Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

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March 30, 2017

Mr. Thomas Wooden Jr.
Vice President, Field Operations
Algonquin Gas Transmission, LLC.
P.O. Box 1642
Houston, TX 77251-1642

RE: **Weymouth**
Transmittal No.: X266786
Application No.: SE-15-027
Class: SM-25
FMF No.: 571926
AIR QUALITY PROPOSED PLAN APPROVAL

Dear Mr. Wooden:

The Massachusetts Department of Environmental Protection ("MassDEP"), Bureau of Air and Waste, has reviewed your non-Major Comprehensive Plan Application ("Application") listed above. This Application concerns the proposed construction of a natural gas fired turbine at your proposed gas pipeline compressor station located at 50 Bridge Street in Weymouth, Massachusetts ("Facility"). The Application bears the seal and signature of David Cotter Massachusetts Registered Professional Engineer Number 49068.

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 "Air Pollution Control" regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-N, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP's review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

In response to a public petition, accompanied by over one hundred (100) signatures, this Proposed Plan Approval has been made subject to a 30-day public comment period. All comments received will be considered and addressed, as appropriate, before taking a final action on the Plan Application.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby **Proposes** to grant this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Proposed Plan Approval, as it stipulates the conditions with which the Facility owner/operator ("Permittee") must comply in order for the Facility to be operated in compliance with this Proposed Plan Approval.

1. DESCRIPTION OF FACILITY AND APPLICATION

A. PROJECT DESCRIPTION

Algonquin Gas Transmission, LLC. ("Algonquin") has proposed the installation and operation of a new natural gas compressor station. This compressor station will support the capacity upgrades and expansion of Algonquin's natural gas transmission pipeline system, which runs from Mahwah, New Jersey to Beverly, Massachusetts for further transportation and deliveries on the Maritimes & Northeast Pipeline, LLC system. Collectively, this project is referred to as the Atlantic Bridge Project.

B. FACILITY and EQUIPMENT DESCRIPTION

The Facility will be on a 15.9± acre site bounded by Route 3A (Bridge St.), Calpine Fore River Energy Center, and the Fore River. The Facility includes an existing gas metering and regulation ("M&R") station.

The proposed natural gas compressor will be driven by one (1) Solar Taurus 60-7802 natural gas fired stationary combustion turbine. The turbine will fire pipeline natural gas as the exclusive fuel. The turbine will have a nominal heat input rating of 61.29 million British thermal units per hour ("MMBtu/hr"), lower heating value ("LHV"); and a nominal power output of 7,700 horsepower ("hp"), which is approximately 5.74 MW.[1] The turbine will have a maximum energy input rating of 74.91 MMBtu/hr, higher heating value ("HHV"); a maximum fuel rate of 73,444 standard cubic feet ("scf") per hour; and a maximum power output of 8,664 hp, which is approximately 6.46 megawatts ("MW").[2]

Exhaust gases from the proposed turbine will be emitted through a stack with an equivalent inside diameter of approximately 9 feet, which provides a nominal exit velocity of 28 feet per second at a nominal temperature of 999 °F. The top of the steel stack will be at least 60 feet above ground level.

The proposed turbine uses dry low NOx technology, operating under the brand name "SoLoNOx," which will limit nitrogen oxide ("NOx") emissions to 9 parts per million by volume, dry basis ("ppmvd") at 15 percent (%) oxygen ("O_2") while operating at ambient temperatures above 0 °F. The turbine will be equipped with an oxidation catalyst, which will reduce emissions of carbon monoxide ("CO") and volatile organic compounds ("VOC") by 95% and 50%, respectively. Emissions will not exceed 1.25 ppmvd at 15% O_2 for CO and 2.4 ppmvd

[1] At ISO conditions.
[2] At -20 degrees Fahrenheit.

at 15% O_2 for VOCs. All emissions factors, which are provided by the manufacturer, have been established as BACT. All emission rates are guaranteed by the manufacturer during steady-state operation at 50% – 100% load for all ambient temperatures above 0 °F.

The turbine has an efficiency rating of 35.7%, which is among the most efficient in its class. Turbine efficiency is the primary means to minimize emissions of carbon dioxide (CO_2).

Annual and short-term monthly emission limitations from the turbine are based on combined emissions from normal operations at an average annual ambient temperature of 46.65°F[3], start-up/shutdown, low temperature operation occurring within a temperature range of -20°F and 0°F, and transient events[4]. At low ambient temperatures (i.e. below 0 °F), emissions of NOx, CO, and VOCs will increase. During periods of low temperature, the emissions will be based on the emission factors provided by the manufacturer, which are listed in Table 8B of the Plan Approval. Transient events will be limited to 50 hours per month and 125 hours per consecutive 12-month period. Transient event emissions will be based on the emission factors provided by the manufacturer, which are listed in Table 8C of the Plan Approval.

The turbine's startup sequence takes approximately 9 minutes from the initial firing to steady-state operation. This includes 3 minutes of ignition-idle operation and 6 minutes of loading / thermal stabilization. During the startup sequence, it is assumed that the oxidation catalyst will not have reached its minimum effective operating temperature and as such, will not have a measurable destruction efficiency. Shutdown of the turbine takes approximately 3.5 minutes for loading and thermal stabilization, during which the oxidation catalyst will be at the required temperature to achieve the specified control efficiencies for CO and VOCs. Startup and shutdown emissions, which are supplied by the manufacturer, are listed in Table 8D of this Proposed Plan Approval.

As previously indicated, all emission rates are guaranteed by the manufacturer during steady-state operation at 50% – 100% load for all ambient temperatures above 0 °F. When the turbine is operating outside of those conditions (i.e., during transient, startup, shutdown, or low temperature events), the turbine monitoring system will indicate SoLoNOx is inactive.

