Westbrook Energy Center, LLC
Cumberland County
Westbrook, Maine
A-743-77-3-A

Departmental
Findings of Fact and Order
New Source Review
NSR #3

FINDINGS OF FACT

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

I. REGISTRATION

A. Introduction

FACILITY	Westbrook Energy Center, LLC (Westbrook Energy Center)
LICENSE TYPE	06-096 CMR 115, Minor Modification
NAICS CODES	22112
NATURE OF BUSINESS	Fossil Fuel Electric Power Generation
FACILITY LOCATION	60 Eisenhower Drive, Westbrook, ME

Westbrook Energy Center, LLC (Westbrook Energy Center) is a natural gas fired combined cycle plant with two combined cycle systems used to produce market electricity. Each combined cycle system consists of a gas combustion turbine and an unfired heat recovery steam generator (HRSG). The steam produced in the HRSG is routed to a steam turbine.

B. Amendment Description

The air emission license amendment application submitted by Westbrook Energy Center addresses clarification of the startup, shutdown, and runback lb/hr license emission limits and associated averaging times for nitrogen oxides (NO_X) and carbon monoxide (CO) from the two combustion turbines. The application also includes a request to reinstate a revised condition from the original Part 70 license to address electricity supply emergency scenarios.

The current lb/hr limits during startup, shutdown, and runback events were based on a 24-hour block average in which these events occurred, including non-

operating and operating times. Westbrook Energy Center has submitted adjusted short term startup, shutdown, and runback emission limits based on 1-hour averaging times for CO and NO_X, utilizing a more appropriate method of calculating the emissions from these events reflecting combustion turbine operations. Actual emissions from the facility are not expected to change, only the calculation method. All other combustion turbine emission limits and averaging times will remain as currently licensed, including short term emission limits during steady state operations and facility tons/year emission limits.

The Part 70 license renewal (A-743-70-D-R, issued on June 9, 2015) currently includes the combustion turbines' lb/hr emissions limits for CO and NO_X during startup, shutdown, and runback on a 24-hour basis; therefore, the request to clarify and adjust the emission limits and averaging time applicable during these events are concurrently being processed under both the licensing procedures of New Source Review (06-096 CMR 115, *Minor and Major Source Air Emission License Regulations*, as amended) and Part 70 (06-096 CMR 140, *Part 70 Emission License Regulations*, as amended). This air emission license amendment addresses the 06-096 CMR 115 New Source Review licensing process.

C. Emission Equipment

The following existing equipment is addressed in this NSR license amendment:

Fuel Burning Equipment

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate (Mscf/hr)	Fuel Type	Date of Manufacture	Date of Installation	Stack #
Combustion Turbine #1	2,013*	2,013	Natural gas	2000	2000/2001	1
Combustion Turbine #2	2,013*	2,013	Natural gas	2000	2000/2001	2

* Maximum design heat input is based on each unit operating at base load with an ambient temperature of -20 °F and firing natural gas at a higher heating value of 1,000 Btu/scf.

D. Application Classification

The modification of a major source is considered a major modification based on whether or not expected emissions increases exceed the "Significant Emission Increase Levels" as given in *Definitions Regulation*, 06-096 CMR 100 (as amended).

Actual emissions are not expected to change with the clarification of the startup, shutdown, and runback emission limits and averaging times. Therefore, a quantitative actual-to-projected-actual applicability test required in the Environmental Protection Agency's (EPA's) Prevention of Significant Deterioration (PSD) regulations in 40 CFR Part 52, §52.21(a)(2)(iv)(b) is not applicable. In addition, facility operations and licensed allowed emissions are not changing so the proposed clarification is not considered a modification as defined in the PSD regulations.

The reinsertion, with revisions, of a condition from the initial Part 70 license to address electricity supply emergency situations will also not result in any emission or operational changes.

