



DEPARTMENT ORDER

Maritimes & Northeast Pipeline, L.L.C.
Cumberland County
Westbrook, Maine
A-957-71-E-R/A

Departmental
Findings of Fact and Order
Air Emission License
Renewal with Amendment

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 (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Maritimes & Northeast Pipeline, L.L.C. (M&N) operates emission sources associated with a natural gas compressor station. M&N was issued a Part 70 license per the requirements of *Part 70 Air Emission License Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 140 on December 15, 2017 (A-957-70-C-R/A).

M&N does not have the potential to emit more than 100 tons per year (tpy) of particulate matter (PM), particulate matter under 10 micrometers (PM₁₀), sulfur dioxide (SO₂), nitrogen oxides (NO_x), or carbon monoxide (CO) or 50 tpy of volatile organic compounds (VOC). However, M&N does have the potential to emit more than 100,000 tpy of carbon dioxide equivalent (CO₂e), and at the time of the last license issuance, the definition of "Part 70 major source" contained in *Definitions Regulation*, 06-096 C.M.R. ch. 100 included sources that have the potential to emit more than 100,000 tpy of CO₂e. The federal regulations no longer contain a major source threshold for CO₂e, and the definitions in 06-096 C.M.R. ch. 100 have been updated accordingly. Therefore, this facility is no longer considered a Part 70 major source, and this licensing action is considered a renewal of their previous minor source license.

In addition, M&N has requested an amendment to their license in order to do the following:

1. Install gas cooling;
2. Update the startup and shutdown related emissions for the two turbines;
3. Update the basis for SO₂ emissions for all natural gas-fired equipment;
4. Revise the VOC emission factors for the auxiliary boiler;
5. Update the expected hours of turbine operation at low temperatures;
6. Define how annual emissions for the turbines are calculated and revise the monitoring plan accordingly; and

7. Update the methodology for calculating facility-wide emissions from gas releases and fugitive emissions.

These changes are all part of M&N's "Portland XPress Project" which will include increasing the pressure to which the natural gas in the pipeline will be compressed and enabling bi-directional compression (i.e. the ability to compress gas either north or south).

The equipment addressed in this license amendment is located off Small Hardy Road in Westbrook, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Fuel Burning Equipment

Equipment	Max. Capacity (MMBtu/hr)	Maximum Firing Rate (scf/hr)	Fuel Type	Date of Installation	Stack #
Turbine #1	139.7 ^a	136,993 ^a	Natural Gas	2008	1
Turbine #2	139.7 ^a	136,993 ^a	Natural Gas	2008	2
Boiler #1	3.9	3,775	Natural Gas	2008	BLR-1
Generator #1	5.02	4,920	Natural Gas	2008	GEN-1

^a At ambient temperatures above 0 °F.

C. Insignificant Activities

M&N intends to compress the gas in the pipeline to higher pressures which will cause the gas temperature to increase. Gas cooling equipment has been proposed to be installed. There are no air emissions from this equipment beyond that already accounted for in this license. Therefore, the gas cooling is determined to be an insignificant activity.

M&N may operate small stationary engines smaller than 0.5 MMBtu/hr. These engines are considered insignificant activities and are not required to be included in this license. However, they are still subject to applicable State and Federal regulations. More information regarding requirements for small stationary engines is available on the Department's website at the link below.

<http://www.maine.gov/dep/air/publications/docs/SmallRICEGuidance.pdf>

Additionally, M&N may operate portable engines used for maintenance or emergency-only purposes. These engines are considered insignificant activities and are not required to be included in this license. However, they may still be subject to applicable State and Federal regulations.

D. Definitions

Portable Engine means an internal combustion engine which is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform. This definition does NOT include engines which remain or will remain at a location (excluding storage locations) for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period.

Definitions Specific to Turbines #1 and #2

Low Temperature Operation means operation at or below an ambient temperature of 0 °F.

Normal Operation means operation when SoLoNO_xTM is Enabled and Active at temperatures above 0 °F. During normal operation, the majority of fuel fired in the turbines is lean-premixed fuel, and the balance is pilot fuel. At these times the turbine is achieving vendor guaranteed emissions indicated by the SoLoNO_xTM system being both Enabled and Active.

Shutdown means the time from when SoLoNO_xTM becomes Inactive to the end of fuel combustion.

Startup means the time from the start of fuel combustion to the time that SoLoNO_xTM becomes Active.

Transient Event means a period of time when SoLoNO_xTM is Enabled but also Inactive.

E. 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 modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the “Significant Emission” levels as defined in the Department’s *Definitions Regulation*, 06-096 C.M.R. ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Pollutant	Current License (TPY)	Future License (TPY)	Net Change (TPY)	Significant Emission Levels
PM	7.7	7.5	-0.2	100
PM ₁₀	7.7	7.5	-0.2	100
SO ₂	3.8	6.5	+2.7	100
NO _x	63.2	64.6	+1.4	100
CO	82.7	85.1	+2.4	100
VOC	49.0	38.3	-10.7	50

Therefore, the license is considered to be a renewal with a minor modification processed through *Major and Minor Source Air Emission License Regulations*, 06-096 C.M.R. ch. 115.

F. Facility Classification

With the annual limit on fugitive VOC emissions, the facility is licensed as follows:

- As a natural minor source of air emissions for PM, PM₁₀, SO₂, NO_x, and CO, because facility emissions cannot exceed major source thresholds;
- As a synthetic minor source of air emissions for VOC, because the licensed emissions are below the major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

Although Emissions of CO are licensed above 80% of the major source threshold, this facility is not classified as an “80% Synthetic Minor” for the purpose of determining the minimum required compliance inspection frequency in accordance with Maine’s Compliance Monitoring Strategy, because this facility is a natural minor source for emissions of CO.

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 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

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

B. Turbines #1 & #2

Turbines #1 and #2 are Solar Mars Model 100-15002S3 combustion turbines. They provide direct drive power to run compressors that are used to recompress and move natural gas through the transmission pipeline. Each turbine has an approximate maximum heat input of 139.7 MMBtu/hr firing natural gas.

Turbines #1 and #2 were manufactured in 2008. The last compliance test for NO_x was performed on March 20, 2018, for Turbine #1 and February 20, 2019, for Turbine #2.

Turbines #1 and #2 are each equipped with SoLoNO_xTM Combustion Technology which combines premixing and lean fuel-air mixtures with a two-stage combustion zone, thereby reducing the flame temperature and consequently thermal NO_x formation.