The Facility will include one new natural gas-fired 585 brake horsepower Waukesha model VGF24GL emergency spark ignition engine generator set. This engine will be subject to requirements of MassDEP's Industry Performance Standards for Engines and Combustion Turbines at 310 CMR 7.26(40) through (44). MassDEP Air Quality regulations at 310 CMR 7.26(42)(e) "Emission Certification, Monitoring and Testing," requires certification under the "Environmental Results Program" at 310 CMR 70.00. Certification shall include a statement from the supplier that the installed engine is capable of complying with the emission limitations for the first three years of operation. A one-time certification is required to be made to MassDEP within 60 days of commencement of operation.

[3] USEPA TANKS 4.09d program for Worcester, MA (worst case of Worcester, Boston, and Providence, RI).
[4] Transient events are periods of time when the turbine is operating outside of steady state or at less than 50% load, excluding startup, shutdown, or low temperature events.

Fugitive emissions occur at piping components such as pump seals, valves, pipe fittings, and the compressor. Emissions were calculated based on the methodology and emission factors contained in EPA publication AP-42 (EPA/R-95-017). Fugitive emissions from piping components will be minimized through the implementation of a Leak Detection and Repair (LDAR) program. LDAR is a work practice designed to identify leaking equipment so that emissions can be reduced through repairs. Monitoring, at regular intervals, will identify leaking components so repairs can be made within the required timeframe. The LDAR program will use the monitoring and testing methodology contained in EPA Method 21 "Determination of Volatile Organic Compound Leaks" as contained in 40 CFR 60, Appendix A-7. The Permittee may use additional monitoring equipment, such as infrared detection, to supplement the required LDAR program.

Additional gas releases associated with the compressor operation occur at the Facility. These routine and non-routine releases are from compressor start-up / shutdown and from maintenance activities.

1. Routine operations, including startup and shutdown of the compressor, result in emissions from the following activities:
    - Case venting related to shutdown of the compressor. When the compressor is taken offline, isolation valves on the inlet and outlet gas lines of the compressor are closed. The pressurized gas remaining in the compressor and associated piping is vented;
    - Gas seal leakage during normal operation and standby shutdown (i.e., compressor seal leakage). Depending on the operating mode of the compressor and the length of time the unit may be in standby mode, the compressor may remain under pressure. If the compressor is in standby mode for a sufficient length of time, compressor seal leakage will result in emissions;
    - Air purges related to startup of the compressor following a depressurization of the unit. Equipment is purged of air and the system is pressurized prior to startup; and
    - Other ancillary activities, including releases from gas-operated pneumatic equipment.

2. Maintenance activities, including startup and shutdown of the compressor, result in emissions from the following activities:
    - Station blowdowns for purposes of major maintenance;
    - Case venting related to shutdown of the compressor for purposes of maintenance;
    - Air purges related to startup of the compressor following a depressurization of the unit. Equipment is purged of air and the system is pressurized prior to startup;
    - Liquid purges related to moving liquids through the pipeline liquids system; and
    - Other ancillary activities, including fuel line venting and air purging for ancillary equipment, such as emergency generators, and fuel gas heaters, and valve seat leakage.

3. Pipeline blowdowns.

- Venting of the pipeline section for maintenance purposes.

Incoming gas will be cleaned and any residual moisture will be removed. This collected water will be stored in a condensate storage tank and periodically transported off site. The associated piping and equipment will be included in the aforementioned Leak Detection and Repair program.

Equipment Exempt from Plan Approval

The following ancillary equipment is exempt from plan approval:

Table 1

Equipment Description	Basis for exemption
Natural gas fired turbine fuel gas heater Heat input rating 0.23 MMBtu/hr	310 CMR 7.02(2)(b)15.a.
5 catalytic space heaters Heat input rating 0.072 MMBtu/ hr each	310 CMR 7.02(2)(b)15.a.
Cold degreaser	310 CMR 7.03(8), which requires operation in a manner consistent with 310 CMR 7.18(8).
Waukesha model VGF24GL emergency engine generator set	310 CMR 7.26(40) through (44)
Separator vessels (4 units)	310 CMR 7.02(2)(b)11.
Condensate storage tank	310 CMR 7.02(2)(b)11.
Lubricating oil storage tank	310 CMR 7.02(2)(b)11.
Oily water storage tank	310 CMR 7.02(2)(b)11.
Hanover natural gas-fired heater [1] 9.5 MMBtu/hr	310 CMR 7.02(2)(b)15.a.
NATCO natural gas-fired heater [1] 6.8 MMBtu/hr	310 CMR 7.02(2)(b)15.a.
Lochinvar natural gas-fired boilers (3 units)[1] 1.8 MMBtu/hr, each	310 CMR 7.02(2)(b)15.a.

Table 1 Notes:

1. The Hanover gas fired heater, the NATCO gas-fired heater, and the 3 Lochinvar gas-fired boilers are existing equipment associated with the metering and regulation station.

Table 1 Key:

CMR = Code of Massachusetts Regulations MMBtu/hr = million British Thermal Units per hour

Sound Impacts and Mitigation

Operation of the Facility will create several sources of sound, which will be mitigated as follows: 1. Insulated / acoustically treated building housing the turbine and compressor, 2. use of a sound suppressant muffler on the turbine exhaust, 3. acoustical pipe insulation for outdoor above ground piping, 4. a silencer for the turbine air intake system, 5. low-noise lube oil coolers, 6. a low-noise gas cooler, and 7. a blowdown silencer.

The Facility is designed to meet the Federal Energy Regulatory Commission ("FERC") standards for air and noise quality, which limits noise attributable to any new compressor station to an average day-night sound level of 55 decibels A weighted ("dB(A)") at any pre-existing noise sensitive area ("NSA")[5].

