

Algonquin Gas Transmission, LLC.

Natural gas pipeline compressor, Weymouth, Massachusetts

Proposed Non Major Comprehensive Air Quality Plan Application “Proposed Plan Approval”

Application Number: SE-15-027

Transmittal Number: X266786

MassDEP Response to Public Comments on the “Proposed Plan Approval” - January 2019

On October 22, 2015 Algonquin Gas Transmission, LLC (“Applicant”) submitted to MassDEP a Non-Major Comprehensive Plan Application (“CPA”) for the installation and operation of a natural gas compressor station (“Project”) to be located at 50 Bridge Street in Weymouth, Massachusetts (“Facility”).

Although state regulation in force at the time did not require a public comment period for a proposed Plan Approval, due to public interest in the Project MassDEP conducted a 30-day public comment period that was opened on March 30, 2017 and a public notice was published on MassDEP’s website. MassDEP continued to accept comments that were submitted beyond the conclusion of the public comment period. In response to the public comments received, MassDEP requested additional information and analysis as it continued its review of the CPA.

MassDEP received a significant number of comments, totaling over 1,200. Please see Attachment A for a list of commenters. In general, commenters expressed opposition to the proposed Project to construct and operate a natural gas compressor station in a densely populated neighborhood and raised concerns regarding risks to public safety, health and the environment.

After careful review of all comments received, MassDEP has made a final decision to approve the CPA. MassDEP has prepared this document, known as the “Response to Comments” (“RTC”), which describes and addresses significant issues raised during the comment period that are related to MassDEP’s statutory and regulatory authority for air pollution control, and describes any requirements of the “Proposed Plan Approval” that have been changed along with the reasons for the changes and / or clarifications. This RTC summarizes all the comments received and includes MassDEP’s response to the comments.

Introduction

The Clean Air Act (“CAA”) is the comprehensive federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes the United States Environmental Protection Agency (“EPA”) to establish National Ambient Air Quality Standards (“NAAQS”) to protect public health and public welfare and to regulate emissions of hazardous air pollutants.

One of the goals of the Act was to set and meet the NAAQS in every state. The setting of these pollutant standards was coupled with directing the states to develop state implementation plans

(“SIPs”), applicable to appropriate industrial sources in the state, in order to achieve these standards.

The EPA’s approval of Massachusetts’ SIP delegates authority to MassDEP for certain aspects of the CAA. Through its Air Pollution Control Regulations at 310 CMR 7.00, MassDEP establishes emissions limitations, pollution control standards, and permit requirements for a range of facilities and activities. Through these regulations, MassDEP ensures that emissions to the ambient air are mitigated to ensure that air quality meets the NAAQS.

Smaller turbines with a rated power output less than or equal to 10 megawatts (“MW”), such as the one at the proposed compressor station, are subject to the Industry Performance Standards at 310 CMR 7.26(43). If the owner/operator of such a turbine complies with these performance standards, no application or MassDEP approval is required to put the turbine into operation. However, an owner or operator of a facility may choose to submit a Non-Major Comprehensive Plan Application (“Non-Major CPA” or simply “CPA”) in lieu of complying with the Industry Performance Standards.¹

The sources of emissions to the ambient atmosphere associated with this Project and regulated by the Air Plan Approval include:

- The natural gas fired turbine, which powers the proposed compressor. Emissions include the by-products of combustion.
- 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 length of time the unit is 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, which contains residual natural gas and the system is pressurized prior to startup; and
- Other ancillary activities, including releases from gas-operated pneumatic equipment.

Some equipment at the compressor station is not subject to the Air Plan application and approval requirements of 310 CMR 7.00. At this Facility, the following equipment is not subject to review:

- The turbine fuel heater and space heaters. These gas-fired units are exempt from Plan Approval in accordance with MassDEP regulations at 310 CMR 7.02(2)(b)15.a., which

¹ 310 CMR 7.26(43)(a).

exempts natural gas fired equipment rated less than 10,000,000 British Thermal units per hour.

