



DEPARTMENT ORDER

**Westbrook Energy Center, LLC
Cumberland County
Westbrook, Maine
A-743-77-5-A**

**Departmental
Findings of Fact and Order
NO_x RACT**

FINDINGS OF FACT

After review of the air emission license application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (the Department) finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	Westbrook Energy Center, LLC
LICENSE TYPE	06-096 C.M.R. ch. 138, NO _x RACT
NAICS CODES	221112
NATURE OF BUSINESS	Fossil Fuel Electric Power Generation
FACILITY LOCATION	60 Eisenhower Drive, Westbrook, ME 04092

B. License Description

Westbrook Energy Center, LLC (Westbrook) has requested an amendment to their air emission license to address new requirements contained in *Reasonably Available Control Technology for Facilities that Emit Nitrogen Oxides (NO_x RACT)*, 06-096 Code of Maine Rules (C.M.R.) ch. 138 (Ch. 138).

C. Emission Equipment

The following equipment is addressed in this license:

Combustion Turbines

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate (scf/hr)	Fuel Type	Mfr. Date	Install . Date	Stack #
Combustion Turbine #1	2,013	2,012,000	Natural Gas	2000	2000	1
Combustion Turbine #2	2,013	2,012,000	Natural Gas	2000	2000	2

D. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The application was submitted to comply with the requirements of 06-096 C.M.R. ch. 138, § 5(A) and has been processed pursuant to the requirements for minor modifications under *Minor and Major Source Air Emission License Regulations*, 06-096 C.M.R. ch. 115.

II. NO_x RACT Requirements

A. Introduction

Revisions to 06-096 C.M.R. ch. 138 went into effect May 7, 2025. These changes included the establishment of new standards for emission units located within the 2022 Ozone Transport Region, as defined in that chapter. Westbrook is located within the 2022 Ozone Transport Region.

Westbrook must either comply with the new applicable standards in 06-096 C.M.R. ch. 138, § 4 by May 1, 2026, or apply for and receive approval of an alternative RACT determination pursuant to 06-096 C.M.R. ch. 138, § 4(H).

B. Exempt Equipment

The Auxiliary Boiler and Cooling Tower each have a potential to emit less than 10 ton per year (tpy) of NO_x. This equipment is therefore exempt from the requirements of 06-096 C.M.R. ch. 138 pursuant to § 2(B)(1).

The Emergency Generator, Fire Pump, and BSEG #1 and #2 are emergency stationary internal combustion engines, which are exempt from the requirements of 06-096 C.M.R. ch. 138 pursuant to § 2(B)(2).

C. Combustion Turbines #1 and #2

Combustion Turbines #1 and #2 are each large turbines with heat inputs greater than 120 MMBtu/hr firing natural gas. Ch. 138 requires NO_x RACT standards for both steady state operation and for periods of startup and shutdown.

Steady State Operation

Beginning May 1, 2026, Combustion Turbines #1 and #2 become subject to NO_x RACT standards in 06-096 C.M.R. ch. 138, §4(F). During steady state operating conditions for Combustion Turbines #1 and #2, Westbrook proposes to

meet the NO_x RACT emission standard contained in section 4(F) of Chapter 138 for large turbines and listed below:

- The NO_x emission rate for Combustion Turbines #1 and #2 must not exceed 25 ppm_{dv} corrected to 15% oxygen based on a one-hour average.
- Compliance must be demonstrated through the use of a CEMS operated pursuant to the requirements of 06-096 C.M.R. ch. 117.

Periods of Startup and Shutdown

In lieu of complying with the startup and shutdown emission limits in 06-096 C.M.R. ch. 138, §6, Westbrook has requested an alternative RACT determination and has submitted a RACT analysis for control of NO_x emissions from Combustion Turbines #1 and #2 for those periods. Following is a summary of that analysis.

1. Control Options

NO_x from combustion is generated through one of three mechanisms: fuel NO_x, thermal NO_x, and prompt NO_x. Fuel NO_x is produced by the oxidation of nitrogen in the fuel source, with low nitrogen content fuels such as natural gas producing less NO_x than fuels with higher levels of fuel-bound nitrogen. Thermal NO_x forms in the high temperature area of the combustor and increases exponentially with increases in flame temperature and linearly with increases in residence time. Flame temperature is dependent upon the ratio of fuel burned in a flame to the amount of fuel needed to consume all the available oxygen, also known as the equivalence ratio. The lower this ratio is, the lower the flame temperature; thus, by maintaining a low fuel-to-air ratio (lean combustion), the potential for NO_x formation can be reduced. Prompt NO_x forms from the oxidation of hydrocarbon radicals near the combustion flame and produces an insignificant amount of NO_x in combustion turbines.