A sound analysis[6], which was included with the Air Plan Application, evaluated sound impacts at nine NSA's as follows:

- NSA #1; Residences located on the North Side of Bridge Street, in Weymouth, approximately 610 feet south-southeast of the Station site "acoustic center" (i.e., anticipated location of Compressor Building);
- NSA #2; Residences at the end of Saint German St. (area of Germantown Point; Town of Quincy), approximately 1,370 feet north of the Station site center;
- NSA #3; Residences located along Kings Cove Beach Road (near Hunt Hills Point, Weymouth), approximately 1,560 feet east of the Station site center;
- NSA #4; Residences located near the intersection of Monatiquot Street and Vaness Road (Weymouth), approximately 900 feet south of the Station site center;
- NSA #5; Residences located along Kings Cove Way (Weymouth), approximately 1,030 feet southeast (SE) of the Station site center;
- NSA #6; Residences located in the area of Roslind Road and Evans Road (Weymouth), approximately 2,300 feet SE of the Station site center;
- NSA #7; Residences located in the area of Weybosset Street and Fore River Ave. (Weymouth), approximately 1,970 feet east-northeast (ENE) of the Station site center;
- NSA #8; Residences located along Dee Road (Quincy), approximately 2,400 feet west of the Station site center; and
- NSA #9; Johnson School (Pearl Street, Weymouth), located approximately 4,200 feet east-southeast (ESE) of the Station site center.

[5] 18 CFR 380.12(k)(4)(v)(A). A NSA as defined therein includes schools, hospitals, and residences.
[6] Hoover & Keith, Inc., *Weymouth Compressor Station Results of Additional Ambient Sound Survey and Updated Acoustical Analysis of a New Natural Gas Compressor Station Associated with the Proposed Atlantic Bridge Project*, dated January 11, 2017.

MassDEP's Noise Policy limits the maximum sound impacts attributable to a noise source to an increase in the broadband sound level of no more than 10 dB(A) above ambient. The sound impact analysis indicates that the Facility will not cause an increase in sound in excess of the sound impacts allowed by MassDEP's Noise Policy. The results of the sound impact analysis are as follows:

Table 2

Identified Receptor	Distance & Direction of Receptor/NSA	Measured Ambient Nighttime L90 (dBA)	Calculated Sound Level of Station [dB(A)]	Calculated Station Level + Lowest Ambient Level [dB(A)]	Increase above Lowest Ambient Level [dB(A)]
NSA 1	610 feet (SSE)	44.8	42.6	46.9	2.1
NSA 2	1,370 feet (north)	46.8	35.7	47.1	0.3
NSA 3	1,560 feet (east)	44.0	34.4	44.4	0.4
NSA 4	900 feet (south)	48.5	38.9	48.9	0.4
NSA 5	1,030 feet (SE)	41.3	37.5	42.8	1.5
NSA 6	2,300 feet (SE)	41.4	29.3	41.7	0.3
NSA 7	1,970 feet (ENE)	39.3	31.8	40.0	0.7
NSA 8	2,400 feet (west)	44.5	28.9	44.6	0.1
NSA 9	4,200 feet (ESE)	41.0	22.7	41.1	0.1

Table 2 Key:

ENE = east northeast
ESE = east southeast
SE = southeast
SSE = south southeast
dB(A) = decibels, A weighted
NSA = noise sensitive area

In addition, the sound impact analysis indicates the sound contribution at the closest station property line, which is the east station property line shared with the King's Cove Parcel, will not exceed the MassDEP Noise Policy.

MassDEP's Noise Policy also prohibits a "pure tone" condition, which is defined as when any octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by 3 decibels or more. A review of the sound analysis and associated supplemental forms submitted with the Application indicate operation of the Facility will not create a pure tone condition.

Accordingly, the predicted sound impacts generated by the Facility will meet the requirements of MassDEP's Noise Policy. A post-construction compliance demonstration for sound impacts is required herein.

C. EMISSIONS MODELING

An air dispersion modeling analysis[7] was conducted to demonstrate that the project's ambient air impacts, combined with the pre-existing background levels, will not cause or contribute to a violation of the National Ambient Air Quality Standards ("NAAQS"). The primary standards are health based standards established under the United States Clean Air Act ("CAA") that are designed to preserve public health and protect sensitive subpopulations, which include people with diseases (e.g. asthma, cardiovascular disease), children, and the elderly with an adequate margin of safety. The Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings

EPA has established Significant Impact Levels ("SILs"), which are numerical values that are used to evaluate the impact that a proposed source may have on the NAAQS (72 CFR 54.138). The SIL is the level of ambient impact below which the EPA considers a source to have an insignificant impact on air quality (72 CFR 54.130). The SILS are a small fraction of the NAAQS and ambient impacts below the SIL are commonly referred to as "de minimis." If the modeling shows that: (1) the predicted impact of a pollutant is less than the SIL, and (2) the difference between the background ambient air concentration and the NAAQS for that pollutant is greater than the SIL, the predicted impact of that pollutant is deemed insignificant. In these circumstances, MassDEP follows EPA Guidance and concludes that the emissions of that pollutant do not cause or contribute to a violation of the NAAQS without requiring cumulative impact modeling.

