

24 February 2015

Mr. Clifford McGinnes  
Chief Operating Officer  
Block Island Power Company  
100 Ocean Avenue  
New Shoreham, RI 02807

Dear Mr. McGinnis:

The Department of Environmental Management, Office of Air Resources has reviewed and approved your request for revisions to your minor source permit for fuel burning equipment (Engine No. 23) and air pollution control equipment at your facility located at 100 Ocean Avenue, Block Island.

Enclosed is a revised minor source permit issued pursuant to our review of your request (Approval Nos. 1586, 1960 & 2280).

If there are any questions concerning this permit, please contact me at 222-2808, extension 7011.

Sincerely,

Ruth A. Gold  
Supervising Air Quality Specialist  
Office of Air Resources

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

MINOR SOURCE PERMIT

*BLOCK ISLAND POWER COMPANY*

APPROVAL NOs. 1586, 1960 & 2280

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

*Block Island Power Company*

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For the following:

*Revisions throughout the permit to address the use of a continuous emission monitor for nitrogen oxides, stack testing frequency, the installation of an oxidation catalyst (Approval No. 2280) to comply with the RICE MACT (40 CFR 63, Subpart ZZZZ) and other changes to current operations and controls.*

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Located at: *100 Ocean Avenue, New Shoreham*

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**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 *Block Island Power Company* 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.**

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Douglas L. McVay, Chief  
Office of Air Resources

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Date of Issuance

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

Permit Conditions and Emission Limitations

**BLOCK ISLAND POWER COMPANY**

**APPROVAL NOs. 1586, 1960 & 2280**

*(revised February 2015)*

A. Emission Limitations

1. Nitrogen Oxides (as Nitrogen Dioxide (NO<sub>2</sub>))
  - a. The emission rate of nitrogen oxides discharged to the atmosphere from Engine No. 23 shall not exceed 0.35 grams per brake horsepower-hour (gr/bhp-hr) or 1.41 lbs. per hour, whichever is more stringent.
  - b. Emissions of nitrogen oxides generated from Engine No. 23 shall be treated by an SCR system and reduced to at least 39 ppmv, on a dry basis, corrected to 15% O<sub>2</sub>(adjusted to 54% relative humidity at 25°C), before discharge to the atmosphere. The NO<sub>x</sub> concentration shall be corrected for intake air temperature and humidity following the procedures in 40 CFR 89.418.
  - c. The quantity of nitrogen oxides emitted from the entire facility shall not exceed 70,000 lbs in any consecutive 12-month period.
2. Carbon Monoxide (CO)
  - a. The emission rate of carbon monoxide from the engine exhaust shall not exceed 0.87 gr/bhp-hr or a maximum of 3.57 lbs. per hour, whichever is more stringent.
  - b. Emissions of carbon monoxide generated from Engine No. 23 shall be treated by an oxidation catalyst and reduced by 70% before discharge to the atmosphere.
3. Total Nonmethane Hydrocarbons (NMHC)
  - a. The emission rate of total nonmethane hydrocarbons from the engine exhaust shall not exceed 0.24 gr/bhp-hr or a maximum of 0.5 lbs. per hour, whichever is more stringent.

- b. Emissions of total nonmethane hydrocarbons from Engine No. 23 shall be treated by an oxidation catalyst before discharge to the atmosphere.
4. Sulfur Dioxide (SO<sub>2</sub>)
- a. The sulfur content of all diesel fuel burned in the engine shall not exceed 15 ppm by weight.
  - b. The emission rate of sulfur dioxide discharged to the atmosphere from the engine shall not exceed 0.02 lbs/hr.
5. Particulate Matter (PM)
- a. The emission rate of particulate matter discharged from the engine exhaust shall not exceed 0.13 gr/bhp-hr or a maximum of 0.48 lbs. per hour whichever is more stringent.
6. Ammonia (NH<sub>3</sub>)
- a. The concentration of ammonia discharged to the atmosphere shall not exceed 30 ppmv, on a dry basis, corrected to 15 percent O<sub>2</sub> .
  - b. The emission rate of ammonia discharged to the atmosphere shall not exceed 0.47 lbs. per hour.
7. Opacity
- Visible emissions from the engine shall not exceed 10% opacity except for a period or periods aggregating no more than three minutes in any one hour. This visible emission limitation shall not apply during the first ten minutes of firing following the initiation of firing.