- One Hanover natural gas-fired heater rated at 9.5 MMBtu/hr. This is existing equipment associated with the metering and regulation station at the Facility and is exempt from Plan Approval in accordance with MassDEP regulations at 310 CMR 7.02(2)(b)15.a.
- Storage tanks, which are exempt in accordance with MassDEP regulations at 310 CMR 7.02(2)(b)11, which pertain to fuel and chemical storage tanks.
- A parts degreaser, which is exempt in accordance with MassDEP regulations at 310 CMR 7.02(2)(b)24, for an emission unit complying with construction and operational requirements under 310 CMR 7.03 in lieu of permitting.
- An emergency engine powered generator. In lieu of permitting, this unit is subject to MassDEP' Industry Performance Standards at 310 CMR 7.26(42), which establishes emission and operational requirements for the engine. The Industry Performance Regulations require one-time certification under the "Environmental Results Program" at 310 CMR 70.00.
- Existing heaters and boilers associated with the metering and regulation facility. These units were previously installed in accordance with the aforementioned exemption pertaining to natural gas fired units rated less than 10 MMBtu/hr.

Comments and Responses:

Comment 1: Nearly all the commenters expressed opposition to the proposed Weymouth compressor station citing public safety, environmental, health, and economical hazards and strongly urged MassDEP to deny the air permit needed for Spectra/Enbridge to continue this project.

Response 1: MassDEP acknowledges the opposition to this Facility. MassDEP notes that its role with regard to the Plan Application is to determine if the Facility meets all regulatory requirements of 310 CMR 7.00, and if the Facility meets all the regulatory requirements, to issue a Plan Approval. By regulation, MassDEP's review is limited to whether a proposed facility may cause a condition of air pollution as defined in 310 CMR 7.00, and does not encompass issues of public safety, natural resource management, economic impacts, etc. Based on its review of the Plan Application, MassDEP has determined that the facility meets all of the regulatory requirements of 310 CMR 7.00 and therefore has issued a Plan Approval. MassDEP has referenced other agencies that are charged with addressing other issues, such as public safety, in response to more detailed comments about those issues throughout this document.

Comment 2: Many commenters are concerned that public health is compromised in the neighborhood and requested information on health impacts due to the industrial sources in close proximity to many homes. Specifically, commenters stated the following concerns:

- the Fore River area is already subject to heavy industrial air pollution from nearby power plants, industrial facilities, a waste processing facility, bulk petroleum storage facilities, passing ships, the venting of sewer pumps, petroleum truck loading, passing car pollution from twenty thousand cars daily, and off-loading of road salt by ship at the Cashman property.
- Commenters stated that the health and safety of the local population should be of the utmost priority when placing a proposed natural gas compressor station in a densely populated area and, thus, an expanded health impact assessment should be performed before this Application receives further consideration for approval or denial. EPA also made comments to FERC, dated June 1, 2016, which recommended an expanded health impact assessment for the Atlantic Bridge Project.

In addition, commenters noted the following more specific concerns:

- The Proposed Plan Approval has little to no consideration of the magnitude of industrial pollution (ambient pollution) already present in the Fore River Basin. With eight polluting industries in place at this time (BELD Potter Power Plant, Clean Harbors Hazardous Waste Facility, Citgo Gas and Diesel tank farm, MWRA Fertilizer Pelletizing Plant, Twin Rivers fatty acid production plant, MWRA Sewage pumping station, Calpine Electric Plant, and Sprague fuel tank farm), it is impossible to separate out the projected emissions from the proposed compressor station as if these above facilities do not exist. Cumulative numbers must be considered in order to protect the air quality of the Basin. Some sources of pollution that were not accounted for:
 - Pollution comes from entering into the Fore River, and from the off-loading of products from ships. In addition, storage tanks also have emissions.
 - Pollution comes from the venting of the sewer pump station and the emissions from deliverables to Clean Harbors from many truck deliveries and transfers of products to multiple tanks.
 - Continuous petroleum truck loading from the multiple oil and gasoline tanks generate vapor releases.
 - The MWRA sludge plant bakes dewatered sewage sludge generating odors and emissions into the vicinity.
 - Twin Rivers processes fatty acids into a component of biofuel and stores the product in tanks and then transfers it to railroad tank cars for transfer off site as well as receiving deliveries of material to be processed at the plant by ship (palm oil) and by truck.
 - Pollution from the twenty thousand cars day that travel over the Atlantic Bridge every day.
 - Off-loading of road salt by ship at Cashman' property and other activities by Quirk that generate emissions that are not measured by permits.
 - The Citgo oil tank farm in Braintree releases a significant amount of benzene and is located within 1 mile of the proposed site.
 - The proposed compressor station will be a constant source of emissions that could have serious adverse health effects on the local population, especially given that the site of the proposed compressor station is located so close to other point sources of emissions.