Table 3

Comparison of Maximum Predicted Impacts with Significant Impact Levels

Pollutant	Averaging Period	Max Impact ($\mu g/m^3$)	SIL ($\mu g/m^3$)	Below SIL
NO_2	1-Hour	**14.4**	7.5	**no**
	Annual	**2.0**	1	**no**
SO_2	1-Hour	6.5	7.8	yes
	3-Hour	6.3	25	yes
	24-Hour	**5.5**	5	**no**
	Annual	0.8	1	yes
PM_{10}	24-Hour	2.6	5	yes
$PM_{2.5}$	24-Hour	**2.3**	1.2	**no**
	Annual	**0.35**	0.3	**no**
CO	1-Hour	122.8	2,000	yes
	8-Hour	101.0	500	yes

[7] Trinity Consultants, *Air Dispersion Modeling Report, Algonquin Gas Transmission, LLC., Weymouth Compressor Station*, dated September 2016.

Table 3 Key:

CO = Carbon Monoxide
NO_2 = Nitrogen Dioxide
PM_{10} = Particulate Matter ≤ 10 microns in diameter
$PM_{2.5}$ = Particulate Matter ≤ 2.5 microns in diameter
SO_2 = Sulfur Dioxide
SIL = significant impact level
$\mu g/m^3$ = micrograms per cubic meter

Since the predicted impacts of SO_2 (1-hour, 3-hour, and annual averaging periods), PM_{10}, and CO are below the SIL, no additional modeling was performed. The predicted impacts of NO_2, $PM_{2.5}$, and SO_2 (24-hour averaging period) exceed the SIL, so a cumulative impact analysis was performed.

In evaluating cumulative impacts with respect to the NAAQS, maximum modeled impacts were added to representative ambient background concentrations and compared to the applicable NAAQS. The Applicant used background data obtained from MassDEP's existing monitoring station on Harrison Avenue in Roxbury. The background data, when added to the modeled impacts found that the maximum impacts from emissions from the proposed facility will be below the NAAQS, as indicated below:

Table 4

Comparison of Predicted Impact Concentrations with NAAQS

Pollutant	Averaging Period	Algonquin Compressor Station Impact ($\mu g/m^3$)	Measured Background ($\mu g/m^3$)	Background plus Compressor Station Total Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Background plus Compressor Station % of NAAQS
NO_2	1-Hour	57.85	91.0	148.85	188	79.2%
	Annual	7.67	32.8	40.47	100	40.5%
SO_2	24-Hour	14.87	23.1	37.97	365	10.4%
$PM_{2.5}$	24-Hour	4.87	16.4	21.27	35	60.8%
	Annual	1.34	7.2	8.54	12	71.2%

Table 4 Key:

NAAQS = National Ambient Air Quality Standards
NO_2 = Nitrogen Dioxide
SO_2 = Sulfur Dioxide
$\mu g/m^3$ = micrograms per cubic meter
PM = Particulate Matter
$PM_{2.5}$ = Particulate Matter ≤ 2.5 microns in diameter
% = percent

The air dispersion modeling analysis also included an evaluation of the Facility's impacts relative to the MassDEP's 24-hour Threshold Effect Exposure Limits ("TELs") and annual Allowable Ambient Limits ("AALs") Guideline values for air toxics. The AALs and TELs were evaluated from Facility-wide sources at both 50% and 100% turbine load.

Table 5						
Pollutant	**TEL (24-hour)**			**AAL (annual)**		
	TEL Limit ($\mu g/m^3$)	**Modeled concentration ($\mu g/m^3$)**	**percent of limit[1]**	**AAL Limit ($\mu g/m^3$)**	**Modeled concentration ($\mu g/m^3$)**	**percent of limit[1]**
Acetaldehyde	30	5.95E-02	0.2	0.40	9.54E-03	2.4
Acrolein	0.07	3.67E-02	52.5	0.07	5.88E-03	8.4
Benzene	0.6	3.96E-01	66.0	0.1	5.66E-02	56.6
1,3 Butadiene	1.20	1.91E-03	0.2	0.003	3.10E-04	10.3
Carbon tetrachloride	85.52	2.60E-04	0.0	0.07	4.00E-05	0.1
Chlorobenzene	93.88	2.20E-04	0.0	6.26	3.00E-05	0.0
Chloroform	132.76	2.00E-04	0.0	0.04	3.00E-05	0.1
Dichloromethane	100.00	1.40E-04	0.0	60.00	2.00E-05	0.0
Diphenyl	0.34	1.52E-03	0.4	0.09	2.40E-04	0.3
Ethylbenzene	300	1.19E-01	0.0	300	1.70E-02	0.0
Formaldehyde	2.00	3.82E-01	19.1	0.08	6.92E-02	86.5
Methanol	7.13	1.79E-02	0.3	7.13	2.86E-03	0.0
2-Methylnaphthalene	14.25	2.40E-04	0.0	14.25	4.00E-05	0.0
Naphthalene	14.25	1.29E-03	0.0	14.25	2.40E-04	0.0
Phenol	52.33	1.70E-04	0.0	52.33	3.00E-05	0.0
Propylene oxide	6.00	1.71E-02	0.3	0.30	1.93E-03	0.6
Styrene	200	1.70E-04	0.0	2	3.00E-05	0.0
1,1,2,2 Tetrachloroethane	18.67	3.00E-04	0.0	0.02	5.00E-05	0.3
Toluene	80	9.00E-01	1.1	20	1.29E-01	0.6
1,1,2 Trichloroethane	14.84	2.30E-04	0.0	0.06	4.00E-05	0.1
Vinyl chloride	3.47	1.10E-04	0.0	0.38	2.00E-05	0.0
xylenes	11.8	1.20E+00	10.2	11.8	1.72E-01	1.5

Table 5 Notes:
1. – Modeled concentration as a percent of limit.

Table 5 Key:

AAL = Ambient Air Limit
TEL = Threshold Effect Exposure Limit
$\mu g/m^3$ = micrograms per cubic meter

Based upon a review of the modeling analysis contained in the application, maximum impacts from emissions from the proposed facility will be below the AALs/TELs.