Based on no expected increases in actual emissions and no changes to the facility's method of operations, this amendment has been processed as a minor modification under 06-096 CMR 115 (as amended) and is simultaneously being processed under 06-096 CMR 140 (as amended). Both a Best Available Control Analysis (BACT) and an ambient air quality impact analysis were submitted as part of the application.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 CMR 100 (as amended). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in 06-096 CMR 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

The following is a general facility process description:

Process Description

Westbrook Energy Center operates two combined cycle systems, each with a combustion turbine consisting of fourteen natural gas burners, followed by a heat recovery steam generator (HRSG). Combustion air enters the inlet of the gas turbine where it is compressed and mixed with the incoming fuel. The mixture is then fired in the turbine's combustion section. A dry low NO_X system minimizes NO_X emissions and creates a high pressure, hot gas. The gas expanding through

the power section of the turbine rotates the turbine, converting thermal energy to work, producing electricity.

Exhaust from each combustion turbine passes over tubes in the HRSG, creating high pressure steam. The steam is routed to the steam turbine which produces additional electricity. A selective catalytic reduction system within the HRSG controls NO_X emissions from the exhaust gases. Each combined cycle system exhausts through its own stack.

Due to the current fluctuating demands of the electricity market, startup and shutdown cycles have become more prevalent than in the past. After review of the calculations for the startup, shutdown, and runback events, it was determined that the method of calculation for NO_X and CO should be clarified for these events.

The following is an overview of startup, shutdown, and runback events:

Overview of Startup, Shutdown, and Runback Events

In addition to operating at steady state, the combustion turbine operations at Westbrook Energy Center include startup and shutdown events, as well as, to a much lesser extent, runback events.

Startup and shutdown events consist of specific steps to thermally stabilize the combined cycle unit during start up or shut down to ensure safe, efficient, and proper operation. Combined cycle units have different startup times depending on how long the unit has not been operating (standstill time). The periods of startup are referred to as cold, warm, or hot starts. The combustion turbine portion of a combined cycle unit is not as affected by the duration of standstill time as the heat recovery steam generator (HRSG) and steam turbine. The steam turbine contains components with metallurgical properties that need to heat up properly to avoid thermal stress on the equipment. Westbrook Energy Center's startups are defined as the period of time from initiation of combustion turbine firing until the unit reaches steady state load operation, not to exceed a time period of 300 minutes. Shutdown occurs by reducing gas combustion loads and then shutting down the steam turbine when exhaust gas temperature reaches a minimum level, followed by full reduction of fuel. Westbrook Energy Center's shutdowns are defined as the period of time from steady state operation to cessation of combustion turbine firing, not to exceed a time period of 60 minutes.

A runback event is when a combustion turbine, without warning, automatically initiates a shutdown and drops out of Mode 6Q (which 6Q is the mode in which the combustor dynamics are optimum). When out of Mode 6Q, the selective catalytic reduction (SCR) equipment is not operational and the dry low NO_X system is not fully operational. A combustion turbine runback is the time during which a turbine is returned to steady state operations after the initiation of an unplanned shutdown. Runback events are not common, but do occasionally occur.

B. Combustion Turbines #1 and #2: Startup, Shutdown, and Runback Events for NO_x and CO

Combustion Turbines #1 and #2 fire natural gas only and are each rated at 2,013 MMBtu/hr. The two General Electric Model number MS7001FA units are equipped with dry low NO_X combustors and a selective catalytic reduction (SCR) system to control NO_X emissions. Each unit exhausts through a separate 165 foot stack.

Westbrook Energy Center has specific NO_X and CO licensed emission limits for startup, shutdown, and runback events from Combustion Turbines #1 and #2. NO_X and CO emissions can be highly variable during these events and are greater than emission rates during steady state operations because the emission control systems are not functional or are only partially functional during startup, shutdown, and runback time periods due to the temperature and operating rates during the events. The combustion turbines are also not operating at full load where operations are most efficient. The combustion turbines must achieve a minimum operating rate before the dry low NO_X combustor systems are fully functioning. The SCR systems must be heated to a specific minimum temperature before the catalyst becomes effective.