- The U.S. Environmental Protection Agency Office of the Inspector General’s report dated February 20, 2013 documented that the complexity of oil and gas emissions presents a challenge to estimating air emissions as well as overseeing the industry. The report also notes that emissions can vary by season and temperature and the volatile organic compounds (“VOCs”) and hazardous air pollutants content of gas varies from location to location. Moreover, the recent report, “Human Exposure to Unconventional Natural Gas Development, A Public Health Demonstration of Periodic High Exposure to Chemical Mixtures in Ambient Air” found that weather and air stability contributed to the variation in VOCs two kilometers from a compressor station.
- In a report dated January 29, 2016 by The Agency for Toxic Substances and Disease Registry (“ATSDR”), ATSDR found that individuals with underlying medical conditions that resided around the Brigich compressor station may experience harmful effects from exposure to PM2.5
- Also, in a report dated April 22, 2016, the EPA conducted air monitoring of PM2.5 at a residence in close proximity to the Williams Central Compressor Station. Based on the monitoring, ATSDR found that (1) “Exposure to maximum levels of PM2.5 may be harmful to unusually sensitive populations, such as those with respiratory or heart disease, but are not at levels that are a concern to the general population” and (2) “the estimated annual average PM2.5 concentration of 15 to 16 µg/m³ may be harmful to the general population and sensitive subpopulations, including the elderly, children, and those with respiratory or heart disease.”
- Moreover, in the study “Air Concentrations of Volatile Compounds Near Oil and Gas Production: A Community-Based Exploratory Study”, concentrations of formaldehyde that exceeded the EPA Integrated Risk Information System (“IRIS”) 1/10,000 cancer risk level and the U.S. Agency for Toxic Substances and Disease Registry (“ATSDR”) acute Minimal Risk Level (“MRL”) were found as far as two thousand five hundred and ninety-one (2,591) feet from a compressor station.¹⁰ Moreover, six of ten passive samples in Pennsylvania contained formaldehyde at levels that exceeded ATSDR MRLs or EPA risk levels. The six samples were taken at distances ranging from seven hundred and fifty-four (754) to two thousand five hundred and ninety-one (2,591) feet away from compressor stations.¹² In Arkansas, seven of the thirteen passive samples had formaldehyde levels that were above ATSDR MRLs or EPA IRIS risk levels though one of the samples was close to the ATSDR MRL. The seven samples were taken at distances ranging from ninety-eight (98) to one thousand one hundred and sixty-four (1,164) feet from compressor stations.¹⁴ One of the grab samples contained 1,3 butadiene at levels above the EPA IRIS 1/10,000 cancer risk approximately one hundred and thirty-seven (137) feet from a compressor station.

Response 2: MassDEP conducted a thorough review of the application for Plan Approval, including the air dispersion modeling that demonstrated that maximum emissions from the facility, combined with representative background concentrations and maximum emissions from nearby significant sources, would not exceed any National Ambient Air Quality Standards

(NAAQS). NAAQS are designed to protect public health, specifically; NAAQS standards are designed to protect the most sensitive populations (children and the elderly) against the health effects of air pollutants. The air dispersion modeling also demonstrated that maximum emissions of volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) from the Project would not contribute concentrations above MassDEP's guidelines on Allowable Ambient Limits (AALs) and Threshold Effects Levels (TELs). The TELs and AALs are extremely conservative levels, intended to protect sensitive members of the population from harmful effects assuming exposure to the same average concentration 24 hours each day for 70 years (also see response 3, below). While VOC and HAP modeling does not take into account background or other unrelated sources, the modeling did show that concentrations of benzene, formaldehyde, and acrolein, which had modeled maximum concentrations closest to their respective TELs or AALs, occur at the site of the facility and concentrations decrease significantly farther away from the site. This analysis demonstrates that the additional emissions from the Project will not present an unacceptable risk to public health.

