



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

**BUREAU OF AIR MANAGEMENT
NEW SOURCE REVIEW PERMIT
TO CONSTRUCT AND OPERATE A STATIONARY SOURCE**

Issued pursuant to Title 22a of the Connecticut General Statutes (CGS) and Section 22a-174-3a of the Regulations of Connecticut State Agencies (RCSA).

Owner/Operator	Capitol District Energy Center Cogeneration Associates
Address	490 Capitol Avenue, Hartford, Connecticut 06106
Equipment Location	490 Capitol Avenue, Hartford, Connecticut 06106
Equipment Description	Detroit Diesel Starter Engine, Model No. 7123-7300
Town-Permit Numbers	075-0150
Premises Number	766
Stack Number	03
Prior Permit Issue Date	4/29/1996
Modification issue Date	November 25, 2016
Expiration Date	None

/s/ Anne Gobin for
Robert J. Klee
Commissioner

November 25, 2016
Date

This permit specifies necessary terms and conditions for the operation of this equipment to comply with state and federal air quality standards. The Permittee shall at all times comply with the terms and conditions stated herein.

PART I. DESIGN SPECIFICATIONS

A. General Description

Capitol District Energy Center Cogeneration Associates (CDECCA), a subsidiary of Maxim Power (USA), Inc. is a combined-cycle cogeneration plant producing electricity and thermal products for sale. The facility consists of a General Electric model PG 6531 (Frame 6) combined-cycle gas and oil turbine generator with an in-line duct burner, a three-pressure heat boiler, a condensing/extraction steam turbine, one 900-ton two-stage absorption chiller, one 900-ton and two 1800-ton centrifugal chillers, a Detroit Diesel starter engine, a feed water pump engine and two package boilers to provide backup steam to the steam loop. The Detroit Diesel starter engine covered under this permit is mechanically coupled to the General Electric gas turbine generator and is used to startup, cool down, and for maintenance and testing operations for the General Electric gas turbine generator.

B. Equipment Design Specifications

1. Fuel Type(s): Ultra Low Sulfur Diesel (ULSD)
2. Maximum Fuel Firing Rate(s) (gal/hr): 41.5
3. Maximum Gross Heat Input (MMBtu/hr): 5.81

C. Stack Parameters

1. Minimum Stack Height (ft): 52.5
2. Minimum Exhaust Gas Flow Rate (acfm): 5630
3. Minimum Stack Exit Temperature (°F): 750
4. Minimum Distance from Stack to Property Line (ft): 60

PART II. OPERATIONAL CONDITIONS

A. Equipment

1. Maximum Fuel Consumption over Any Consecutive 12 Month Period (gal): 4,150
2. Maximum Fuel Sulfur Content ULSD (0.0015% by weight) (ppmw): 15
3. Maximum Operating Hours over Any Consecutive 12 Month Period: 500
4. Maximum Daily Fuel Usage (gal/day): 161
5. Maximum Allowable Fuel Consumption in Any One Hour Period (gal): 25

PART III. ALLOWABLE EMISSION LIMITS

The Permittee shall not cause or allow this equipment to exceed the emission limits stated herein at any time.

A. Criteria Pollutants

Pollutant	Grams/BHP-hr	lb/hr	lb/MMBtu	tpy
PM		0.58	0.1	0.029
PM ₁₀ *		0.33	0.06	0.017
PM _{2.5} *		0.33	0.06	0.017
SO _x		0.01	0.31	5E-4
NO _x	8.0**	17.76***	5.00	0.89
VOC		0.52	0.09	0.026
CO		4.94	0.85	0.247

* The sum of the filterable and the condensable particulate. From AP 42 5th Edition 10/96 (Table 3.41-2)

**The Permittee may use NO_x DERCs to comply with this limit and the NO_x RACT limit in Table 22-1 of RCSA §22a-174-22(e)(4) as stated in a trading order issued in accordance with RCSA §22a-174-22(j).

*** This limit shall be for the total pounds of NO_x emissions in any one hour period and not an instantaneous mass emission rate.

B. Hazardous Air Pollutants

This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted and listed in RCSA §22a-174-29. [STATE ONLY REQUIREMENT]

D. Opacity

This equipment shall not exceed 10% opacity during any six minute block average as measured by 40 CFR Part 60, Appendix A, Reference Method 9.

E. Demonstration of compliance with the above emission limits may be met by calculating the emission rates using emission factors from the following sources:

- NO_x: Most recent Stack Test emission results
- All Other Pollutants: AP-42 5th Edition (Revised October 1996)

The commissioner may require other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

Not more than 90 days after the issuance of this modified permit [201408508], but prior to the initial stack test required in accordance with Part V.D of this modified permit [201408508], the Permittee shall install and operate equipment capable of continuously monitoring and recording fuel consumption from this unit. Such equipment shall include a non-resettable, totalizing fuel meter and shall continuously monitor fuel consumed by this emission unit.