1. 40 C.F.R. Part 60, Subpart KKKK

Turbines #1 and #2 are subject to *Standards of Performance for Stationary Combustion Turbines*, 40 C.F.R. Part 60, Subpart KKKK since they were constructed after February 18, 2005.

Turbines which are subject to 40 C.F.R. Part 60, Subpart KKKK are exempt from the requirements of *Standards of Performance for Stationary Gas Turbines*, 40 C.F.R. Part 60, Subpart GG per § 60.4305(b).

a. Standards

(1) Nitrogen Oxides NO_x

Per Table 1 of Subpart KKKK, Turbines #1 and #2 are each subject to a NO_x emission limit of 25 ppm at 15% O₂ during operation at or above 75% of peak load and at temperatures at or above 0 °F. However, the BPT limit for NO_x emissions is more stringent, and therefore, only the most stringent limit is contained in this license.

For operating loads less than 75% of peak load or temperatures below 0 °F, Table 1 of Subpart KKKK limits NO_x emissions to 150 ppm at 15% O₂.

(2) Sulfur Dioxide (SO₂)

M&N has elected to comply with an SO₂ emission limit of 0.060 lb/MMBtu per § 60.4330(a)(2).

b. Performance Testing

(1) M&N last conducted performance testing for NO_x on March 20, 2018, for Turbine #1 and February 20, 2019, for Turbine #2. Section § 60.4340(a) allows M&N to perform subsequent performance tests every two years (in lieu of annually) if the results of the performance test is less than or equal to 75% of the emission limit contained in Subpart KKKK. Since Turbines #1 and #2 are subject to a BACT emission limit for NO_x that is less than 75% of the Subpart KKKK emission limit, M&N will always be subject to performance testing on a two-year schedule.

(2) Performance testing for NO_x shall be done at any load condition within plus or minus 25% of 100% of peak load. M&N shall conduct three separate test runs for each performance test. The minimum run time shall be 20 minutes. The ambient temperature shall be greater than 0 °F during the performance test.

[40 C.F.R. § 60.4400(b)]

c. Recordkeeping

M&N shall maintain a current FERC Gas Tariff establishing gas quality, which documents the total sulfur content is 20 grains of sulfur or less per 100 scf of gas.

[40 C.F.R. § 60.4365(a)]

2. Operation at Low Temperatures

The turbine control system is programmed to increase pilot fuel when the ambient temperature drops below 0 °F to maintain combustion stability. As a result, emissions increase at these temperatures. This license includes provisions for increased emissions during periods when the ambient temperature is below 0 °F. Annual emissions estimates conservatively assume Turbines #1 and #2 will operate up to 161 hours/year at temperatures between 0 °F and -20 °F and one hour per year of operation below -20 °F. Emissions from operation at low temperatures are to be included when demonstrating compliance with the facility's annual emission limits.

3. Startup/Shutdown and Transient Events

As discussed in the BPT section below, emissions of NO_x, CO, and VOC are controlled using Solar's SoLoNO_xTM which is a technology based on dry, lean-premixed combustion.

SoLoNO_xTM can be either Enabled or Disabled, essentially either on or off. SoLoNO_xTM is typically Disabled during low load conditions, i.e., startup and shutdown, as well as during low temperature events (see Definitions section).

When Enabled, SoLoNO_xTM can be either Active or Inactive. A transient event occurs when SoLoNO_xTM is Enabled but Inactive. These are infrequent periods of a short duration (typically a few minutes or less) when the turbine is not achieving the emissions guarantee provided by Solar. These periods occur as a result of the turbine losing combustion stability in the lean premix mode. To stabilize combustion, the turbine control system increases the pilot fuel to the combustion chamber resulting in higher emissions until stable lean premix mode can be achieved again. The cause of transient events is usually outside the control of M&N, e.g. a bump/drop in pipeline pressure due to a large facility coming on/off-line.

In M&N's previous air emission license, Turbines #1 and #2 are prohibited from operating at gas producer speeds less than 92% except for periods of startup and shutdown. Gas producer speed is an indicator of turbine load and this requirement was originally intended to prevent the turbine operating without SoLoNO_xTM functioning as expected. However, gas producer speed is an imprecise measurement of load and also does not take into account potential transient events. Therefore, M&N has requested that this monitoring requirement be removed and replaced with monitoring the SoLoNO_xTM system for Enabled/Disabled status and whether it is Active/Inactive. The control system for Turbines #1 and #2 will be equipped with an interlock which prevents operating in SoLoNO_xTM Disabled mode except for periods of Startup, Shutdown, and low temperature.

Collecting this additional data for Turbines #1 and #2 will require retrofitting the existing monitoring systems. Therefore, M&N has requested that the change in monitoring take effect concurrent with the startup of equipment associated with the Portland XPress project, specifically the FERC in-service date. M&N shall notify the Department of the FERC in-service date.

The Department approves this request. Turbines #1 and #2 shall continue to be limited to a gas producer speed of not less than 92% demonstrated through the use of a programming interlock and verified through continuous records of gas producer speed until such time as monitoring of the SoLoNO_xTM status (Enabled/Disabled and Active/Inactive) is available but no later than the FERC in-service date for the Portland XPress Project.

M&N will continuously monitor the SoLoNO_xTM system and whether it is Enabled/Disabled and Active/Inactive. In calculating compliance with the facility’s annual emission limits, M&N shall determine the amount of operating time the turbine spent in each mode and calculate emissions based on the following:

Mode	Calculate Emissions Using Emission Factors Based On...
Startup	The emissions data supplied by the turbine manufacturer at the time of the most recent permit application
Shutdown	The emissions data supplied by the turbine manufacturer at the time of the most recent permit application
Normal Operation	Licensed emission limits for temperatures above 0 °F
Low Temperature	Licensed emission limits for appropriate temperature range
Transient Event	Licensed emission limits for temperatures less than or equal to -20 °F

4. BPT Findings

The following control strategies represent BPT for Turbines #1 and #2:

PM/PM ₁₀	Good Combustion Practices
SO ₂	Firing of Pipeline Quality Natural Gas
NO _x	SoLoNO _x TM Combustion Technology
CO	SoLoNO _x TM Combustion Technology
VOC	SoLoNO _x TM Combustion Technology
HAP	Good Combustion Practices

The BPT emission limits for the turbine were based on the following:

a. Operation at Low Temperatures

Under normal operating conditions the majority of the fuel is lean-premixed fuel and the balance is pilot fuel. However, the turbine control system is programmed to increase pilot fuel when the ambient temperature drops below zero degrees Fahrenheit to maintain combustion stability. As a result, emissions increase at these temperatures. This license includes provisions for increased emissions during periods when the ambient temperature falls below zero degrees Fahrenheit.

b. Particulate Matter (PM, PM₁₀)

BPT for PM emissions from Turbines #1 and #2 consists of firing pipeline quality natural gas exclusively and good combustion practices. Units firing fuels with low ash content and high combustion efficiency exhibit low particulate matter emissions. The most stringent particulate control method demonstrated for gas turbines is the use of low ash fuel such as natural gas. Thus, firing of only pipeline quality natural gas represents BPT.