In addition, to further address public health concerns, Governor Charles Baker directed the Massachusetts Department of Public Health ("DPH") and MassDEP to jointly prepare a public health impact assessment ("HIA") prior to issuance of any air permit for the proposed project. DPH contracted with the Metropolitan Area Planning Council ("MAPC") to conduct the HIA. The purpose of the HIA was to determine: 1) the current health status of the local community, 2) current background air quality near the proposed project site, 3) the potential health effects of the proposed compressor station on residents of surrounding neighborhoods and municipalities and, 4) possible actions to protect and promote community health in the area.² The HIA, finalized on January 4, 2019 is available at <http://foreriverhia.com/>. The HIA predicts that estimated air emissions from the proposed station are not likely to cause health effects through direct exposure because estimated air emissions do not exceed daily or annual health-protective regulatory standards or guidelines.

As part of the HIA, MassDEP conducted ambient air monitoring to better define existing levels of VOCs in the Fore River area. All of the 24-hour sample results showed levels below MassDEP's 24-hour TEL guidelines, with the exception of formaldehyde, which had some levels above the TEL. While not directly comparable, some of the 24-hour levels (e.g., benzene, formaldehyde, carbon tetrachloride, chloroform) were above MassDEP's annual AAL guidelines. These levels are consistent with levels for these pollutants measured by MassDEP at its Boston and Lynn monitoring station, indicating that existing ambient VOC levels are not atypical compared to other areas in the Boston Metro region.

Due to the level of public concern about health effects, MassDEP included the following recommendations from the HIA in the Plan Approval that will increase the level of protection of the public from emissions of air pollutants from the facility: 1) enhanced restrictions designed to mitigate noise and dust associated with construction of the Facility, 2) enhanced blowdown

² Health Impact Assessment of a Proposed Natural Gas Compressor Station in Weymouth, MA, http://foreriverhia.com/wp-content/uploads/2019/01/Executive_Summary_20190104.pdf

notification to the community, and 3) enhanced leak detection requirements; (4) additional sound mitigation investments and limitations on planned hours of maintenance and operation of equipment; (5) additional post-construction sound impact testing requirements; (6) enhanced monitoring of gas release events; and (7) a requirement for submission of a de-commissioning plan.

Comment 3: Many commenters noted that existing background levels of toxic pollutant (such as benzene and formaldehyde) were not incorporated into the air dispersion modeling and that background levels of for toxics already are above MassDEP's Allowable Ambient Limits (AALs) and the Threshold Effects Exposure Limits (TELS).

Response 3: MassDEP has published AAL and TEL guidelines to evaluate potential human health risks from exposures to chemicals in air.

To determine the AALs and TELs, MassDEP first develops:

- Non-Threshold Effects Exposure Limits (NTELS) based on known or suspected carcinogenic health effects associated with a one in a million excess lifetime cancer risk over a lifetime of continuous exposure. Environmental and public health agencies, including MassDEP and U.S. EPA, do not consider risks at this level to be significant enough to warrant regulatory action; and
- Threshold Effects Exposure Limits (TELS) based on non-cancer health effects of individual chemicals. The TEL is a concentration intended to protect the general population, including sensitive populations such as children, from adverse health effects over a lifetime of continuous exposure. TELs take into account the fact that people may be exposed to a chemical from other sources, including indoor air, food, soil and water.

MassDEP compares the NTEL and the TEL and designates the lower concentration as the AAL. Since NTELS are generally lower than TELs, most AALs are based on the NTEL, or risk of excess cancer. For chemicals that do not pose cancer risks, the AAL is based on the TEL, and in this case the published AAL and TEL values are the same.

The AALs are compared to annual average concentrations. The TELs are compared to 24-hour average concentrations as a health protective measure to prevent exposures to higher concentrations that would be averaged out over an annual averaging period. It should be noted that exposure above an AAL or TEL does not automatically mean an individual will develop cancer or experience non-cancer health effects. However, the risk of developing adverse effects increases with frequency and intensity of exposure.

If a proposed facility has the potential to emit air toxics that will affect people MassDEP requires air dispersion modeling of maximum potential emissions for comparison to the AALs and TELs. In air permitting, AALs and TELs represent screening-level guidelines that indicate the maximum ambient air concentration of a toxic pollutant that may be contributed by a single source or facility. Therefore, the modeling does not take into account background or other unrelated sources

(however, it should be noted that the AALs and TELs do take into account that people may be exposed to a chemical from other sources, including air, food, soil, and water.)

