion turbine. The fail-safe block valve must stop the flow of landfill gas in the event of a combustion turbine failure.
5. Excess landfill gas, not used as a fuel in a combustion turbine, must be flared or combusted in the Caterpillar engines.
6. At all times, including periods of startup, shutdown and malfunction, the owner/operator shall, to the extent practicable, maintain and operate the facility 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 the Office of Air Resources which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures and inspection of the source.
7. The owner/operator shall not initiate start-up of the facility until a minimum of 116 tons of NO<sub>x</sub> emission offsets has been purchased. The NO<sub>x</sub> emission offsets shall



be those generated by the the voluntary installation of an SCR system at the Medical Area Total Energy Plant (MATEP) in Boston, MA and the shutdown of equipment associated with the Lawrence RDF and the Ogden Martin Systems of Haverhill plants located in Lawrence, MA. Offsets purchased from any other source must have the prior approval of the Office of Air Resources.

8. The owner/operator shall not initiate start-up of the facility until a minimum of 36 tons of VOC emission offsets has been purchased. The VOC emission offsets shall be those generated by the shutdown of the Quebecor Printing Providence, Inc. facility in Providence, RI in 1998. Offsets purchased from any other source must have the prior approval of the Office of Air Resources.

G. Startup/Shutdown Conditions and Initial Commissioning

1. Turbine startup/shutdown shall be defined as that period of time from initiation of combustion turbine firing until the unit reaches steady state load operation. Steady state operation shall be reached when the combustion turbine reaches minimum load (70%). This period shall not exceed 60 minutes for a hot start, 180 minutes for a warm start, or 240 minutes for a cold start. A warm start shall be defined as startup when the generating unit has been down for more than 2 hours and less than or equal to 24 hours. A cold start shall be defined as startup when the generating unit has been down for more than 24 hours. Unit shutdown shall be defined as that period of time from steady state operation to cessation of combustion turbine firing. This period shall not exceed 60 minutes.
2. Initial turbine commissioning shall be defined as the first 100 hours of combustion turbine operation following initial startup or to commercial acceptance whichever is less.
3. The emission limitations of Conditions A.1-4 shall not apply to the turbine startup/shutdown conditions or to initial turbine commissioning. Within twelve months of the initial performance testing required by Condition D.1, the owner/operator shall propose to the Office of Air Resources, numerical emission limits to apply during turbine startup and shutdown conditions. Continuous emission monitoring and/or stack test data gathered during startups and shutdowns shall be used as the basis for these limits and calculation of these emission limits shall be based on statistical methods, numerical methods or other appropriate analytical methodology that is deemed acceptable by the Office of Air Resources.
4. The owner/operator shall follow proper operating procedures during turbine startup/shutdown conditions and initial turbine commissioning to minimize the emissions of air contaminants to the maximum extent practical. The owner/operator shall submit to the Office of Air Resources for review and approval, at least 90 days prior to startup, the procedures to be followed during turbine startup/shutdown

conditions and initial turbine commissioning. The procedures shall be designed to minimize the emission of air contaminants to the maximum extent practical.

#### H. Malfunctions

1. In the case of a malfunction of any air pollution control device, all reasonable measures shall be taken to assure resumption of the designed control efficiency as soon as possible. In the event that the malfunction of the air pollution control device is expected or may reasonably be expected to continue for longer than 24 hours and if the owner or operator wishes to continue to operate the air pollution control device and/or the equipment vented to that air pollution control device at any time beyond that period, the Director shall be petitioned for a variance under Section 23-23-15 of the General Laws of Rhode Island, as amended. Such petition shall include, but is not limited to, the following:
  - a. Identification of the specific air pollution control device and source on which it is installed;
  - b. The expected period of time that the air pollution control device will be malfunctioning or out of service;
  - c. The nature and quantity of air contaminants likely to be emitted during said period;
  - d. Measures that will be taken to minimize the length of said period;
  - e. The reasons that it would be impossible or impractical to cease the source operation during said period.
  