Turbines #1 and #2 are fuel burning equipment with a rated capacity greater than 3 MMBtu/hr, and are therefore subject to *Fuel Burning Equipment Particulate Emission Standard*, 06-096 C.M.R. ch. 103. They are subject to a PM emission limit of 0.08 lb/MMBtu per § 2(B)(1)(b), because they each have a maximum heat input capacity between 50 and 250 MMBtu/hr and fire natural gas. It is expected that this emission limitation will be easily met as Turbines #1 and #2 fire natural gas (an inherently low PM emitting fuel) and they will be subject to a lb/hr PM limit that is much lower than that corresponding to 0.08 lb/MMBtu.

c. Sulfur Dioxide

Sulfur Dioxide (SO₂) is formed from the oxidation of sulfur in fuel. The most stringent method of control for SO₂ that has been demonstrated for gas fired turbines is firing pipeline quality natural gas.

d. Nitrogen Oxides

Nitrogen Oxides (NO_x) emitted from combustion turbines result from the oxidation of both fuel bound nitrogen and atmospheric nitrogen (thermal NO_x). Natural gas has very low fuel bound nitrogen. Therefore, reducing NO_x emissions must focus on reducing the thermal NO_x component. M&N uses SoLoNO_xTM combustion technology, which employs lean-premixed combustion techniques. The premixing of fuel and air upstream of the combustor primary zone helps to ensure that the flame operates at a fuel lean condition, thus lowering flame temperature and minimizing thermal NO_x formation.

The Department has concluded BPT for NO_x emissions shall consist of operating Turbines #1 and #2 with SoLoNO_xTM combustion technology. New Source Performance Standards (NSPS), 40 C.F.R. Part 60, Subpart KKKK contains a NO_x emission limit. BPT for all ambient temperatures has been determined to be at least as stringent as the NSPS limit.

e. Carbon Monoxide

Carbon Monoxide (CO) results from the incomplete combustion of gas in the turbine.

The gas turbine uses a dry low NO_x combustor system, integrates sophisticated burner controls with staged premixed combustion zones, and uses fuel feed systems to achieve the required low NO_x emissions. Additional CO reductions are attributed to the SoLoNO_xTM technology.

The Department has determined M&N's use of SoLoNO_xTM combustion technology and associated good combustion practices and instrumentation and controls for CO is BPT. The lb/hr emission limits listed in the Conditions of this license are based on the ppm values.

f. Volatile Organic Compounds

The majority of volatile organic compounds (VOCs) emitted from gas fired turbines come from unburned hydrocarbons. Control of VOCs is accomplished by providing adequate fuel residence time and high temperature in the combustion zone to ensure complete combustion. The Department has determined that BPT for VOCs is using combustion control, via the SoLoNO_xTM combustion technology.

g. Hazardous Air Pollutants

Formaldehyde is the only organic compound which is also a hazardous air pollutant emitted in more than a negligible amount. Total emissions are less than 3 tons/year, substantially below the 10 ton/year major source threshold. Good combustion practices with a state of art combustion system insure complete combustion of organic constituents of the fuel streams. Therefore, good combustion practices constitute BPT for the control of hazardous air pollutants.

5. Summary of Emission Limits

Except during periods of startup, shutdown, and transient events, Turbines #1 and #2 shall each not exceed the following emissions limits.

Pollutant	Emission Limit T > 0 °F	Emission Limit 0 °F ≥ T > -20 °F	Emission Limit T ≤ -20 °F	Citation
PM	0.92 lb/hr	0.95 lb/hr		06-096 C.M.R. ch. 115, BPT
PM ₁₀	0.92 lb/hr	0.95 lb/hr		
SO ₂	0.78 lb/hr	0.81 lb/hr		
NO _x	15 ppmdv @ 15% O ₂	–	–	40 C.F.R. Part 60, Subpart KKKK
	–	150 ppmdv @ 15% O ₂	150 ppmdv @ 15% O ₂	
	7.56 lb/hr	21.79 lb/hr	62.26 lb/hr	06-096 C.M.R. ch. 115, BPT
CO	7.67 lb/hr	31.59 lb/hr	47.38 lb/hr	
VOC	0.96 lb/hr	1.98 lb/hr	2.97 lb/hr	

Visible emissions from Turbines #1 and #2 shall each not exceed 10% opacity on a six-minute block average basis.

6. Turbine Case Venting and Station Piping Venting

When a turbine sits idle for some time, it is decompressed and vented to atmosphere to prevent damage to equipment. The turbine is also decompressed and vented when maintenance work is done on the turbine. M&N shall keep records as specified for the turbine venting.

Emergency shutdowns (ESD), ESD testing, and routine maintenance of station piping result in venting natural gas to the atmosphere. These activities are necessary for safety reasons, and no specific emission limit is imposed to restrict these activities. M&N shall notify the Department as specified of any release that results in more than 85,000 scf of natural gas.

C. Boiler #1

Boiler #1 is a Cleaver-Brooks package boiler used for facility heating. Boiler #1 has a maximum heat input capacity of 3.9 MMBtu/hr and fires natural gas. It was manufactured and installed in 2008.