D. REGULATORY APPLICABILITY

The Permittee has indicated that the Facility, emission units therein, or exempt equipment are subject to and will comply with the EPA's New Source Performance Standards ("NSPS") and National Emissions Standards for Hazardous Air Pollutants ("NESHAPs") and MassDEP's Industry Performance Standards, as follows:

Table 6

Affected Unit	Applicable Regulation	Title
Combustion turbine	40 CFR part 60 subpart KKKK	Standards of Performance for Stationary Combustion Turbines
Compressor station	40 CFR part 60 subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification, or Reconstruction Commenced after September 18, 2015
Emergency engine [1]	310 CMR 7.26(40)-(42) and (44)	Industry Performance Standards – Engines and Combustion Turbines
	40 CFR part 60 subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
	40 CFR part 63 subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Table 6 Notes:
1. The emergency engine is exempt from plan approval; refer to Table 1 of this document for basis.

Table 6 Key:

CFR = Code of Federal Regulations CMR = Code of Massachusetts Regulations

The Permittee is advised that MassDEP has not accepted delegation for 40 CFR part 60 subpart JJJJ, subpart KKKK, or subpart OOOOa, or 40 CFR part 63 subpart ZZZZ. The Permittee is advised to consult with the EPA regarding the requirements of the NSPS and NESHAPs.

E. ENVIRONMENTAL JUSTICE

On January 30, 2017, the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) adopted an updated Environmental Justice Policy ("EJ Policy") that requires MassDEP to make environmental justice an integral consideration in the implementation and enforcement of laws, regulations, and policies. The enhanced public participation / enhanced analysis requirements of the EJ Policy apply when the project / project site meet both thresholds:

(1) Any project that exceeds an Environmental Notification Form ("ENF") / Environmental Impact Report ("EIR") threshold for air, solid and hazardous waste (other than remediation projects), or wastewater and sewage sludge treatment and disposal; and

(2) The project site is located within one mile of an EJ Population (or in the case of projects exceeding an ENF / EIR threshold for air, within five miles of an EJ Population).

The EEA Geographic Information System includes environmental justice areas divided by block groups based on the 2010 US Census data. Based on environmental justice mapping completed by EEA, the Facility is within 5 miles of a number of environmental justice communities in the Towns of Weymouth, Braintree, Quincy, Randolph, and the City of Boston.

This Project does not exceed the ENF / EIR requirements at 301 CMR 11.00, therefore, the updated Environmental Justice Policy dated January 30, 2017 is not applicable.

2. EMISSION UNIT IDENTIFICATION

Each Emission Unit ("EU") identified in Table 7 is subject to and regulated by this Proposed Plan Approval:

Table 7

EU	Description	Design Capacity	Pollution Control Device (PCD)
1	Solar Taurus 60 natural gas fired compressor turbine	7,700 hp / 5.74 MW (nominal) [1] 8,664 hp / 6.46 MW (peak) [2]	Oxidation catalyst
2	Venting (gas releases)	Not applicable	none
3	Piping components	Not applicable	LDAR program

Table 7 Notes:
1. At ISO conditions.
2. At -20 degrees Fahrenheit.

Table 7 Key:

EU = Emission Unit Number
hp = horsepower
ISO = International Organization for Standardization
LDAR = Leak Detection and Repair
MW = megawatts (mechanical)
PCD = Pollution Control Device

3. APPLICABLE REQUIREMENTS

A. OPERATIONAL, PRODUCTION and EMISSION LIMITS

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 8A, 8B, 8C, and 8D:

Table 8A
Standard Operating Conditions

EU	Operational / Production Limit	Air Contaminant	Emission Limit [1, 2, 3]
1	1. 54.64 MMscf natural gas per month 2. 592.23 MMscf natural gas per consecutive 12-month period 3. Natural gas shall be the exclusive fuel of use	NOx	9 ppmvd at 15% O_2 0.93 tpm 9.96 tpy
	4. Minimum temperature at inlet of catalyst bed ≥ 880°F (hourly average basis) 5. Minimum pressure drop across the catalyst bed ≥ 2.83 in. W.C. (hourly average basis)	CO	1.25 ppmvd at 15% O_2 2.12 tpm 16.77 tpy
		VOC	2.4 ppmvd @ 15% O_2 0.12 tpm 1.26 tpy
		HAP (single)	0.01 tpm 0.10 tpy
		HAP (total)	0.03 tpm 0.28 tpy
	6. None	SO_2	14.29 lb/MMscf (HHV) 0.37 tpm 4.23 tpy
	7. None	PM PM_{10} $PM_{2.5}$	0.0066 lb/MMBtu (HHV) 0.18 tpm 1.99 tpy
	8. None	Opacity	Less than 5%, except 5% to less than 10% for up to 2 minutes during any one hour
2	9. Monthly emissions established in accordance with equation 1 10. Annual emissions established in accordance with equation 2	VOC	15.26 tpm 18.93 tpy
		HAP (single)	0.73 tpm 0.82 tpy
		HAP (total)	0.95 tpm 1.09 tpy

Equation 1:

$$m_{Pollutant_{month}} = Q_{Gas_{month}} \rho_{Gas_{monthly\ average}} wt\%_{Pollutant_{monthly\ average}}$$

Equation 2:

$$m_{Pollutant_{consecutive\ 12-month\ period}} = \sum_{month=1}^{consecutive\ 12-month\ period} m_{Pollutant_{month}}$$

m =	mass of pollutant, in pounds	*wt*% =	weight percent of pollutant in natural gas
Q =	quantity of natural gas in standard cubic feet	ρ =	density of natural gas in pound per standard cubic feet

Table 8B
Low Temperature Operation [4]