B. Record Keeping

1. The Permittee shall keep records of the monthly and consecutive 12 month fuel consumption. The consecutive 12 month fuel consumption shall be determined by adding the current month's fuel consumption to that of the previous 11 months. Not more than 90 days after the issuance of this modified permit [201408508], but prior to the initial stack test required in accordance with Part V.D of this modified permit [201408508], the Permittee shall commence and continue to record hourly and daily fuel consumption. The Permittee shall make these calculations and records within 30 days of the end of the previous month.
2. The Permittee shall keep records of the fuel certification for each delivery of fuel oil from a bulk petroleum provider or a copy of the current contract with the fuel supplier supplying the fuel used by this equipment that includes the applicable sulfur content and British Thermal Units (BTUs) of the fuel as a condition of each shipment. The shipping receipt or contract shall include the date of delivery, the name of the fuel supplier, type of fuel delivered, the percentage of sulfur in such fuel, by weight, and the method used to determine the sulfur and BTU content of such fuel. In lieu of a fuel supplier certification and shipping receipt or contract, the Permittee may determine the sulfur and or BTU content by sampling and analyzing the fuel oil from a delivery.
3. The Permittee shall calculate and record the monthly and consecutive 12 month PM, PM₁₀, PM_{2.5}, SO₂, NO_x, VOC, and CO emissions in units of tons. The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.
4. The Permittee shall make and keep records of the daily, monthly and consecutive 12 month operating hours of the starter engine.
5. The Permittee shall keep all records required by this permit for a period of no less than five years and shall submit such records to the commissioner upon request.

C. Reporting

The Permittee shall comply with applicable reporting requirements of RCSA §22a-174-22(l).

PART V. STACK EMISSION TEST REQUIREMENTS

- A. Stack emission testing shall be performed in accordance with the [Emission Test Guidelines](#) available on the DEEP website.
- B. Stack testing shall be required for the following pollutant(s):
- PM PM₁₀ PM_{2.5} SO₂ NO_x CO
 VOC Opacity Other (HAPs):
- C. The Permittee shall perform stack emission tests for NO_x to demonstrate compliance with the emission limits as stated in Part III.A. of this permit.
- D. The Permittee shall conduct testing within 90 days of issuance of this permit and shall submit test results within 60 days after completion of testing.
- E. Stack testing shall consist of four test runs to be conducted under normal startup engine operating conditions for the startup of the General Electric gas turbine as an alternative to 90% of maximum fuel consumption rate pursuant to RCSA §22a-174-22(k). Each test run shall consist of the following sequence of operating phases: Startup > warmup (idle) > accelerate > high speed > cooldown (idle).
- F. Recurrent stack testing for the above pollutants shall be conducted within five years from the date of the previous stack test or when it is next due, whatever is sooner.
- G. Stack test results shall be reported as follows: For NO_x in lb/hr, g/BHP-hr and lb/MMBtu.

PART VI. OPERATION AND MAINTENANCE REQUIREMENTS

- A. The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.
- B. The Permittee shall only operate this equipment in conjunction with the General Electric gas turbine, Model No. PG6531. These situations are defined as:
1. Startup of turbine. The engine is run at low speed for approximately five minutes to warm up the engine. The engine is then ramped up to full speed over the period of five minutes and then held at maximum speed for an additional five minutes. This allows the turbine to reach self-sustaining speed; at which point the startup engine is shut off. Total operation time is approximately 20 to 30 minutes per startup.
 2. Cooldown of turbine blades. During the shutdown process, the engine is used to rotate the turbine blades without combustion occurring in the turbine. This operation lasts approximately two hours.
 3. Washing of turbine blades. The engine, operating at low speed, rotates the blades while a cleaning solution is sprayed onto the blades. This operation usually lasts about an hour and a half.
 4. Engine testing. If the engine appears to be malfunctioning during any of the above operations, the engine may be tested for a short period (about two minutes) to check for irregularities.

PART VII. SPECIAL REQUIREMENTS

- A.** The source cannot emit continuously for a period of more than six hours.
- B.** The Permittee shall comply with all applicable sections of the following National Emission Standards For Hazardous Air Pollutants at all times.

Title 40 CFR Part 63 Subparts: ZZZZ and A

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

- C.** The Permittee shall not cause or permit the emission of any substance or combination of substances which creates or contributes to an odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA Section 22a-174-23. [STATE ONLY REQUIREMENT]
- D.** The Permittee shall operate this facility at all times in a manner so as not to violate or contribute significantly to the violation of any applicable state noise control regulations, as set forth in RCSA Sections 22a-69-1 through 22a-69-7.4. [STATE ONLY REQUIREMENT]

PART VIII. ADDITIONAL TERMS AND CONDITIONS

- A.** This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- B.** Any representative of DEEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.
- C.** This permit may be revoked, suspended, modified or transferred in accordance with applicable law.
- D.** This permit is subject to and in no way derogates from any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material, nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the facility or regulated activity affected thereby. This permit shall neither create nor affect any rights of persons or municipalities who are not parties to this permit.
- E.** Any document, including any notice, which is required to be submitted to the commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."

- F.** Nothing in this permit shall affect the commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the commissioner.
- G.** Within 15 days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.
- H.** The date of submission to the commissioner of any document required by this permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.
- I.** Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director; Engineering & Enforcement Division; Bureau of Air Management; Department of Energy and Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.