Westbrook has proposed that it is not technically feasible to install additional NO_x controls to operate during startup and shutdown events, that certain technologies listed in Chapter 138 Section 4.H(1)(d) are not applicable to large combustion turbines (overfire air, flue gas recirculation, SNCR), and the use of alternative fuels or alternative operating scenarios is not technically feasible for startup and shutdowns of Combustion Turbines #1 and #2. Combustion Turbines #1 and #2 are presently equipped with both low-NO_x burners (dry low-NO_x, or DLN) and selective catalytic reduction (SCR), neither of which is able to operate effectively during startup or shutdown due to the reduced temperatures of exhaust gases during those periods.

Westbrook proposes the only available approach to reducing startup and shutdown NO_x emissions from combustion turbines is following good operating

practices in accordance with manufacturer recommendations. By following equipment manufacturers' recommendations, Westbrook minimizes the duration of each startup and shutdown event.

Westbrook follows the manufacturer's procedures for equipment operation and maintenance. Startup and shutdown procedures are prescribed by the manufacturer and programmed into Westbrook's controller logic. During startup, the turbines are brought online through a specific load sequence referred to as "modes." There are eight modes for startup, and the transition through modes is dependent on temperature to allow for exhaust gas and equipment to heat up. Shutdown has five transitions and occurs more quickly than startups because there are no temperature holding times like there are during startups. Additionally, Westbrook utilizes an auxiliary boiler to assist in raising the steam turbine temperature, thereby minimizing combustion turbine startup times.

2. Proposed Alternative RACT Determination

Westbrook has proposed that for Combustion Turbines #1 and #2, the existing hourly mass emission rate of 360 lb/hr for periods of startup and shutdown, established as Best Available Control Technology (BACT) in New Source Review License A-743-77-3-A (issued 2/16/2016), be considered to represent RACT for those operating periods. Although 06-096 C.M.R. ch. 138(6) allows for an alternative emission rate equating to 92.5 lb/hr on a 24-hour basis, periods of startup and shutdown for Combustion Turbines #1 and #2 generally are limited to five hours per startup event and one hour per shutdown event, both much shorter than 24 hours. Additional controls have been determined to be not technically feasible for the short duration of startup and shutdown periods. The Department finds that the existing limit of 360 lb/hr for periods of startup and shutdown satisfies the requirements of 06-096 C.M.R. ch. 138.

3. Startup and Shutdown Duration and Frequency Planning

Westbrook's Part 70 operating license limits durations of startups and shutdowns to 300 minutes per startup event and 60 minutes per shutdown event, established as part of the original BACT determination in A-743-71-A-N (12/4/1998). Limiting frequency of startups and shutdowns would block the facility's ability to respond to demands of the regional grid operating authority as necessary to provide reliable and stable electricity to the region and is therefore not considered practicable for the facility. Further, the limited duration of each startup and shutdown period results in minimal actual emissions comparative to the facility's normal operation. Therefore, the frequency of Westbrook's startups and shutdowns is unrestricted given the inconsistency of grid demands and Westbrook's role in providing grid support.

D. Incorporation Into the Part 70 Air Emission License

Pursuant to *Part 70 Air Emission License Regulations*, 06-096 C.M.R. ch. 140 § 1(C)(8), for a modification at the facility that has been processed through 06-096 C.M.R. ch. 115, the source must apply for an amendment to their Part 70 license within one year of commencing the proposed operations, as provided in 40 C.F.R. Part 70.5. An application to incorporate the requirements of this NSR license into the Part 70 air emission license has been submitted to the Department.

E. Annual Emissions

This license will not change the facility's licensed annual emissions.

ORDER

The Department hereby grants NO_x RACT air emission license A-743-77-5-A pursuant to the licensing requirements of 06-096 C.M.R. chs. 115 and 138 and subject to the specific conditions below.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

(1) **Combustion Turbines #1 and #2**

Combustion Turbines #1 and #2 shall each be subject to the following standards beginning May 1, 2026:

- A. The NO_x emission rate for Combustion Turbines #1 and #2 must each not exceed 25 ppm_{dv} corrected to 15% oxygen based on a one-hour average not including periods of startup and shutdown. [06-096 C.M.R. ch. 138, § 4(F)]
- B. During periods of startup and shutdown for Combustion Turbines #1 and #2, the NO_x emission rate shall not exceed 360 lb/hr. [06-096 C.M.R. ch. 138, § 4(H)]
- C. Compliance with both limits must be demonstrated through the use of a CEMS operated pursuant to the requirements of 06-096 C.M.R. ch. 117. [06-096 C.M.R. ch. 138, § 4(F)]

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D. Westbrook shall at all times follow the manufacturer's procedures for equipment operation and maintenance of Combustion Turbines #1 and #2.
[06-096 C.M.R. ch. 138, § 4(H)]

DONE AND DATED IN AUGUSTA, MAINE THIS 30th DAY OF APRIL, 2026.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for
MELANIE LOYZIM, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 10/27/25

Date of application acceptance: 10/28/25

This Order prepared by Chris Ham, Bureau of Air Quality.