1. BPT Findings

The BPT emission limits for Boiler #1 were based on the following:

- PM/PM₁₀ – 7.6 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98 and 06-096 C.M.R. ch. 115, BPT
- SO₂ – 5.71 lb/MMBtu based on AP-42 Table 1.4-2 dated 7/98 and Tariff of 2 gr/100 scf
- NO_x – 74 lb/MMscf based on manufacturer data
- CO – 38 lb/MMscf based on manufacturer data
- VOC – 8.18 lb/MMscf based on AP-42 Table 1.4-3 dated 7/98
- Opacity – 06-096 C.M.R. ch. 115, BPT

The BPT emission limits for Boiler #1 are the following:

Unit	Pollutant	lb/MMBtu
Boiler #1	PM	0.08

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #1	0.03	0.03	0.02	0.28	0.14	0.03

Visible emissions from Boiler #1 shall not exceed 10% opacity on a six-minute block average basis.

2. New Source Performance Standards (NSPS): 40 C.F.R. Part 60, Subpart Dc

Due to its size, Boiler #1 is not subject to *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* 40 C.F.R. Part 60, Subpart Dc for units greater than 10 MMBtu/hr manufactured after June 9, 1989. [40 C.F.R. § 60.40c(a)]

3. National Emission Standards for Hazardous Air Pollutants (NESHAP):
 40 C.F.R. Part 63, Subpart JJJJJ

National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, 40 C.F.R. Part 63, Subpart JJJJJ, is not applicable to gas-fired boilers.

D. Generator #1

M&N operates one emergency generator (Generator #1). Generator #1 is a gen set consisting of an engine and an electrical generator. It has an engine with a nominal rating of 5.02 MMBtu/hr (395 kW) and fires natural gas. Generator #1 was manufactured in August 2008.

1. BPT Findings

The BPT emission limits for Generator #1 are based on the following:

- PM/PM₁₀ - 0.12 lb/MMBtu from 06-096 C.M.R. ch. 103
- SO₂ - 5.88 x 10⁻³ lb/MMBtu from AP-42 dated 7/00
 and Tariff of 2 gr/100 scf
- NO_x - 524.30 lb/MMscf from manufacturer's data
- CO - 458.77 lb/MMscf from manufacturer's data
- VOC - 196.61 lb/MMscf from manufacturer's data
- Opacity - 06-096 C.M.R. ch. 115, BPT

The BPT emission limits for Generator #1 are the following:

Unit	Pollutant	lb/MMBtu
Generator #1	PM	0.12

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator #1	0.60	0.60	neg	2.58	2.26	0.97

Visible emissions from Generator #1 shall not exceed 10% opacity on a six-minute block average basis.

2. New Source Performance Standards (NSPS)

Standards of Performance for Spark Ignition Internal Combustion Engines, 40 C.F.R. Part 60, Subpart JJJJ is not applicable to Generator #1 since it is an emergency engine which was manufactured and installed prior to January 1, 2009. To be considered an emergency stationary internal combustion engine under 40 C.F.R. Part 60, Subpart JJJJ,

any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for up to 50 hours per calendar year, as described in §§ 60.4243(d)(1) through (3), is prohibited.

3. National Emissions Standards for Hazardous Air Pollutants (NESHAP)

National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 C.F.R. Part 63, Subpart ZZZZ, is applicable to Generator #1. Generator #1 is considered a new stationary RICE located at an area source of HAP emissions because construction commenced after June 12, 2006.

Per § 63.6590(c)(1), new stationary, spark ignition RICE are required to meet the requirements of Subpart ZZZZ by complying with the applicable requirements of 40 C.F.R. Part 60, Subpart JJJJ. As mentioned in the proceeding section, Subpart JJJJ has no applicable requirements for Generator #1. Therefore, there are no applicable requirements for Generator #1 under 40 C.F.R. Part 63, Subpart ZZZZ either.

E. Updates to Emission Calculation Methodology

M&N has requested several updates to how annual emissions are calculated for compliance purposes.

1. Startup and Shutdown Emissions

M&N bases emissions from the turbines during startup and shutdown on guidance provided by the vendor. Recently the vendor has updated their guidance resulting in a slight decrease in the short-term emission rate for NO_x and a slight increase in the short-term emission rates for CO and VOC. M&N shall use the vendor-supplied guidance relied upon in the most recent permit application for calculating emissions from the turbines during periods of startup and shutdown.

2. Basis for SO₂ Emissions

Previously, M&N calculated emissions of SO₂ from the station's combustion equipment based on the average sulfur content of natural gas. M&N has requested that this be changed to instead conservatively reflect the maximum sulfur content allowed by the gas tariff sheet (2 grains per 100 scf). This is a change in calculation methodology only and does not represent any change in actual emissions.

3. Hours of Operation at Low Temperatures

Previously, M&N's annual emissions were calculated based on assumed operation of up to 81 hours per year at temperatures below 0 °F. M&N has requested that this be

updated to assume 161 hours per year of operation between -20 °F and 0 °F and one hour per year of operation below -20 °F based on updated meteorological data. This is a change in calculation methodology only and does not represent any change in actual emissions.

4. Gas Releases and Fugitive Emissions

Gas releases occur during startup, shutdown, and maintenance activities. The changes to the facility due to the Portland XPress Project result in an increase in potential gas releases associated with the new gas cooling. There is also a potential increase in fugitive emissions due to new piping components associated with the new gas cooling piping tie-in.

In addition, M&N has updated their calculations of gas releases and fugitive emissions based on updated approaches to estimating gas release volumes for similar sized stations and a statistical analysis of available gas quality data. These changes are changes to the calculation methodology only and do not represent a change to actual emissions.

F. Emissions Statement

M&N is subject to emissions inventory requirements contained in *Emission Statements*, 06-096 C.M.R. ch. 137. M&N shall maintain the following records in order to comply with this rule:

1. The amount of natural gas fired in each unit on a monthly basis;
2. Calculations of emissions of all regulated pollutants from each emissions unit on a calendar year total basis;
3. Calculations of the VOC and/or HAP emissions from gas releases and fugitive emissions on a calendar year total basis; and
4. Hours of operation for each emission unit on a monthly basis.