Westbrook Energy Center has proposed to clarify and adjust the licensed emission limits during the startup, shutdown, and runback events, based on a shorter averaging time than previously utilized. A 1-hr average is proposed as compared to the current 24-hour average. The emissions limits under steady state operation and the facility's tons/year emission limits are proposed to remain as licensed.

Startup, shutdown, and runback periods are defined in the Part 70 license A-743-70-D-R (issued June 9, 2015) for a specified short period of time such that the current 24-hr block average is not an appropriate averaging time to be used during these events. The Part 70 license defines a combustion turbine startup as being completed as soon as practicable, in no case exceeding 300 minutes (5 hours), and turbine shutdown and runback events are each not to exceed 60 minutes (1 hour). A 1-hour averaging time is more practical for these events, particularly since NO_X and CO have 1-hour National Ambient Air Quality Standards. Because the averaging time being proposed is a much shorter time period than the existing 24-hour average and will not include hours during steady state operation or when the unit is offline, the emission limits will need to be higher. The proposed startup, shutdown, and runback emission limits for NO_X and CO were developed based on a review of Westbrook Energy Center's actual combustion turbine emission data. Actual emissions are not expected to change with the proposed emission limits which were based on the 1-hour averaging time.

The license emission limits set forth in condition (15)(D)(2) of Part 70 license A-743-70-D-R and the proposed emission limits and averaging times are listed in the table below.

Startup, Shutdown, and Runback Limits for Each Combustion Turbine

Pollutant	Current Limit (lb/hr)	Current Averaging Time	Proposed Limit (lb/hr)	Proposed Averaging Time
NO_X	160	24-hr block avg*	360	1-hr block avg
CO	200	24-hr block avg*	2000	1-hr block avg

* For the purposes of calculating startup and shutdown lb/hr during the startup and shutdown conditions, 24 hours shall be defined as the period between 12:00am and 11:59pm during which startup(s) and/or shutdowns have taken place.

Westbrook Energy proposed that any hour with startup, shutdown, or runback minutes will be classified as such and the startup, shutdown, or runback emission limits proposed in the table above will apply. Any hour with startup, shutdown, or runback minutes will not be included in the averaging time calculations for steady state operation. Consistent with 06-096 CMR 117, Section (3)(C)(2)(a), a valid hour for demonstrating compliance with short term startup, shutdown, and runback emission limits is defined as an hour that contains at least one data point in at least three of the four 15 minute quadrants.

Hourly emissions rates of NO_X and CO are typically higher during periods of startup, shutdown, and runback due, in general, to the combustion turbine's dry low NO_X system not being in full operational mode, the NO_X emissions not being controlled by the selective catalytic reduction (SCR) system, and the combustion turbine not operating at full load where it is most efficient. When the combustion turbine exhaust gas is below the minimum catalyst activation temperature, the control system does not permit the flow of ammonia and therefore the SCR does not function during these events.

Westbrook Energy Center follows detailed procedures for combustion turbine operation during startup and shutdown events as specified by the manufacturer, minimizing emissions from the combustion turbines to the maximum extent practicable. The combustion turbine systems are equipped with control technology based on their design and size. During steady state operations, CO emissions are minimized by good combustion practices and NO_X emissions are controlled by low NO_X combustors and SCR.

The proposed clarification of startup, shutdown, and runback emission limits and averaging times do not constitute a modification since actual emissions, the method of operations, and licensed allowed annual facility emissions are not changing.

1. New Source Performance Standards (NSPS)

   The combustion turbines, originally installed in 2000, were subject to 40 CFR Part 60, Subpart GG *Standards of Performance for Stationary Gas Turbines*, for which construction was commenced after October 3, 1977; however, the units are no longer subject to 40 CFR Part 60 Subpart GG since they were modified through license amendment A-743-77-1-A (November 3, 2010). Based on that modification, the combustion turbines are now subject to 40 CFR Part 60, Subpart KKKK, *Standards of Performance for Stationary Combustion Turbines*.