2. The owner/operator may seek to establish that a malfunction of any air pollution control device that would result in noncompliance with any of the terms of this permit or any other applicable air pollution control rules and regulations was due to unavoidable increases in emissions attributable to the malfunction. To do so, the owner/operator must demonstrate to the Office of Air Resources that:
  - a. The malfunction was not attributable to improperly designed air pollution control equipment, lack of preventative maintenance, careless or improper operation, or operator error;
  - b. The malfunction was not part of a recurring pattern indicative of inadequate design, operation, or maintenance;
  - c. Repairs necessary to bring the air pollution control system back to normal and proper operation were performed in an expeditious fashion. Off-shift

labor and overtime should be utilized, to the extent practicable, to ensure that such repairs were completed as expeditiously as practicable. Any parts or material needed should be shipped overnight where possible or practical.

- d. All possible steps were taken to minimize emissions during the period of time that the repairs were performed.
- e. Emissions during the period of time that the repairs were performed will not:
  - (1) Cause an increase in the ground level ambient concentration at or beyond the property line in excess of that allowed by Air Pollution Control Regulation No. 22 and any Calculated Acceptable Ambient Levels; and
  - (2) Cause or contribute to air pollution in violation of any applicable state or national ambient air quality standard.
- f. The reasons that it would be impossible or impractical to cease the source operation during said period.

This demonstration must be provided to the Office of Air Resources, in writing, within two working days of the time when the malfunction occurred and contain a description of the malfunction, any steps taken to minimize emissions and corrective actions taken.

The owner/operator shall have the burden of proof in seeking to establish that noncompliance was due to unavoidable increases in emissions attributable to the malfunction.

Table 1  
Reportable Concentrations

Pollutant	CAS Number	Reportable Concentration (ppm)
Benzene	71432	130
1,4 Dichlorobenzene	106467	61
Ethylidene dichloride	75343	629
Hydrogen sulfide	7783064	6100
Mercury	7439976	0.13
Methylene chloride	75092	2236
Tetrachloroethylene	127184	124
Trichloroethylene	79016	383
Trichlorofluoromethane	75694	86,667
Vinyl Chloride	75014	324
Hydrogen Chloride	7647010	537



STATE OF RHODE ISLAND  
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR RESOURCES

In Re: Proposal to issue a Major Source Permit to Rhode Island Central Genco, LLC

Response to Comments and Decision

Introduction

Rhode Island Central Genco, LLC, (RICG) proposes to install five, landfill gas-fired combustion turbines and three flares at its existing facility at 65 Shun Pike, Johnston, RI. An application for a Major Source Permit for this facility was received by the Office of Air Resources on 28 December 2007. The application was determined to be complete on 10 March 2008. On 28 August 2008 RICG submitted an addendum to their application proposing to add three flares to the project. This Response to Comments and Decision will respond to substantial comments made on the draft permit and present the Department's final action on RICG's Major Source Permit application.

On 11 March 2009 a Notice of Public Hearing and Comment Period was published in the Providence Journal and was mailed and/or e-mailed to interested parties announcing a public hearing and the opportunity for public comment on the Office of Air Resources' proposal to issue a Major Source Permit to Rhode Island Central Genco, LLC. The public notice contained the information required by Section 9.12.2 of APC Regulation No. 9. The public notice was sent to those persons required to be sent a public notice by Section 9.12.3 of APC Regulation No. 9 and other interested persons. A fact sheet was prepared for the draft permit, which includes the information required by Section 9.12.4 of APC Regulation No. 9.

A copy of the draft Major Source Permit and supporting documentation was made available at the Office of Air Resources. The availability of these materials at this location was announced in the public notice.

A public hearing was held on 16 April 2009 at the Rhode Island Department of Environmental Management's offices, 235 Promenade Street, Providence, RI at 7:00 PM. The written comment period closed at 4:00 PM on 16 April 2009, 36 days after the date of initial public notice. A transcript of the public hearing was prepared.

Written comments were received from the United States Environmental Protection Agency and Domenic Parisella. No individuals provided comments on the record at the public hearing. The following is the Office of Air Resources' responses to the written comments.

Response to Comments

The following are the comments of the USEPA contained in a 7 April 2009 letter from Donald Dahl to Doug McVay followed by DEM's response.