B. Operating Requirements

- 1. There shall be no more than four engines operating simultaneously at the facility at any given time.
- 2. The air pollution control system (SCR and CO oxidation catalyst) and urea injection system shall be operated at all times that Engine 23 is operating except for:
  - a. engine startup; Engine startup shall be defined as the period of time following the initiation of firing during which engine and emission control parameters may be fluctuating prior to achieving steady state

operation. The engine startup period shall not exceed 45 minutes;

- b. engine shutdown; Engine shutdown shall be defined as the cessation of operation for any purpose;
3. Urea shall be injected into the SCR system whenever the catalyst bed is at or above 482°F.

### C. Monitoring

1. Engine 23 shall be equipped with a non-resettable elapsed time meter to indicate, in cumulative hours, the elapsed operating time.
2. The generator shall be equipped with a kilowatt-hour meter to indicate, in cumulative kilowatt-hours, the power generated by the engine-generator set.
3. The owner/operator shall install and operate a thermocouple to measure the inlet temperature to the SCR systems.
4. The owner/operator shall install and operate a flowmeter on the urea supply line to monitor overall urea consumption.
5. The owner/operator shall install and operate an electro-mechanical differential pressure instrument to monitor pressure drop across the SCR catalyst.
6. The concentration, in parts per million (ppm), of nitrogen oxides at the outlet of the SCR system shall be monitored continuously and read a minimum of three times in a 24-hour period, during steady state operation, and the date, time and measurement shall be recorded. The requirement to measure nitrogen oxides concentration shall be waived for any shift where Engine 23 is not in operation.

The recorded concentration shall be corrected to 15% O<sub>2</sub> (adjusted to 54% relative humidity at 25°C) and the relative humidity, engine exhaust O<sub>2</sub> content and ambient temperature shall be recorded.

The continuous flue gas nitrogen oxides analyzer will be a Land Instruments Model 940 (or equal). The flue gas analyzer will include automatic calibration capability and will automatically correct for any zero drift and detect any span drift.

7. The owner/operator shall monitor ammonia emissions from the SCR systems for Engine 23. Periodic routine emissions monitoring may be performed using Draeger detector tubes. Ammonia emissions shall be monitored according to the following schedule:

- a. Ammonia emissions shall be measured and recorded during steady state operation at least annually until 15,000 hours of SCR system operation after startup and once every 750 operating hours until the SCR catalyst is replaced.
- b. Ammonia emissions shall be measured and recorded, during steady state operation, whenever the urea pump speed meets or exceeds 115 strokes per minute; and,
- c. Ammonia emissions shall be measured and recorded during steady state operation whenever the concentration of nitrogen oxides discharged to the atmosphere exceeds 63 ppmv, on a dry basis, corrected to 15% O<sub>2</sub> (adjusted to 54% relative humidity at 25°C); and,
- d. Ammonia emissions shall be measured and recorded during steady state operations whenever the pressure drop across the SCR catalyst changes by more than one kilopascal (kPa).

#### D. Compliance Determinations

1. Compliance with the emission limitations in Conditions A.1-6 shall be based on one-hour average concentrations. Initial performance testing shall consist of three one-hour test runs at a load typical of representative operation (70-80%) and one one-hour test run at a high load condition (90-100%) and a low load condition (50-60%). Compliance with the emission limitations must be demonstrated for each load condition. Where multiple test runs are required at a single load condition, compliance is to be demonstrated based on the average of the test runs at that load condition.
2. Compliance with the limitation for nitrogen oxides emissions in Conditions A.1.c shall be determined by using the procedures in Attachment A.
3. Compliance with the diesel fuel sulfur limits may be determined based on a certification from the fuel supplier. Fuel supplier certifications shall include the following information:
  - a. The name of the fuel supplier;
  - b. The sulfur content of the fuel from which the shipment came or the shipment itself;
  - c. The location of the fuel when the sample was drawn for analysis to determine the sulfur content of the fuel, specifically including whether the fuel was sampled as delivered to Block Island Power Company or

whether the sample was drawn from fuel in storage at the fuel supplier's facility or another location;

- d. The method used to determine the sulfur content of the fuel.
4. As an alternative to fuel supplier certification, the owner/operator may elect to sample the fuel prior to combustion. Sampling and analysis shall be conducted for the fuel in the initial tank(s) of fuel to be fired in the engines and after each new shipment of fuel is received. Samples shall be collected from the fuel tank immediately after the fuel tank is filled and before any fuel is combusted.

#### E. Stack Testing

1. Within 180 days of the date of issuance of this permit, initial performance testing shall be conducted for the air pollution control system. Performance testing shall be conducted for nitrogen oxides and ammonia.