EU	Air Contaminant	Emission Limit	
		0°F ≥ Temp ≥ -20°F	Temp ≤ -20°F
1	NOx	11.36 lb/hr	32.46 lb/hr
	CO	0.82 lb/hr	1.24 lb/hr
	VOC	0.52 lb/hr	0.77 lb/hr
	PM/ PM_{10} / $PM_{2.5}$	0.49 lb/hr	0.49 lb/hr
	SO_2	1.05 lb/hr	1.05 lb/hr

Table 8C
Transient Events [5,8]

EU	Operational / Production Limit	Air Contaminant	Emission Limit
1	1. Operations during transient events (operation with SoLoNOx inactive, not including startup, shutdown, or low temperature events), not to exceed 50 hours per month and 125 hours in any consecutive 12-month period	NOx	18.6 lb/hr
		CO	80.4 lb/hr
		VOC	10.2 lb/hr

Table 8D
Startup / Shutdown Emissions [6]

EU	Operational / Production Limit	Air Contaminant	Startup	Shutdown [6]
1	1. Operation during startups (from first combustion of fuel to when SoLoNOx is active, but not to exceed 30 minutes) 2. Operation during shutdowns (from when SoLoNOx is inactive to flame out, but not to exceed 30 minutes)	NOx	0.80 lb/event	0.38 lb/event
	3. Operation during startups (from first combustion of fuel to when the temperature at the inlet to the catalyst bed reaches at least 880 °F, but not to exceed 30 minutes) 4. Operation during shutdowns (from initial lowering of	CO	77.24 lb/event	1.74 lb/event
		VOC	0.97 lb/event	0.22 lb/event

Table 8D **Startup / Shutdown Emissions [6]**				
EU	**Operational / Production Limit**	**Air Contaminant**	**Startup**	**Shutdown [6]**
	turbine fuel combustion rate with the intent to cease operation to flame out, but not to exceed 30 minutes)			

Table 8A, 8B, 8C, and 8D Key:

CMR = Code of Massachusetts Regulations
CO = Carbon Monoxide
EU = Emission Unit Number
°F = degrees Fahrenheit
HAP (single) = maximum single Hazardous Air Pollutant
HAP (total) = total Hazardous Air Pollutants
HHV = higher heating value
in WC= inches water column
lb = pounds
lb/event = pounds per event
lb/hr = pounds per hour
lb/MMBtu = lbs per million British Thermal Units
lb/MWh = pounds per megawatt hour
LDAR = Leak detection and repair
MMBtu million British Thermal Units
MMscf = million standard cubic feet
NO_x = Nitrogen Oxides
O_2 = oxygen
PM = Particulate Matter
$PM_{2.5}$ = Particulate Matter ≤ 2.5 microns in diameter
PM_{10} = Particulate Matter ≤ 10 microns in diameter
ppmvd = parts per million by volume, dry basis
Scf = standard cubic feet
SO_2 = Sulfur Dioxide
Temp = temperature
TPM = tons per month
TPY = tons per consecutive12-month period
VOC = Volatile Organic Compounds
≥ greater than or equal to
≤ less than or equal to

Table 8A, 8B, 8C, and 8D Notes:

1. Short-term monthly emission limits are combined emissions based on normal operation at an average annual ambient temperature of 46.65°F, start-up/shutdown, low temperature operation during a temperature range of -20°F to 0°F, and transient events.
2. Annual emissions are combined emissions based on normal operation at an average annual ambient temperature of 46.65°F, start-up/shutdown, low temperature operation during a temperature range of -20°F to 0°F, and transient events.
3. Compliance with the emission limits based on the applicable USEPA reference test method.
4. Emissions associated with low temperature operation are to be included when determining monthly and annual emissions.
5. Emissions associated with transient events are to be included when determining monthly and annual emissions.

6. Emissions associated with startups and shutdowns are to be included when determining monthly and annual emissions.
7. The shutdown emission limits for VOC and CO are based on the oxidation catalyst being operational.
8. Transient events are periods of operation when the turbine is operating outside of steady state or when operating at less than 50% load.

B. COMPLIANCE DEMONSTRATION

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 9, 10, and 11:

Table 9

EU	Monitoring and Testing Requirements
1	1. The Permittee shall continuously monitor the turbine inlet temperature at all times that the turbine is operated.
	2. The Permittee shall continuously monitor the quantity of natural gas combusted in the turbine.
	3. The Permittee shall continuously monitor: a. the temperature at the inlet of oxidation catalyst bed, b. the pressure drop across the catalyst bed.
	4. The Permittee shall monitor the number of startups and shutdowns of the turbine and the duration of each event.
	5. The Permittee shall monitor the number of transient events and the duration of each event, as indicated by SoLoNOx inactive status, not including startup, shutdown, and low temperature events, which are monitored separately.
	6. Within 60 days of achieving maximum production rate, but no later than 180 days of startup, the Permittee shall conduct initial compliance testing for the emission unit. The testing shall be conducted on a date mutually agreed upon with MassDEP. Testing shall be conducted for NOx, CO, VOC, and $PM_{2.5}$ to determine the compliance status with the ppmvd, lb/MMBtu and lb/hr for standard operating conditions as listed in Table 8A. The performance test must be done at any load condition within plus or minus 25 percent of 100 percent of peak load. You may perform testing at the highest achievable load point, if at least 75 percent of peak load cannot be achieved in practice. The Permittee shall conduct subsequent testing every two (2) years from the date of the initial compliance test.
	7. In order to demonstrate compliance with the applicable fuel sulfur requirement, the Permittee will utilize a current, valid purchase contract, tariff sheet or transportation contract for natural gas that will specify the maximum total sulfur content of the natural gas used at the facility.
2	8. The Permittee shall monitor the date, time, duration, and quantity of gas released for each gas release event.