Beginning in reporting year 2020 and every third year thereafter, M&N shall report to the Department emissions of hazardous air pollutants as required by 06-096 C.M.R. ch. 137, § (3)(C). The Department will use these reports to calculate and invoice for the applicable annual air quality surcharge for the subsequent three billing periods. M&N shall pay the annual air quality surcharge, calculated by the Department based on these reported emissions of hazardous air pollutants, by the date required in Title 38 M.R.S. § 353-A(3). [38 M.R.S. § 353-A(1-A)]

G. Annual Emissions

M&N shall be restricted to the following annual emissions, based on a 12-month rolling total. The tons per year limits were calculated based on the following:

- Operation of Turbines #1 and #2 for 8,760 hr/year each, assuming 161 hr/year each of operation between -20 °F and 0 °F and one hour per year each of operation below -20 °F;
- 65 startup and shutdown events per year (each) for Turbines #1 and #2;
- Operation of Boiler #1 for 8,760 hr/year; and
- Operation of Generator #1 for 100 hr/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
Turbine #1	3.7	3.7	3.2	31.7	42.2	4.3
Turbine #2	3.7	3.7	3.2	31.7	42.2	4.3
Boiler #1	0.1	0.1	0.1	1.1	0.6	0.1
Generator #1	–	–	–	0.1	0.1	0.1
Gas Releases	–	–	–	–	–	23.4
Fugitive	–	–	–	–	–	6.1
Total TPY	7.5	7.5	6.5	64.6	85.1	38.3

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 M&N, in conjunction with other sources, will not cause or contribute to violations of National Ambient Air Quality Standards (NAAQS) for SO₂, PM₁₀, PM_{2.5}, NO₂ or CO or to Class II increments for SO₂, PM₁₀, PM_{2.5} or NO₂.

Since M&N is a minor source, it has been determined by MEDEP-BAQ that an assessment of Class I Air Quality Related Values (AQRVs) is not required.

B. Model Inputs

The American Meteorological Society USEPA Dispersion Model (AERMOD) dispersion model was used to address NAAQS and increment impacts 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 practices (GEP) stack heights.

All modeling was performed in accordance with all applicable requirements of the Maine Department of Environmental Protection, Bureau of Air Quality (MEDEP-BAQ) and the United States Environmental Protection Agency (USEPA). The most-recent regulatory version of the AERMOD model and its associated processors were used to conduct the analyses.

A valid five-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	10 meters, 100 meters
Temperature	7 meters

Each year of meteorological data met the 90% data recovery requirement, both singularly and jointly.

When possible, hourly Integrated Surface Hourly Data (ISHD) collected at the Portland Jetport National Weather Service (NWS) site were substituted for any missing surface data collected at the primary site. All other missing data were interpolated or coded as missing, per USEPA guidance. In addition, hourly Portland Jetport NWS data, from the same time period, were used to supplement the primary surface dataset for any required variables that were not explicitly collected on-site.

The surface meteorological data was combined with concurrent hourly cloud cover and upper-air data obtained from the Gray NWS. 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 the AERSURFACE utility program and from procedures recommended by USEPA.

Point-source parameters, used in the modeling for M&N, are listed in Table III-2.

TABLE III-2 : M&N Point Source Stack Parameters

Stack	Stack Base Elevation (m)	Stack Height (m)	GEP Stack Height (m)	Stack Diameter (m)	UTM Easting NAD83 (m)	UTM Northing NAD83 (m)
CURRENT/PROPOSED						
• M&N Mars 100, Unit 1	92.00	13.11	34.00	2.67	389,956	4,842,032
• M&N Mars 100, Unit 2	92.00	13.11	34.00	2.67	389,972	4,842,017
2012 BASELINE (PM_{2.5} INCREMENT)						
• M&N conservatively assumed no credit for any sources existing in the 2012 baseline year.						
1987 BASELINE (NO₂ INCREMENT)						
• M&N did not exist during the 1987 baseline year, no NO ₂ credits to be taken.						
1977 BASELINE (SO₂/PM₁₀ INCREMENT)						
• M&N did not exist during the 1977 baseline year, no SO ₂ /PM ₁₀ credits to be taken.						

Emission parameters for M&N NAAQS and increment modeling are listed in Table III-3. Emission parameters are based on the maximum (100%) operation for each turbine, with refined modeling scenarios representing the following ambient temperatures: 100°F, 45°F and 0°F.

For the purpose of determining maximum predicted impacts, the following assumptions were used:

- NO_x emissions were assumed to convert to NO₂ using USEPA's Tier II Ambient Ratio Method (ARM2);
- all particulate emissions were conservatively assumed to convert to PM₁₀ and PM_{2.5}

TABLE III-3 : Stack Emission Parameters

Stack	Averaging Periods	SO ₂ (g/s)	PM ₁₀ /PM _{2.5} (g/s)	NO _x (g/s)	CO (g/s)	Stack Temp (K)	Stack Velocity (m/s)
MAXIMUM LICENSE ALLOWED							
• M&N Mars 100 Unit 1 – 0°F	Short Term	0.10	0.12	0.99	1.02	725	17.76
• M&N Mars 100 Unit 1 – 45°F	All	0.09	0.11	0.87	0.88	756	16.69
• M&N Mars 100 Unit 1 – 100°F	Short Term	0.07	0.09	0.72	0.73	785	14.86
• M&N Mars 100 Unit 1 – SU/SD	Short Term	-	-	0.07	4.33	647	12.34
• M&N Mars 100 Unit 2 – 0°F	Short Term	0.10	0.12	0.99	1.02	725	17.76
• M&N Mars 100 Unit 2 – 45°F	All	0.09	0.11	0.87	0.88	756	16.69
• M&N Mars 100 Unit 2 – 100°F	Short Term	0.07	0.09	0.72	0.73	785	14.86
• M&N Mars 100 Unit 2 – SU/SD	Short Term	-	-	0.07	4.33	647	12.34
2012 BASELINE (PM_{2.5} INCREMENT)							
• M&N conservatively assumed no credit for any sources existing in the 2012 baseline year.							
1987 BASELINE (NO₂ INCREMENT)							
• M&N did not exist during the 1987 baseline year, no NO ₂ credits to be taken.							
1977 BASELINE (SO₂/PM₁₀ INCREMENT)							
• M&N did not exist during the 1977 baseline year, no SO ₂ /PM ₁₀ credits to be taken.							

C. Single Source Modeling Impacts

The significant impact model results for M&N alone are shown in Table III-4. Maximum predicted impacts that exceed their respective significance level are indicated in boldface type. For comparison to the Class II significance levels, the impacts for 1-hour SO₂, 1-hour NO₂, 24-hour PM_{2.5} and annual PM_{2.5} were conservatively based on the maximum High-1st-High predicted values, averaged over five-years of meteorological data. All other pollutants/averaging periods were conservatively based on their maximum High-1st-High predicted values. The maximum impacts at ambient temperatures of 100 °F, 45 °F or 0 °F were compared to the short-term significance levels. Only impacts at the average ambient temperature of 45 °F were compared to the annual significance levels. No additional refined modeling was required for pollutants that did not exceed their respective significance levels.