MassDEP required Algonquin to conduct toxics air dispersion modeling. In this modeling Algonquin followed MassDEP's long-standing protocol that requires an assessment of the ambient concentrations of air toxics caused solely by that source's emissions. These modeled concentrations were then compared to the AALs and TELs to determine whether there may be potentially unacceptable risks associated with that particular source. As shown in the amended Table 5 of the Air Plan Approval, the maximum modeled 24-hour and annual concentrations for each toxic air pollutant attributable to the facility are below all applicable MassDEP's AALs and TELs.

Thus the maximum impacts from the Facility will be below the AALs and TELs, which are health protective guidelines that also take into account that people may be exposed to other sources. As noted in the HIA (page 97), the maximum concentrations of benzene, formaldehyde and acrolein attributable to the facility would occur at the site of the compressor station and would decrease significantly farther away from the Facility. The modeling showed that at the nearest residence on Bridge Street the decreasing concentrations approach negligible levels that would contribute very little to background levels.

Comment 4: Numerous people commented that the proposed project should be subject to the Environmental Justice Policy because air emissions from the facility would affect nearby environmental justice areas. One commenter requested MassDEP to do an 'enhanced participation plan' with the EJ communities.

Response 4: On January 30, 2017, the Executive Office of Energy and Environmental Affairs (EEA) adopted an updated Environmental Justice ("EJ") Policy that requires MassDEP to make environmental justice an integral consideration in the implementation and enforcement of laws, regulations, and policies. The EJ Policy is applicable only if both of the following criteria are met:

- (1) The project exceeds Environmental Notification Form ("ENF") / Environmental Impact Report ("EIR") thresholds 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 a mile of an EJ population, a neighborhood where 25 percent of the households have an annual median household income that is equal to or less than 65 percent of the statewide median or 25 percent of its population is Minority or identifies as a household that has English isolation (or in the case of projects exceeding an ENF / EIR threshold for air, within five miles of an EJ population).

MassDEP's environmental justice evaluation included a review of the Massachusetts Geographic Information System ("MassGIS"), which identified several EJ populations located in the Towns of Weymouth, Braintree, Quincy, Randolph, and the City of Boston, each of which are within 5 miles of the proposed project. The Project has a proposed federal potential to emit of 20.19 tpy

VOC, 0.92 tpy individual HAPS, and 1.37 tpy total HAPs, each of which are below the respective ENF / EIR thresholds for air emissions.³ As such, the Project is below the required thresholds for air emissions and is not subject to the 2017 EJ Policy.

Although the Project is not subject to the requirements of the 2017 EJ Policy, the Applicant provided enhanced notification of the availability of the Proposed Plan Approval for public comment. This notification was published in the Patriot Ledger, the World Journal, a Cantonese and Mandarin language newspaper, and El Mundo, a Spanish language newspaper, all with circulation in the general area.

Comment 5: Many commenters questioned whether the project would be more appropriately sited at an alternative location. Commenters contended that this is the only compressor stations located in an urban and populated area, and that compressor stations are normally located in sparsely settled rural areas measuring 40-50 acres. Commenters also noted the concern that in the area, there are located homes, large subsidized housing developments for disabled and elderly people, schools, public beaches, or separated by a chain link fence but on the same property as a public park. Commenters also noted that the facility is on a river where huge gas filled tankers go by, and that it is right next to industries like Twin Rivers that processes fatty acids and other material that is highly flammable. Commenters also pointed to the nearby sewage plant that processes millions of gallons of Boston sewage every day. Commenters also alleged that the land is filled with settled coal ash and very high levels of arsenic and other serious toxins which will pollute the Fore River and surrounding bays if stirred up / disturbed. Commenters contended that the site in Weymouth proposed by Algonquin Gas consists of only 4 acres and is within one half-mile of over 960 homes, 38 educational facilities, a water treatment plant, and O'Brien Towers senior housing and homeless veterans. Commenters claimed that this is the most densely settled location for the smallest site on any compressor station.

Response 5: MassDEP does not have jurisdiction over the siting of natural gas compressor stations or natural gas pipelines. Under federal law, authority for siting the Facility rests exclusively with the Federal Energy Regulatory Commission ("FERC"). As part of its review, the FERC evaluated seven alternative sites to the Weymouth location. Each of these alternative sites was selected for evaluation based on a combination of natural gas transmission system hydraulics, proximity to both the low pressure and high-pressure natural gas pipelines, and minimum physical space requirements.