   The clarification to the NO_X and CO startup, shutdown, and runback method of calculation does not trigger a change to Westbrook Energy Center's applicability to 40 CFR Part 60, Subpart KKKK.

2. Best Available Control Technology (BACT)

   Westbrook Energy Center submitted a BACT analysis in support of the clarification to the startup, shutdown, and runback calculation's averaging time and associated emission limits. Emissions during startup, shutdown, and runback events can vary depending on the make, model, size, and cycling times of the combined cycle unit. Site specific conditions such as ambient temperature and humidity can also impact emissions. Therefore, there are no standard or established BACT emission limits for these events. The startup, shutdown, and runback emission limits are normally determined on a site specific, case-by-case basis by the original equipment manufacturer, facility operators, and permitting authorities.

   Emission control devices for NO_X or CO are not technically feasible to be operated during startup, shutdown, or runback periods due to low exhaust temperatures; however, good combustion practices can minimize emissions during these events. Before being brought on-line, the control devices require an exhaust temperature achieved only at or around 60% load or greater. Prior to operating the control systems, Westbrook Energy Center's operators limit the duration of each startup, shutdown, and runback event by following the manufacturer's recommendations and utilizing their plant specific operational experience.

   Startup and shutdown procedures are prescribed by the manufacturer and are programmed into Westbrook Energy Center's controller logic. During startup, the combustion turbines are brought online through a specific load sequence referred to as 'modes'. There are eight modes for startup. Mode transition is prescribed by temperature to allow for the exhaust gas and the

equipment to heat up properly. Shutdown has five transitions and occurs more quickly than startups, since there are no temperature holding times.

Based on the operational and physical limitations during temporary periods of time defined as startup, shutdown, and runback events, the Department determines that minimizing time operating in startup, shutdown, and runback modes through good combustion practices and good engineering and operating practices in accordance with manufacturer's recommendations are considered BACT for the combined cycle units.

In order to propose NO_X and CO startup, shutdown, and runback emission limits on a shorter 1-hr average basis (instead of the 24-hour basis), operational data was reviewed which showed higher emissions typically occurred during a cold startup in a cold month. Westbrook Energy Center also performed an Ambient Air Quality Impact Analysis to ensure that National Ambient Air Quality Standards would be met with the proposed emission limits.

Based on the review of operational data and the results of the Ambient Air Quality Impact Analysis, Westbrook Energy Center shall be limited to NO_X emissions of 360 lb/hr on a 1-hr basis and CO emissions of 2000 lb/hr on a 1-hr basis during startup, shutdown, and runback events for each combustion turbine.

C. Electrical Supply Emergency Condition

Due to its geographical location in the regional electrical grid and its power generating capabilities, Westbrook Energy Center may be required by Independent System Operator- New England (ISO-NE) to operate at low loads in the event of an ISO-NE electrical supply emergency. An ISO-NE electrical emergency is generally defined as a wide-spread electrical outage or blackout and, although rare, it can occur if multiple reliability safeguards break down. Requiring Westbrook Energy Center to operate below normal operating loads to provide electrical load back to the grid and help establish grid stability after these potential emergency electrical supply blackouts is more environmentally beneficial than operating many small emergency diesel generators throughout the state to provide the power necessary to bring the grid back up.

In the initial Part 70 license (A-743-70-A-I, issued August 12, 2003), condition (15)(M) addressed electrical supply emergency scenarios, but was not included in the subsequent renewal because the language did not specify emission limits during the events. The following wording was in the initial Part 70 license:

(15)(M) The emission limits contained in this permit do not apply if the facility, during an electricity supply emergency, is directed by Independent

System Operator - New England (ISO-NE) to operate at low loads such that the SCR cannot operate due to unstable temperatures. During such operation, Calpine will use its best efforts to minimize air emissions, and shall operate the SCR as soon as it is practical once temperatures stabilize.