TABLE III-4 : Maximum AERMOD Significant Impact Results from M&N

Pollutant	Averaging Period	Max Impact ($\mu\text{g}/\text{m}^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Class II Significance Level ($\mu\text{g}/\text{m}^3$)	Load Case
SO ₂	1-hour	13.17	389,932	4,842,063	92.63	7.9	100%, 0°F
	3-hour	12.30	389,946	4,842,077	92.78	25	100%, 0°F
	24-hour	4.74	390,013	4,842,047	91.99	5	100%, 0°F
	Annual	0.10	389,930	4,841,937	89.00	1	100%, 45°F
PM ₁₀	24-hour	5.57	390,013	4,842,047	91.99	5	100%, 0°F
	Annual	0.12	389,930	4,841,937	89.00	1	100%, 45°F
PM _{2.5}	24-hour	3.56	390,013	4,842,047	91.99	1.2	100%, 0°F
	Annual	0.10	389,989	4,841,945	90.18	0.2	100%, 45°F
NO ₂	1-hour	63.67	389,932	4,842,063	92.63	7.5	100%, 0°F
	Annual	0.94	389,980	4,841,944	90.05	1	100%, 45°F
CO	1-hour	890.76	390,035	4,842,026	91.68	2,000	SU/SD
	8-hour	521.60	389,946	4,842,077	92.78	500	SU/SD

D. Combined Source Modeling Impacts

As indicated in boldface type in Table III-4, the maximum predicted impacts for 1-hour SO₂, 24-hour PM₁₀, 24-hour PM_{2.5}, 1-hour NO₂, and 8-hour CO exceed the significance level, therefore other sources not explicitly included in the modeling analysis must be accounted for by using representative pollutant and averaging period 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 ($\mu\text{g}/\text{m}^3$)	Monitoring Site
SO ₂	1-hour	24	Portland
PM ₁₀	24-hour	17	
PM _{2.5}	24-hour	17	
NO ₂	1-hour	38	
CO	8-hour	1150	

MEDEP examined other nearby sources to determine if any impacts would be significant in or near the M&N significant impact area. Due to the location of the M&N facility, 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 refined modeling.

The maximum AERMOD modeled impacts, which were explicitly normalized to the form of their respective NAAQS, were added with conservative rural background concentrations to demonstrate compliance with the NAAQS, as shown in Table III-6.

Because all significant 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 ($\mu\text{g}/\text{m}^3$)

Pollutant	Averaging Period	Max Impact ($\mu\text{g}/\text{m}^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Back-Ground ($\mu\text{g}/\text{m}^3$)	Total Impact ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
SO ₂	1-hour	7.22	389,939	4,842,070	92.79	24	31.22	196
PM ₁₀	24-hour	4.24	389,921	4,841,936	88.83	17	21.24	150
PM _{2.5}	24-hour	0.91	389,940	4,841,938	89.74	17	17.91	35
NO ₂	1-hour	26.55	390,005	4,841,958	90.47	38	64.55	188
CO	8-hour	372.85	389,914	4,841,943	89.26	1150	1522.85	10,000

E. Class II Increment

The AERMOD model was used to predict maximum Class II increment impacts.

Results of the Class II increment analysis are shown in Tables III-7. All modeled maximum impacts were below all increment standards. Because all predicted increment impacts meet increment standards, no additional Class II SO₂, PM₁₀, PM_{2.5} and NO₂ increment modeling needed to be performed.

TABLE III-7 : Class II Increment Consumption

Pollutant	Averaging Period	Max Impact ($\mu\text{g}/\text{m}^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Class II Increment ($\mu\text{g}/\text{m}^3$)
SO ₂	3-hour	12.30	389,946	4,842,077	92.78	512
	24-hour	4.74	390,013	4,842,047	91.99	91
	Annual	0.10	389,930	4,841,937	89.00	20
PM ₁₀	24-hour	4.24	389,921	4,841,936	88.83	30
	Annual	0.12	389,930	4,841,937	89.00	17
PM _{2.5}	24-hour	4.24	389,940	4,841,938	89.74	9
	Annual	0.12	389,989	4,841,945	90.18	4
NO ₂	Annual	0.94	389,980	4,841,944	90.05	25

F. Summary

In summary, it has been demonstrated that M&N will not cause or contribute to a violation of any SO₂, PM₁₀, PM_{2.5}, NO₂ or CO NAAQS or to Class II increments for SO₂, PM₁₀, PM_{2.5} or NO₂.

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, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-957-71-E-R/A subject to the following conditions.

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.

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (38 M.R.S. § 347-C).
- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115. [06-096 C.M.R. ch. 115]
- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 C.M.R. ch. 115]
- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 C.M.R. ch. 115]
- (5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S. § 353-A. [06-096 C.M.R. ch. 115]

- (6) The license does not convey any property rights of any sort, or any exclusive privilege.
[06-096 C.M.R. ch. 115]
- (7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 C.M.R. ch. 115]
- (8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request.
[06-096 C.M.R. ch. 115]
- (9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license.
[06-096 C.M.R. ch. 115]
- (10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license.
[06-096 C.M.R. ch. 115]
- (11) In accordance with the Department's air emission compliance test protocol and 40 C.F.R. Part 60 or other method approved or required by the Department, the licensee shall:
 - A. Perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
 1. Within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions;
or
 2. Pursuant to any other requirement of this license to perform stack testing.
 - B. Install or make provisions to install test ports that meet the criteria of 40 C.F.R. Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and
 - C. Submit a written report to the Department within thirty (30) days from date of test completion.
[06-096 C.M.R. ch. 115]

- (12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:
- A. Within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 C.F.R. Part 60 or other method approved or required by the Department; and
 - B. The days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - C. The licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.
[06-096 C.M.R. ch. 115]
- (13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [06-096 C.M.R. ch. 115]
- (14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emissions and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [06-096 C.M.R. ch. 115]
- (15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status.
[06-096 C.M.R. ch. 115]

SPECIFIC CONDITIONS

(16) Turbines #1 and #2

- A. Turbines #1 and #2 shall only fire pipeline-quality natural gas.
 [06-096 C.M.R. ch. 115, BPT]
- B. Except during periods of startup, shutdown, and transient events, Turbines #1 and #2 shall each not exceed the following emission limits:

Pollutant	Emission Limit T > 0 °F	Emission Limit 0 °F ≥ T > -20 °F	Emission Limit T ≤ -20 °F	Citation
PM	0.92 lb/hr	0.95 lb/hr		06-096 C.M.R. ch. 115, BPT
PM ₁₀	0.92 lb/hr	0.95 lb/hr		
SO ₂	0.78 lb/hr	0.81 lb/hr		
NO _x	15 ppm _{dv} @ 15% O ₂	–	–	40 C.F.R. Part 60, Subpart KKKK
	–	150 ppm _{dv} @ 15% O ₂	150 ppm _{dv} @ 15% O ₂	
	7.56 lb/hr	21.79 lb/hr	62.26 lb/hr	06-096 C.M.R. ch. 115, BPT
CO	7.67 lb/hr	31.59 lb/hr	47.38 lb/hr	
VOC	0.96 lb/hr	1.98 lb/hr	2.97 lb/hr	

- C. Visible emissions from Turbines #1 and #2 shall each not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]
- D. M&N shall keep records of the number of hours during the calendar year that the ambient temperature is at or below 0 °F and at or below -20 °F. For any gaps in M&N’s temperature data, it may utilize meteorological data from an appropriate representative location. [06-096 C.M.R. ch. 115, BPT]
- E. The following shall apply until such time as monitoring of the SoLoNO_xTM status (Enabled/Disabled and Active/Inactive) is available but no later than the FERC in-service date for the Portland XPress Project:

Except during periods of startup and shutdown, M&N shall not operate either Turbine #1 or #2 at gas producer speeds less than 92%. Compliance shall be demonstrated by the use of a programming interlock and verified through recordkeeping of gas producer speeds within the programmable logic controller.
 [06-096 C.M.R. ch. 115, BPT]

- F. The following shall apply once monitoring of the SoLoNO_xTM status (Enabled/Disabled and Active/Inactive) is available but no later than the FERC in-service date for the Portland XPress Project:
1. M&N shall not operate Turbines #1 or #2 in SoLoNO_xTM Disabled mode except for periods of startup, shutdown, and low temperature. Compliance shall be demonstrated by continuously monitoring the SoLoNO_xTM system and whether it is Enabled/Disabled. [06-096 C.M.R. ch. 115, BACT]
 2. M&N shall continuously monitor the SoLoNO_xTM system on Turbines #1 and #2 during all operating times, whether it is Active/Inactive, and use that information to determine the frequency and duration of transient events. This information shall be used in demonstrating compliance with the facility's annual emission limits. [06-096 C.M.R. ch. 115, BACT]
- G. Performance Testing
1. M&N shall conduct performance testing on Turbines #1 and #2 (each) for NO_x every two years (no more than 26 calendar months between tests). [40 C.F.R. § 60.4340(a)]
 2. Performance testing shall be conducted at any load condition within plus or minus 25% of 100% of peak load. M&N shall conduct three separate test runs for each performance test. The minimum run time shall be 20 minutes. The ambient temperature shall be greater than 0 °F during the performance test. [40 C.F.R. § 60.4400(b)]
- H. M&N shall keep documentation of all maintenance and repairs (both planned and unplanned) performed on Turbines #1 and #2. The documentation shall include all planned shutdowns, maintenance procedures, and major parts replacements. These records shall be available to the Department upon request. [06-096 C.M.R. ch. 115, BPT]
- I. Turbines #1 and #2 are subject to, and shall comply with, the applicable requirements of 40 C.F.R. Part 60, Subpart KKKK.
- J. M&N shall maintain a current FERC Gas Tariff establishing gas quality, which documents the total sulfur content is 20 grains of sulfur or less per 100 scf of gas or otherwise comply with the specified methods for demonstrating compliance with the fuel sulfur content requirements of 40 C.F.R. § 60.4365(a).
- K. M&N shall operate and maintain Turbines #1 and #2 and their associated air pollution control equipment and monitoring equipment in a manner consistent with good air

pollution control practices for minimizing emissions at all times, including during startup, shutdown, and malfunction. [40 C.F.R. § 60.4333(a)]

- L. M&N may install like-kind manufacturer-supplied replacement components for the turbines that occur either as part of scheduled maintenance of a turbine or in the event of a malfunction or outage and subsequent repair. M&N shall notify the Department in writing in advance of any replacement of turbine components and shall still be subject to and responsible for any applicable New Source Performance Standard provisions with respect to replacement of the turbine or any components.
 [06-096 C.M.R. ch. 115, BPT]

M. Parameter Monitors

1. M&N shall monitor and record the following. These are considered Parameter Monitors. [06-096 C.M.R. ch. 115, BPT]

Parameter	Monitor	Record Monitor Data	Total	Notes
Natural Gas Fuel Flow Rate to Turbine #1 (standard cubic feet input)	Continuously	Continuously	Monthly	a
Natural Gas Fuel Flow Rate to Turbine #2 (standard cubic feet input)	Continuously	Continuously	Monthly	a
SoLoNO _x TM Enabled/Disabled Status on Turbine #1	Continuously (status)	Continuously (minutes)	Monthly (minutes)	b, c
SoLoNO _x TM Enabled/Disabled Status on Turbine #2	Continuously (status)	Continuously (minutes)	Monthly (minutes)	b, c
SoLoNO _x TM Active/Inactive Status on Turbine #1	Continuously (status)	Continuously (minutes)	Monthly (minutes)	b, c
SoLoNO _x TM Active/Inactive Status on Turbine #2	Continuously (status)	Continuously (minutes)	Monthly (minutes)	b, c

Notes:

- a. For this parameter, Continuously means the total fuel flow will be recorded at least once per 15-minute period.
- b. The requirement to monitor SoLoNO_xTM becomes effective once monitoring of the SoLoNO_xTM status (Enabled/Disabled and Active/Inactive) is available but no later than the FERC in-service date for the Portland XPress Project.
- c. For this parameter, Continuously means the total minutes for each status will be recorded at least once per 15-minute period.

2. If any parameter monitor is recording accurate and reliable data less than 98% of the source-operating time within any quarter of the calendar year, the Department may initiate enforcement action and may include in that enforcement action any period of time that the parameter monitor was not recording accurate and reliable data during that quarter unless the licensee can demonstrate to the satisfaction of the Department that the failure of the system to record accurate and reliable data was due to the performance of established quality assurance and quality control procedures or unavoidable malfunctions.