Table 9	
EU	**Monitoring and Testing Requirements**
3	9. The Permittee shall monitor the piping components in accordance with the LDAR program. Refer to Special Condition, Provision 5.
Facility-wide	10. The Permittee shall monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	11. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and Regulation 310 CMR 7.13.
	12. At least 30 days prior to emission testing, the Permittee shall submit to MassDEP for approval, a stack emission pretest protocol.
	13. Within 45 days after emission testing, the Permittee shall submit to MassDEP a final stack emission test results report.
	14. The Permittee shall conduct sound impact testing to demonstrate that the Facility does not cause any sound impacts in excess of MassDEP's Noise Policy. This testing may be conducted concurrently with FERC's required sound impact testing. The sound impact testing shall be conducted within 90 days of the date of this Plan Approval or in a timeframe as required by FERC, whichever comes later. A pretest protocol shall be submitted to MassDEP at least 30 days prior to the sound impact testing.

Table 9 Key:

CMR = Code of Massachusetts Regulations
CO = Carbon Monoxide
EU = Emission Unit Number
FERC = Federal Energy Regulatory Commission
lb/hr = pounds per hour
lb/MMBtu = pounds per million British Thermal Units
MassDEP = Massachusetts Department of Environmental Protection.
NO_x = Nitrogen Oxides
PM = Total Particulate Matter
PM_{10} = Particulate Matter ≤ 10 microns in diameter
$PM_{2.5}$ = Particulate Matter ≤ 2.5 microns in diameter
ppmvd = parts per million by volume, dry basis
VOC = Volatile Organic Compounds
USEPA = United States Environmental Protection Agency.
≤ = less than or equal to

Table 10	
EU	**Record Keeping Requirements**
1.	1. The Permittee shall maintain average hourly records of the turbine inlet temperature at all times that the turbine is operated. The record shall indicate the actual ambient temperature for each hour the turbine is in operation. On days when the temperature never drops below 0 °F, the record may indicate the average daily temperature.
	2. The Permittee shall maintain records of the daily, monthly, and annual gas flow to the turbine.

Table 10	
EU	**Record Keeping Requirements**
	3. The Permittee shall maintain records of: a. the hourly average inlet temperature of the oxidation catalyst bed, b. the hourly average pressure drop across the catalyst bed.
	4. The Permittee shall maintain records of each transient event, the duration of each event, and associated emissions, separate from startup, shutdown, and low temperature events.
	5. The Permittee shall maintain records of each startup, shutdown, the duration of each event, and associated emissions.
	6. The Permittee shall maintain records of the status of SoLoNOx mode at all times that the unit is in operation.
	7. The Permittee shall maintain records of each transient event, the duration of each event, and associated emissions, separate from startups and shutdowns.
2.	8. The Permittee shall maintain records of the date, time, duration and quantity of natural gas emitted for each gas release event.
3.	9. The Permittee shall maintain the following records: a. the date of each LDAR inspection, b. components monitored, c. leaks identified, d. date of each repair, e. date of re-monitoring to validate repairs, f. an up to date Delay of Repair list, including the basis for being on the list, g. any additional items to document compliance with the LDAR program.
Facility-wide	10. The Permittee shall maintain adequate records to demonstrate compliance status with all operational, production, and emission limits contained in Table 8A, above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive 12-month period (current month plus prior eleven months). These records shall be compiled no later than the 15th day of the month following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping. The Permittee may propose an alternative record keeping spreadsheet for approval by MassDEP
	11. The Permittee shall maintain records of monitoring and testing as required by Table 9.
	12. The Permittee shall maintain a copy of this Plan Approval, underlying Application and the most up-to-date SOMP for the EU(s) and PCDs approved herein.
	13. The Permittee shall maintain a record of routine maintenance activities performed on the approved EU(s), PCD(s) and monitoring equipment. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.

Table 10	
EU	**Record Keeping Requirements**
	14. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU(s), approved PCDs and monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.
	15. The Permittee shall maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	16. The Permittee shall maintain records required by this Plan Approval on-site for a minimum of five (5) years.
	17. The Permittee shall make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.
	18. All records required herein shall be maintained on-site. Alternatively, electronic records may be maintained at a remote location, provided the records are readily available upon request.

Table 10 Key:

CMR = Code of Massachusetts Regulations
EU = Emission Unit Number
°F = degrees Fahrenheit
LDAR = Leak Detection and Repair

MassDEP = Massachusetts Department of Environmental Protection.

PCD = Pollution Control Device

SOMP = Standard Operating and Maintenance Procedure

USEPA = United States Environmental Protection Agency

Table 11	
EU	**Reporting Requirements**
Facility-wide	1. The Permittee shall notify MassDEP upon commencement of construction, upon initial startup, and upon commencement of commercial operation of the equipment approved herein. Each notification shall be made within 30 days of the respective milestone.
	2. The Permittee shall notify MassDEP prior to any planned pipeline blowdowns with volume expected to be greater than 1 MMscf. The notification shall include the date(s), time(s), and expected duration of the blowdown(s). The notification shall identify the estimated quantity of emissions from the blowdown, steps taken to minimize emissions, and steps taken to minimize any potential nuisance impacts. This notification shall be provided to MassDEP no later than 48 hours prior to the event. The Weymouth Board of Health shall be provided a copy of this notification.
	3. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a "Responsible Official" as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).

Table 11	
EU	**Reporting Requirements**
	4. The Permittee shall notify the Southeast Regional Office of MassDEP, BAW Compliance & Enforcement Chief by telephone: 508-946-2878, email: Sero.Air@massmail.state.ma.us, or fax : (508) 946-2714, as soon as possible, but no later than three (3) business day after discovery of an exceedance(s) of Table 8A, 8B, or 8C requirements. A written report shall be submitted to the Compliance & Enforcement Chief at MassDEP within ten (10) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).
	5. The Permittee shall report to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Permittee shall note therein any minor changes (under 310 CMR 7.02(2)(e), 7.03, 7.26, etc.), which did not require Plan Approval.