In evaluating the alternative sites, the FERC considered the gas transmission system's operational constraints, right-of-way limitations imposed by existing utilities and infrastructure, and environmental and other impacts associated with constructing up to 30 miles of new pipeline. The FERC approved the Weymouth location in its "Order Issuing Certificate and Authorizing Abandonment," issued on January 25, 2017.⁴ Detailed information regarding the siting process

³ See Massachusetts Environmental Policy Act Regulations at 301 CMR 11.03(8)(a).

⁴ See Section 3.5.1 of the *Atlantic Bridge Project Environmental Assessment* dated May 2016 <https://www.ferc.gov/industries/gas/enviro/eis/2016/CP16-9-000-EA.pdf>.

can be found on the FERC's website at: https://elibrary.ferc.gov/idmws/docket_search.asp
(Docket number CP16-9).

Comment 6: Many comments submitted contained reference to natural gas production facilities, particularly those located in Pennsylvania. Some comments provided reference to a study written by the Southwest Pennsylvania Environmental Health Project, titled *Summary on Compressor Stations and Health Impacts*. This study focused on the impacts associated with natural gas production facilities, which process raw, untreated natural gas.

Response 6: The Pennsylvania study and any conclusions in the study are not applicable to the Weymouth Project because compressor stations used in the transmission of pipeline quality natural gas only transfer natural gas that has been cleaned of impurities. Studies identifying health effects from natural gas production facilities that handle unrefined natural gas, which has a range of different contaminants of concern, are not applicable to compressor stations that transmit pipeline quality natural gas.

Comment 7: A recent study of ambient air methane levels in New York and Pennsylvania found methane plumes located proximally to compressor stations, and that during atmospheric temperature inversions, when near-ground mixing of the atmosphere is limited or does not occur, residents and properties located within 1 mile of a compressor station can be exposed to methane from these point sources.

Response 7: The Weymouth Project will have very limited releases of natural gas to the atmosphere. As discussed above, studies of other compressor stations, especially ones related to natural gas production, do not provide a good comparison to the Weymouth Project.

Comment 8: There is no mention in the Proposed Plan Approval pollution tables of radon, cadmium, mercury, lead, and a host of other pollutants that come with the piping of fracked gas. These pollutants are powerful health hazards and would be released in the atmosphere of the Basin 24/7 with the continuous off-gassing of the compressor. MassDEP should require the applicant to provide test results for these hazardous pollutants, and the permit application should be amended with an analysis of the impacts of these releases prior to its approval.

Response 8: As noted in Response 6, pipeline quality natural gas has been cleaned of impurities that are present in unprocessed gas. As such, any data and conclusions drawn from compressors involved fracking are not applicable to this Project.

Comment 9: Many commenters raised concern with the safety of the proposed compressor station and its associated piping and equipment.

Response 9: MassDEP does not have jurisdiction over natural gas compressor station or pipeline safety. The Pipeline and Hazardous Materials Safety Administration ("PHMSA") is mandated to provide pipeline safety under Title 49 USC Chapter 601. The Office of Pipeline Safety administers the national regulatory program to ensure the safe transportation of natural gas and

other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that address safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities.

Comment 10: Many comments were received concerning a January 6, 2017 incident involving a gas leak from the existing site location and the lack of an adequate response time by Algonquin.

Response 10: The natural gas release was caused by a failure of a relief valve due to ice formation internally within the valve body, causing the valve to open. The Applicant has informed MassDEP that their standard operating procedure has been updated to include annual inspection of the valve's weather cap and drain weep hole. In addition, the Applicant worked with the Weymouth Fire Department to ensure there is an up-to-date staff contact list to minimize future response times.

Comment 11: The compressor station will be an unmanned facility that will be remotely operated from Texas and has already had a pipeline leak for several hours only to be reported by local neighbors and business due to the smell.

Response 11: The facility will be staffed on a daily basis during business hours, and will have local staff on call 24 hours per day. In addition to local staff, the Permittee will remotely monitor the site 24 hours per day. This monitoring includes monitoring operating parameters of the combustion turbine and other equipment, ambient gas sensors, and video surveillance.