EPA does not allow for blanket exemptions from emission limits, and, therefore, the condition was not incorporated into the Part 70 license renewal; however, Westbrook Energy has proposed a revised condition for these emergency scenarios. The proposed condition is as follows:

The NO_X and CO emission limits (ppm and lb/hr) for steady state load operation contained in this license do not apply if the facility, during an electricity supply emergency, is directed by Independent System Operator - New England (ISO-NE) to operate at low loads such that the SCR cannot operate due to unstable temperatures. During such operation, the NO_X and CO lb/hr limits for startup, shutdown, and runback events shall apply.

The Department approves the proposed license language to address the electrical supply emergency scenarios. Steady state operations emission limits would not apply and the appropriate approach to minimize emissions during the low load operation is utilizing good engineering and operating practices in accordance with manufacturer recommendations, as detailed in the discussion on startup, shutdown, and runback events.

D. Incorporation into the Part 70 Air Emission License

The requirements in this 06-096 CMR 115 New Source Review amendment shall apply to the facility upon amendment issuance. Per *Part 70 Air Emission License Regulations*, 06-096 CMR 140 (as amended), Section 1(C)(8), for a modification that has undergone NSR requirements or been processed through 06-096 CMR 115, the source must then apply for an amendment to the Part 70 license within one year of commencing the proposed operations as provided in 40 CFR Part 70.5. However, due to the changes necessary to the Part 70 license (A-743-70-D-R) to address the NSR conditions, a Part 70 Significant Modification is being processed simultaneously with this amendment.

E. Annual Emissions

Annual licensed emissions are not changing with this amendment. Westbrook Energy Center is licensed for the following annual emissions, based on a 12-month rolling total. The tons per year limits were calculated based on license limitations on the combustion turbines, the auxiliary boiler fuel limit of 98 MMscf/year, the Emergency Generator non-emergency operational limit of 100 hours/year and the Fire Pump non-emergency operational limit of 100 hours/year.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	SO_2	NO_x	CO	VOC	NH_3
Combustion Turbines #1 and #2 (total)	36	26	90	137	525	26	188
Auxiliary Boiler	0.49	0.49	0.05	1.72	7.41	0.98	--
Emergency Generator	0.04	0.04	negl	1.28	0.34	0.03	--
Emergency Fire Pump	0.02	0.02	negl	0.70	0.15	0.01	--
Cooling Tower	12.3	12.3	--	--	--	--	--
Total TPY	**48.9**	**38.9**	**90.1**	**140.7**	**532.9**	**27.0**	**188**

Westbrook Energy Center is an area source for hazardous air pollutants; therefore HAP emissions shall not exceed the following:

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

A. Overview

A refined modeling analysis was performed to show that emissions from Westbrook Energy Center, in conjunction with other sources, will not cause or contribute to violations of National Ambient Air Quality Standards (NAAQS) for NO_2 or CO. Since SO_2 and PM_{10} were addressed as part of a previous modeling analysis and because no emissions changes for these pollutants are proposed, no further modeling for these pollutants is required as part of this licensing action.

Since the current licensing action for Westbrook Energy Center represents a minor modification to an existing major source, it has been determined by Maine Department of Environmental Protection, Bureau of Air Quality (MEDEP-BAQ) that an assessment of Class I Air Quality Related Values (AQRVs) is not required.

B. Model Inputs

The AERMOD-PRIME refined model was used to address standards in all areas. The modeling analysis accounted for the potential of building wake and cavity effects on emissions from all modeled stacks that are below their calculated formula Good Engineering Practice (GEP) stack heights.

All modeling was performed in accordance with all applicable requirements of the MEDEP-BAQ and the United States Environmental Protection Agency (USEPA).