Thereafter, emission testing shall be conducted annually to determine compliance with the nitrogen oxides emission limitations. Annual emissions testing for nitrogen oxides shall consist of three-one hour test runs at a load typical of representative operation (70-80% of peak load). This requirement shall remain in effect until December 31, 2012.

After January 1, 2013, emission testing to determine compliance with the nitrogen oxides and ammonia emission limitations shall be conducted every five years. The five-year emissions testing for nitrogen oxides and ammonia shall consist of three-one hour test runs at a load typical of representative operation (70-80% of peak load). Ammonia emissions shall be measured using Conditional Test Method 27 (CTM-027) or another method approved by the USEPA and the Director.

2. Beginning in calendar year 2013, emission testing shall be conducted every 8760 hours of operation or three years, whichever comes first, to determine compliance with the carbon monoxide emission limitations. Emission testing shall be conducted according to the requirements in Table 4 to Subpart ZZZZ of 40 CFR 63.
3. A stack testing protocol shall be submitted to the Office of Resources for review prior to the performance of any stack tests. A copy of the stack testing protocol for the initial performance testing shall be sent to EPA for review and approval. The owner/operator shall provide the Office of Air Resources at least 60 days prior notice of any performance test.
4. All test procedures used for stack testing shall be approved by the Office of Air Resources prior to the performance of any stack tests.

5. 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.
6. All testing shall be conducted under operating conditions deemed acceptable and representative for the purpose of assessing compliance with the applicable emission limitation.
7. 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. The final report of the results of stack testing conducted pursuant to Condition E.2 shall also be submitted to the USEPA.
8. All stack testing must be observed by a representative of the Office of Air Resources to be considered acceptable, unless the Office of Air Resources provides prior written authorization to the owner/operator to conduct the testing without an observer present.

F. Record Keeping and Reporting

1. The owner/operator shall, on a monthly basis, no later than 15 days after the first of each month, determine the nitrogen oxides emissions for the entire facility for the previous 12 months. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.
2. The owner/operator shall notify the Office of Air Resources in writing within 15 days, of determining that the quantity of nitrogen oxides emitted from the facility exceeds 70,000 lbs in any consecutive 12-month period.
3. The owner/operator shall, on a monthly basis, no later than 15 days after the first of each month, determine and record the hours of operation for Engine No. 23 for the previous month. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.
4. The owner/operator shall, on a monthly basis, no later than 15 days after the first of each month, determine and record the kilowatt-hours generated for Engine No. 23 for the previous month. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.
5. The owner/operator shall, on a monthly basis, no later than 15 days after the first of each month, determine and record the fuel usage for Engine No. 23 and the



urea consumption for the previous month. The owner/operator shall calculate and record a urea-to-fuel ratio using this data. The owner/operator shall keep records of these determinations and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.

6. The owner/operator shall maintain copies of all fuel supplier certifications or fuel analyses and these copies shall be made accessible for review by the Office of Air Resources or its authorized representative and EPA. These records shall include a certified statement, signed by the owner/operator of the facility, that the records represent all of the fuel combusted at the facility during each calendar quarter.
7. Inlet temperature to the SCR system shall be continuously monitored and recorded during steady state operation in an operating log at least once per day. The owner/operator shall keep records of these determinations and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.
8. Pressure drop across the SCR catalyst shall be recorded a minimum of three times in a 24-hour period, during steady state operation, and the date, time and measurement shall be recorded. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.
9. The owner/operator shall maintain records of the concentration, in parts per million (PPM), of nitrogen oxides at the outlet of the SCR system (corrected to 15% O<sub>2</sub> (adjusted to 54% relative humidity at 25°C)), including any date and time when Engine No. 23 is not operating. The owner/operator shall maintain records of the relative humidity, engine exhaust O<sub>2</sub> and ambient temperature used to correct the measured ppm concentration. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.
10. Urea pump speed shall be monitored and recorded a minimum of three times in a 24-hour period, during steady state operation, and the date, time and measurement shall be recorded. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources or its authorized representative and EPA upon request.
11. The owner/operator shall maintain records of the dates when the catalyst in the SCR system and the CO oxidation catalyst are replaced and the engine operating hours at the time of replacement.
12. The owner/operator shall maintain properly signed, contemporaneous operating logs, or other relevant evidence to document actions during startup/shutdown periods.

13. 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.

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. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.
15. For the recordkeeping requirements in Conditions C.6, F.8 and F.10, the owner/operator shall make all reasonable efforts to record the required information near the beginning, middle and end of the manned portion of each 24-hour period. Readings should be taken at least 4 hours apart. Information may be recorded for all operating engines in a single round. Information for any engine that is started after a round of recordings is made may be recorded with the next scheduled round of recordings.
16. All records required in this permit shall be maintained for a minimum of five years after the date of each record and shall be made available to representatives of the Office of Air Resources or its authorized representative and EPA upon request.