[06-096 C.M.R. ch. 115, BPT]

(17) Gas Releases and Fugitive Emissions

- A. M&N shall maintain a log of all gas releases and ESD events that includes the following information:

1. Date of the event;
2. Estimated or actual event start time;
3. Estimated or actual event duration;
4. Event source;
5. Event type (shutdown, maintenance, testing, or malfunction);
6. Description of event;
7. Estimate of the amount of natural gas vented;
8. Estimate of VOC density of the released gas; and
9. Calculation of the tons of VOC emitted based on the VOC content of the gas released.

[06-096 CMR 115, BPT]

- B. M&N shall notify the Department in advance of any scheduled venting event that is expected to result in the release of more than 85,000 scf of natural gas. M&N shall notify the Department within two working days of any unscheduled venting event that results in the release of more than 85,000 scf of natural gas. [06-096 CMR 115, BPT]

(18) Boiler #1

- A. Boiler #1 shall fire only pipeline quality natural gas. [06-096 C.M.R. ch. 115, BPT]

- B. Emissions shall not exceed the following:

Unit	Pollutant	lb/MMBtu	Origin and Authority
Boiler #1	PM	0.08	06-096 C.M.R. ch. 115, BPT

C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BPT]:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #1	0.03	0.03	0.02	0.28	0.14	0.02

D. Visible emissions from Boiler #1 shall not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]

(19) **Generator #1**

A. Generator #1 shall be limited to 100 hours of operation per calendar year, excluding operating hours during emergency situations. [06-096 C.M.R. ch. 115, BPT]

B. Generator #1 shall only to be operated for maintenance purposes and for situations arising from sudden and reasonably unforeseeable events beyond the control of the source. Generator #1 shall not to be used for prime power when reliable offsite power is available; nor to operate or to be contractually obligated to be available in a demand response program, during a period of deviation from standard voltage or frequency, or supplying power during a non-emergency situation as part of a financial arrangement with another entity. [06-096 C.M.R. ch. 115, BPT]

C. M&N shall keep records that include maintenance conducted on the engine and the hours of operation of the engine recorded through the non-resettable hour meter. Documentation shall include the number of hours the unit operated for emergency purposes, the number of hours the unit operated for non-emergency purposes, and the reason the engine was in operation during each time. [06-096 C.M.R. ch. 115, BPT]

D. Emissions shall not exceed the following:

Unit	Pollutant	lb/MMBtu	Origin and Authority
Generator #1	PM	0.12	06-096 C.M.R. ch. 103 § 2(B)(1)(a)

E. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BPT]:

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator #1	0.60	0.60	neg	2.58	2.26	0.97

F. Visible emissions from Generator #1 shall not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]

(20) **Annual Emissions Limits**

A. Total emissions from all licensed sources at the facility shall not exceed the following on a 12-month rolling total basis. [06-096 C.M.R. ch. 115, BACT]

Pollutant	Tons/year
PM	7.5
PM ₁₀	7.5
SO ₂	6.5
NO _x	64.6
CO	85.1
VOC	38.3
Single HAP	9.9
Total HAP	24.9

B. As part of documenting compliance with the annual emission limits listed above, M&N shall include turbine emissions from startup, shutdown, and transient events and calculate turbine emissions based on the following:

Mode	Calculate Emissions Using Emission Factors Based On...
Startup	The emissions data supplied by the turbine manufacturer at the time of the most recent permit application.
Shutdown	The emissions data supplied by the turbine manufacturer at the time of the most recent permit application.
Normal Operation	Licensed emission limits for temperatures above 0 °F
Low Temperature	Licensed emission limits for appropriate temperature range
Transient Event	Licensed emission limits for temperatures less than or equal to -20 °F

[06-096 C.M.R. ch. 115, BACT]

C. M&N shall keep monthly records sufficient to document the facility's emissions on a 12-month rolling total basis and shall make those records available to the Department upon request. [06-096 C.M.R. ch. 115, BACT]

(21) **Fugitive Emissions**

Visible emissions from a fugitive emission source (including roadways) shall not exceed 20% opacity on a five-minute block average basis. [06-096 C.M.R. ch. 115, BPT]

(22) **General Process Sources**

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 115, BPT]

(23) **Annual Emission Statement**

A. In accordance with *Emission Statements*, 06-096 C.M.R. ch. 137, M&N shall annually report to the Department, in a format prescribed by the Department, the information necessary to accurately update the State's emission inventory. The emission statement shall be submitted as specified by the date in 06-096 C.M.R. ch. 137.

B. M&N shall keep the following records in order to comply with 06-096 C.M.R. ch. 137:

1. The amount of natural gas fired in each unit on a monthly basis;
 2. Calculations of emissions of all regulated pollutants from each emissions unit on a calendar year total basis;
 3. Calculations of the VOC and/or HAP emissions from gas releases and fugitive emissions on a calendar year total basis; and
 4. Hours of operation for each emission unit on a monthly basis.
- [06-096 C.M.R. ch. 137]

C. Beginning in reporting year 2020 and every third year thereafter, M&N shall report to the Department emissions of hazardous air pollutants as required by 06-096 C.M.R. ch. 137, § (3)(C). M&N shall pay the annual air quality surcharge, calculated by the Department based on these reported emissions of hazardous air pollutants, by the date required in Title 38 M.R.S. § 353-A(3). [38 M.R.S. § 353-A(1-A)]

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Departmental
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Air Emission License
Renewal with Amendment

- (24) M&N shall notify the Department within 48 hours and submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component causes a violation of any emission standard (38 M.R.S. § 605).

DONE AND DATED IN AUGUSTA, MAINE THIS 3 DAY OF April, 2019.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:

Marc Allen Robert Conner for
GERALD D. REID, COMMISSIONER

The term of this license shall be ten (10) years from the signature date above.

[Note: If a renewal application, determined as complete by the Department, is submitted prior to expiration of this license, then pursuant to Title 5 M.R.S. § 10002, all terms and conditions of the license shall remain in effect until the Department takes final action on the license renewal application.]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 8/13/18

Date of application acceptance: 8/13/18

Date filed with the Board of Environmental Protection:

This Order prepared by Lynn Muzzey, Bureau of Air Quality.