**Comment:** *The BACT analysis for the combustion turbines supports establishing the permit emission limits as provided for in the Preliminary Determination and not at the emission limits in*

*the draft NSR permit. The BACT analysis in the Preliminary Determination for the combustion turbine has a finding of 100 ppmv and 10 ppmv, respectively, on a dry basis, corrected to 15% O<sub>2</sub> (1-hour average) for the CO and VOC emission limits respectively, representative of full load conditions. The emission limits for CO and VOC of 200 ppmv and 20 ppmv, respectively, on a dry basis, corrected to 15% O<sub>2</sub> (1-hour average) in the draft NSR permit do not represent BACT but appear to be emission limits determined over a range of load conditions. EPA recommends changing the permit emission limits to reflect the BACT analysis as discussed in the Preliminary Determination.*

**Response:** DEM has revised the permit emission limits for carbon monoxide (CO) and total nonmethane hydrocarbons (NMHC) (aka VOC) to be consistent with the statements in the BACT evaluation.

The emission limitation for CO has been revised to read:

*The concentration of carbon monoxide discharged to the atmosphere from each combustion turbine shall not exceed 100 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (1-hour average) at full load conditions and 200 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (1-hour average) at load conditions other than full load Full load conditions shall mean 95-100% load*

The emission limitation for NMHC has been revised to read:

*The concentration of total nonmethane hydrocarbons discharged to the atmosphere from each combustion turbine shall not exceed 10 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (1-hour average) at full load conditions and 20 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> (1-hour average) at load conditions other than full load Full load conditions shall mean 95-100% load*

**Comment:** *The emission limit in the draft NSR permit for SO<sub>2</sub> for the combustion turbines is 0.060 lb SO<sub>2</sub>/MMBtu. Although this limit represents the emission limit found in 40 CFR 60, Subpart KKKK, Standards of Performance for Stationary Combustion Turbines, it is not consistent with the BACT emission limit of 0.034 lb SO<sub>2</sub>/MMBtu established in the Preliminary Determination. EPA recommends changing the permit emission limit for SO<sub>2</sub> to reflect the BACT analysis as discussed in the Preliminary Determination.*

**Response:** The emission limit in the permit has been revised to 0.034 lb SO<sub>2</sub>/MMBtu to be consistent with the BACT analysis in the Preliminary Determination.

**Comment:** *DEM should establish a minimum operating temperature for the operation of the SCR system in support of the permit conditions requiring the owner/operator to continuously monitor the inlet temperature of the SCR catalyst.*

**Response:** DEM has added two conditions to the Operating Requirements section of the permit to require that the SCR unit be in operation at all times that the inlet temperature of the SCR catalyst is 600° F or greater and that ammonia injection occur when the inlet temperature of the SCR catalyst is 600° F or greater.

The new conditions read:

*The SCR system shall be operated at all times that the inlet temperature of the SCR catalyst is 600° F or greater, and, Ammonia shall be injected into the SCR system whenever the inlet temperature of the SCR catalyst is at or above 600 °F.*

Domenic Parisella provided the following comment in an e-mail to Doug McVay dated 8 April 2009:

**Comment:** *I strongly object to any proposal that might contribute to any additional odor. Any increase in air pollution emissions is not acceptable.*

**Response:** The landfill gas-fired turbines would not be expected to generate odors that would be objectionable beyond the property line. However, unreacted ammonia is emitted from the SCR system used to control nitrogen oxides emissions. The maximum predicted 1-hour average impact of ammonia from the air quality modeling was 15.324  $\mu\text{g}/\text{m}^3$  (0.021 ppm). This impact is less than the lowest reported odor threshold for ammonia.

Additionally, the applicant has demonstrated in the air quality impact analysis that:

- This facility will not cause or contribute to air pollution in violation of any National Ambient Air Quality Standard.
- Emissions from the facility will not cause an increase in the ground level ambient concentration at or beyond the property line in excess of that allowed by Air Pollution Control Regulation No. 22 ("Air Toxics").

Decision

The Department finds that the applicant has satisfied all the applicable provisions of APC Regulation No. 9, Section 9.4 relative to the requirements for issuance of a Major Source Permit for a major modification in a nonattainment area and Section 9.5 relative to the requirements for issuance of a Major Source Permit for a major modification in an attainment area.

Based on the comments received on the proposal to issue a Major Source Permit to Rhode Island Central Genco, LLC, it is the decision of the Office of Air Resources to amend the draft permit as indicated in the response to comments above and issue the Major Source Permit, as revised.

5.7.09

Date



Susan Forcier, Hearing Officer  
Office of Legal Services