A valid 5-year hourly off-site meteorological database was used in the AERMOD refined modeling analysis. Wind data was collected at heights of 10 and 100 meters at the SAPPI Westbrook meteorological monitoring site during the 5-year period 1989 - 1993. The following parameters and their associated heights were as follows:

TABLE III-1: Meteorological Parameters and Collection Heights

Parameter	Sensor Height(s)
Scalar Wind Speed	10 meters, 100 meters
Scalar Wind Direction	10 meters, 100 meters
Standard Deviation of Wind Direction (Sigma A)	10 meters, 100 meters
Temperature	7 meters

Each year of meteorological data met the 90% data recovery requirement, both singularly and jointly. Missing data from the primary site were substituted with representative data, interpolated or coded as missing, per USEPA guidance.

In addition, hourly Portland National Weather Service data, from the same time period, were used to supplement the primary surface dataset for the required variables (cloud cover and ceiling height) that were not explicitly collected at the SAPPI meteorological monitoring site. Concurrent upper-air data from the Portland National Weather Service site were also used in the analysis. Missing cloud cover and/or upper-air data values were interpolated or coded as missing, per USEPA guidance.

All necessary representative micrometeorological surface variables for inclusion into AERMET (surface roughness, Bowen ratio and albedo) were calculated using AERSURFACE utility program and from procedures recommended by USEPA.

Point-source parameters, used in the modeling for Westbrook Energy Center are listed in Table III-2.

TABLE III-2: Point Source Stack Parameters

Facility/Stack	Stack Base Elevation (m)	Stack Height (m)	GEP Stack Height (m)	Stack Diameter (m)	UTM Easting NAD83 (km)	UTM Northing NAD83 (km)
CURRENT/PROPOSED						
Westbrook Energy Center						
• CT1 (Turbine #1)	28.96	50.29	83.15	5.49	388.966	4834.733
• CT2 (Turbine #2)	28.96	50.29	83.15	5.49	388.955	4834.765

Emission parameters for NAAQS modeling are listed in Table III-3.

For the purpose of determining maximum NO_2 predicted impacts, the default ambient NO_x-to-NO_2 conversion ratios of 0.8 and 0.75 were used for the 1-hour and annual averaging periods, respectively. This is consistent with the USEPA Tier II conversion method.

TABLE III-3: Stack Emission Parameters

Facility/Stack	Averaging Periods	SO_2 (g/s)	PM_{10} (g/s)	$PM_{2.5}$ (g/s)	NO_2 (g/s)	CO (g/s)	Stack Temp (K)	Stack Velocity (m/s)
MAXIMUM LICENSE ALLOWED								
Westbrook Energy Center – Startup/Shutdown/Runback Scenario 1								
• CT1 – 100% Load	All	-	-	-	2.27	6.68	372.04	21.48
• CT2 – SU/SD	All	-	-	-	45.36	252.00	372.04	13.52
Westbrook Energy Center – Startup/Shutdown/Runback Scenario 2								
• CT1 – SU/SD	All	-	-	-	45.36	252.00	372.04	13.52
• CT2 – 100% Load	All	-	-	-	2.27	6.68	372.04	20.61

C. Single Source Modeling Impacts

AERMOD-PRIME refined modeling was performed to demonstrate that startup, shutdown and runback operational cycles would not violate NO_2 and CO NAAQS.

The AERMOD-PRIME model results for Westbrook Energy Center alone are shown in Table III-4. Maximum predicted impacts that exceed their respective significance level are indicated in boldface type.

TABLE III-4: Maximum AERMOD-PRIME Impacts from Westbrook Energy Center Alone

Pollutant	Averaging Period	Max Impact ($\mu g/m^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Class II Significance Level ($\mu g/m^3$)
NO_2	1-hour	**134.60**	389,166	4834,533	39.60	**10**[1]
	Annual	**3.28**	388,916	4835,133	24.50	**1**
CO	1-hour	**6998.30**	388,994	4834,694	29.51	**2000**
	8-hour	**1222.41**	388,749	4834,608	30.70	**500**

[1] Interim Significant Impact Level (SIL) adopted by NESCAUM states

D. Combined Source Modeling Impacts

As indicated in boldface type in Table III-4, other sources not explicitly included in the modeling analysis must be accounted for by using representative background concentrations for the area.