G. Malfunctions

1. The owner/operator may seek to establish that a malfunction of any air pollution control system 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 equipment, lack of preventative maintenance, careless or improper operation or operator error;
  - b. The malfunction is not part of a recurring pattern indicative of inadequate design, operation or maintenance;
  - c. Repairs 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.
  - d. All possible steps were taken to minimize emissions during the period of time that repairs were performed.
  - e. Emissions during the period of time that the repairs were performed will not:
    - (1) Cause and 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.
  - g. The owner/operator's actions in response to the excess emissions were documented by properly signed, contemporaneous operating logs or other relevant evidence.

This demonstration must be provided to the Office of Air Resources 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.

H. Other Permit Conditions

1. To the extent consistent with the requirements of this approval and applicable Federal and State laws, the facility shall be designed, constructed and operated in accordance with the representation of the equipment in the permit application prepared by LFR Levine Fricke dated 12 July 2006 and any subsequent revisions.
2. Employees of the Office of Air Resources or its authorized representatives and EPA 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. The emission limitations of Conditions A.1-6 shall not apply during engine startup/shutdown conditions and shall apply only during steady state operation. Engine startup shall be defined as the period of time following the initiation of firing during which engine and emission control parameters may be fluctuating prior to achieving a steady state. The engine startup period shall not exceed 45 minutes. Engine shutdown shall be defined as the cessation of operation for any purpose. Steady state operation shall be defined as operating periods between engine startup and shutdown, during which loads are stable and not fluctuating by more than 50 kilowatts in five minutes.
4. The Office of Air Resources shall reopen and revise this permit:
  - a. If it determines that a material mistake was made in establishing the operating restrictions; or,
  - b. If it determines that inaccurate emission factors were used in establishing the permit.
5. The owner/operator may appeal any final determination by the Office of Air Resources to reopen and revise an emission limitation or permit condition to the Administrative Adjudication Division for Environmental Matters (AAD). Appeals must be filed within 30 days of the Office of Air Resources final determination.
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. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this permit have been achieved. 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. Approval No. 1587 issued on 2 February 2001 for the installation of a SCR system for Engine 23 shall be rescinded effective with the start-up of the new SCR system.
8. The owner/operator is subject to the requirements of 40 CFR 63.1-15, Subpart A, "General Provisions" [as indicated in Table 8 to Subpart ZZZZ of 40 CFR 63] and 40 CFR 63, Subpart ZZZZ "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines". Compliance with all applicable provisions therein is required, unless otherwise stated in this permit. The owner/operator must comply with the standards in Subpart ZZZZ by 03 May 2013.

I. Excess Emissions Due to an Emergency

As the term is used in this condition an "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of his source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes this source to exceed any emission limitation or condition under this permit, due to unavoidable increases in emission attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

The owner/operator may seek to establish that noncompliance with an emission limitation or condition under this permit was due to an emergency. To do so, the owner/operator shall demonstrate the affirmative defense of emergency through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An emergency occurred and that the owner/operator can identify the cause(s) of the emergency;
2. The permitted facility was at the time being properly operated;
3. During the period of the emergency the owner/operator took all reasonable steps to minimize levels of emissions that exceeded the emissions standards, or other requirements in this permit; and

4. The owner/operator submitted notice of the emergency to the Office of Air Resources within 2 working days of the time when emission limitations or permit conditions were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions and corrective actions taken.

The owner/operator shall have the burden of proof in seeking to establish the occurrence of an emergency.

**Attachment A  
Compliance Determination  
Block Island Power  
Conditions A.1.c**

Engine Number	Engine KW Rating	Engine Hours (previous 12 months) (1)	Maximum Power Output (kW-hrs) (2)	Actual Power Output (kW-hrs) (previous 12 months) (3)	Load Factor (4)	NOx Emissions Maximum Load (lbs/hr)	NOx Emissions (tons) (previous 12 months) (5)
22	1390					2.39	
23	1285					1.41	
24	1640					1.96	
25	1825					3.69	
26	1825					4.20	
Total							

- Notes:
1. Information determined pursuant to Condition F.3 of this permit
  2. Maximum Power Output = Engine Hours x Engine kW rating
  3. Information determined pursuant to Condition F.4 of this permit
  4. Load Factor = Actual Power Output/Maximum Power Output
  5. NO<sub>x</sub> Emissions = NO<sub>x</sub> Emissions Maximum Load x Load Factor x Engine Hours