Table 11 Key:

EU = Emission Unit Number

MassDEP = Massachusetts Department of Environmental Protection.

CMR = Code of Massachusetts Regulations

MMscf = million standard cubic feet

4. SPECIAL TERMS AND CONDITIONS

A. The Permittee is subject to, and shall comply with, the Special Terms and Conditions as contained in Table 12 below:

Table 12	
EU	**Special Terms and Conditions**
1	1. The oxidation catalyst shall not be by-passed at any time.
	2. The oxidation catalyst shall be operated and maintained in accordance with the manufacturer's recommendations.
	3. The turbine and associated compressor shall be operated and maintained in accordance with the manufacturer's recommendations.

Table 12	
EU	**Special Terms and Conditions**
3.	4. Prior to initial startup, the Permittee shall submit a Leak Detection and Repair (LDAR) program for MassDEP review and approval. The LDAR program is in addition to any specific LDAR criteria established in this Plan Approval and at a minimum shall include: a. a system to identify every component that requires monitoring, b. leak definition, which includes, but is not limited to, any visual or audible standards. This is in addition to the standards defined in this Plan Approval, c. monitoring requirements and frequency, d. repair requirements, which is to include standards for initial repair, final repair, and any standards to place an item on a Delay of Repair list, e. employee training, f. recordkeeping. The LDAR program shall be no less stringent than the leak detection and repair requirements contained in 40 CFR 60 subpart OOOOa. Any changes to the LDAR program shall be submitted to MassDEP prior to implementation.
	5. For piping components in natural gas service, a leak shall be emissions in excess of the following: a. For valves & connectors: any detected concentration 500 ppmv, or greater b. For optical gas imaging: any detected emissions.
	6. For piping components in pipeline liquids service, a leak shall be emissions in excess of the following: a. For valves & connectors: any detected concentration 500 ppmv, or greater b. For pump seals: any detected concentration 10,000 ppmv, or greater

Table 12 Key:

EU = Emission Unit Number
ppmv = parts per million by volume
≤ = less than or equal to
LDAR = Leak Detection and Repair
% = percent

B. The Permittee shall install and use an exhaust stack, as required in Table 13, on each of the Emission Units that is consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including, but not limited to, rain protection devices known as "shanty caps" and "egg beaters."

C. The Permittee shall install and utilize exhaust stacks with the following parameters, as contained in Table 13, for the Emission Units that are regulated by this Proposed Plan Approval:

Table 13				
EU	**Minimum Stack Height Above Ground (feet)**	**Nominal Stack Inside Exit Dimensions (feet)**	**Nominal Stack Gas Exit Velocity Range (feet per second)**	**Nominal Stack Gas Exit Temperature Range (°F)**
1	60	9 note 1	25 – 28	865 - 999
2	No stack			
3	No stack			

Table 13 Key:

EU = Emission Unit Number

°F = Degree Fahrenheit

Table 13 Notes:

1. Equivalent diameter for rectangular stack

5. GENERAL CONDITIONS

The Permittee is subject to, and shall comply with, the following general conditions:

A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).

B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.

C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.

D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.

E. This Proposed Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.

F. Should there be any differences between the Application and this Proposed Plan Approval, the Proposed Plan Approval shall govern.

G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Proposed Plan Approval if the construction work is not commenced within two years from the date of issuance of this Proposed Plan Approval, or if the construction work is suspended for one year or more.

H. This Proposed Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Proposed Plan Approval is being violated.

I. This Proposed Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Proposed Plan Approval conditions or after consideration of a written request by the Permittee to amend the Proposed Plan Approval conditions.

J. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Proposed Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Proposed Plan Approval, the latter shall govern.

6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT

In a letter dated March 15, 2016 and in a follow-up letter dated May 31, 2016 to the Secretariat of the Executive Office of Energy and Environmental Affairs ("EOEEA"), the Town of Weymouth requested an advisory opinion on the applicability of this project to review under the Massachusetts Environmental Policy Act ("MEPA"). The request for Advisory Opinion requested MEPA invoke the Fail-Safe provisions, requiring the proposed project go through the MEPA review process. Secondly, the request for Advisory Opinion indicated that the proposed Atlantic Bridge Project may have been improperly segmented from the proposed Access Northeast Project[8]. The request for Advisory Opinion was published in the June 8, 2016 Environmental Monitor for public review and comment, subject to a 20-day comment period.

In a letter dated July 11, 2016 to the Mayor of the Town of Weymouth, the Secretariat of the EOEEA concluded "that the project is not subject to MEPA review and the project does not meet the criteria for invoking Fail-Safe Review." Additionally, a determination was made that the Atlantic Bridge Project and the Access Northeast Project "are sufficiently distinct in purpose, design, and scope that they have independent utility and can be reviewed separately."

[8] Algonquin has submitted an application for the Access Northeast Project to FERC. Currently, no Air Quality Plan Application has been submitted to MassDEP.

Should you have any questions concerning this Plan Approval, please contact the undersigned by telephone at 508-946-2824, or in writing at the letterhead address.

PROPOSED

Thomas Cushing
Permit Chief
Bureau of Air and Waste

Enclosure

cc: Weymouth Board of Health/Dept. of Health
Weymouth Fire Department
MassDEP / SERO- M. Garcia-Serrano
M. Pinaud
L. Ramos
MassDEP / Boston- K. Kerigan
Y. Tian
Algonquin Gas T. Doyle
Trinity Consultants - D. Cotter