Background concentrations, listed in Table III-5, are derived from representative rural background data for use in the Southern Maine region.

TABLE III-5: Background Concentrations

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)	Date	Monitoring Site
NO_2	1-hour	43	2009-2012	Presque Isle
	Annual	4	2010-2012	
CO	1-hour	365	2010-2012	Acadia National Park
	8-hour	322		

MEDEP examined other nearby sources to determine if any impacts would be significant in or near Westbrook Energy Center's significant impact area. Due to the location, extent of the predicted significant impact area and other nearby source's emissions, MEDEP has determined that no other sources would be included in combined-source modeling.

The maximum AERMOD-PRIME modeled impacts were added with conservative rural background concentrations to demonstrate compliance with NAAQS, as shown in Table III-6.

Because all pollutant/averaging period impacts using this method meet NAAQS, no further NAAQS modeling analyses need to be performed.

TABLE III-6: Maximum Combined Source Impacts ($\mu g/m^3$)

Pollutant	Averaging Period	Max Impact ($\mu g/m^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Back-Ground ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
NO_2	1-hour	**134.60**	389,166	4834,533	39.60	43	177.60	188
	Annual	**3.28**	388,916	4835,133	24.50	4	7.28	100
CO	1-hour	**6998.30**	388,994	4834,694	29.51	365	7363.30	40,000
	8-hour	**1222.41**	388,749	4834,608	30.70	322	1544.41	10,000

E. Class I Impacts

Since the current licensing action for Westbrook Energy Center represents a minor modification to an existing major source, it has been determined by MEDEP-BAQ that an assessment of Class I Air Quality Related Values (AQRVs) is not required.

F. Summary

In summary, it has been demonstrated that emissions from Westbrook Energy Center will not cause or contribute to violations of National Ambient Air Quality Standards (NAAQS) for NO_2 or CO.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-743-77-3-A pursuant to the preconstruction licensing requirements of 06-096 CMR 115 and subject to the standard and specific conditions below.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License 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

The following shall apply to each Combustion Turbine #1 and #2 during startup, shutdown, and runback events defined in condition 15(F) of Part 70 license A-743-70-D-R (June 9, 2015).

Startup, Shutdown, and Runback Limits for Each Combustion Turbine

Pollutant	lb/hr	Averaging Time
NO_X	360	1-hr block avg*
CO	2000	1-hr block avg*

* For the purposes of calculating startup, shutdown, and runback lb/hr, any hour with startup, shutdown, or runback minutes will be classified as such and the startup, shutdown, or runback emission limits proposed in the table above will apply. Any hour with startup, shutdown, or runback minutes will not be included in the averaging time calculations for steady state operation. A valid hour for demonstrating compliance with short term startup, shutdown, and runback emission limits is defined as an hour that contains at least one data point in at least three of the four 15 minute quadrants.

[06-096 CMR 115, BACT]

(2) ISO-NE Electrical Supply Emergency [06-096 CMR 115, BACT]

Combustion Turbines #1 and #2 licensed NO_X and CO emission limits (ppm and lb/hr) for steady state load operation do not apply if the facility, during an electricity supply emergency, is directed by Independent System Operator - New England (ISO-NE) to operate at low loads such that the SCR cannot operate due to unstable temperatures. During such operation, the NO_X and CO lb/hr limits for startup, shutdown, and runback events shall apply to each combustion turbine.

DONE AND DATED IN AUGUSTA, MAINE THIS 16 DAY OF February , 2016.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PAUL MERCER, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: October 27, 2015
Date of application acceptance: October 30, 2015

Date filed with the Board of Environmental Protection:

Filed
FEB 16 2016
State of Maine
Board of Environmental Protection

This Order prepared by Kathleen E. Tarbuck and Edwin L. Cousins, Bureau of Air Quality.