Comment 12: A significant number of comments were received relative to communication with the applicant and their ability to review a draft plan approval prior to issuance. Some commenters believe that working on the draft approval with the applicant is collusion.

Response 12: MassDEP regulations at 310 CMR 4.00 "Timely Action Schedule and Fee Provisions" establish permit application review timelines. Review of a Non-Major Comprehensive Plan Application ("CPA") consists of an administrative completeness review followed by a technical review. During these review periods, MassDEP may request additional information from the Applicant. This request may be either orally or in writing.⁵

MassDEP's standard practice is to provide all applicants with opportunities to: answer questions about its permit application; to supplement or amend application materials; and to review and comment on the draft Plan Approval. MassDEP has found that this practice improves the accuracy of the Plan Approval and provides an opportunity to fill in information and data gaps. Any edits provided by the Applicant are subject to acceptance by MassDEP.

Comment 13: Many commenters questioned why an emission limit contained in the leak detection and repair provisions was revised upward.

⁵ 310 CMR 4.04(2)(c)

Response 13: The Applicant identified an incorrect number in the draft application. As a result, the revised value reflected the emission limit proposed in the original Air Plan Application and was incorporated in the Plan Approval.

Comment 14: Comments were received relative to facility emissions and mitigation. Specifically, “The applicant has proposed a catalyst which controls 50% of organics emissions (like formaldehyde). The applicant asserts a catalyst with 50% control is the Best Available Control Technology (BACT) for controlling organics. However, RSG permitted a similar project in the Northeast with a catalyst having an 80% control efficiency; therefore, DEP must consider BACT as being an 80% organics (including formaldehyde) for this project.”

Response 14: The Air Plan Approval contains emission limitations that have been determined to represent Best Available Control Technology (“BACT”). BACT is defined as:

“an emission limitation based on the maximum degree of reduction of any regulated air contaminant emitted from or which results from any regulated facility which the Department, on a case-by-case basis taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems and techniques for control of each such contaminant. The best available control technology determination shall not allow emissions in excess of any emission standard established under the New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants or under any other applicable section of 310 CMR 7.00, and may include a design feature, equipment specification, work practice, operating standard, or combination thereof.”⁶

MassDEP’s VOC BACT determination for the turbine emissions included a review of the USEPA’s RACT / BACT / LAER Clearinghouse, Connecticut DEEP’s BACT database, and MassDEP’s BACT Guidelines. BACT was determined for the by-products of fuel combustion as follows:

VOC as a by-product of combustion from the turbine will be limited to 2.4 ppmvd at 15% oxygen for ambient temperatures above 0 °F. BACT for VOC will be achieved through the use of natural gas as a fuel and the use of a 2-way catalyst, which will reduce VOC emissions by 50%. The 50% catalyst control efficiency is an overall VOC control efficiency based on a weighted average, using data presented in Table B-1Aj of the Air Plan Application. Table B-1Aj presents the control efficiency for each species of VOC and indicates that the catalyst will achieve 95% control of formaldehyde, by weight, which exceeds the 80% control efficiency referenced by the commenter.

Based upon evaluation of this comment, MassDEP has added clarification to the Plan Approval that the catalyst control efficiency for VOCs is based on a weighted average.

⁶ 310 CMR 7.00 Definitions

Comment 15: A commenter questioned turbine's output rating as it relates to ambient impacts. Specifically, the comment stated "The turbine capacity is listed at 8,664 horsepower (HP). The permit application and modeling report list the turbine capacity at 7,700 HP. We understand the air dispersion modeling reflects 7,700 HP; therefore, the modeling underestimated air quality impacts by as much as 12.5% if the turbine will be operated at 8,664 HP (8,664 HP is 12.5% larger than 7,700 HP)."

Response 15: The nominal output of 7,700 hp is based on an average annual ambient temperature of 46.65°F, which is the mean temperature of the Weymouth area⁷. Ambient temperature has a significant effect on the power output and efficiency of a gas turbine. Colder air is denser, which allows for higher mass flow of air at the inlet. The higher mass airflow allows the turbine to fire more fuel, resulting in higher power output and an increase in emissions. Based on data from the manufacturer, the maximum power output of 8,664 hp is only achieved for this unit at ambient temperatures below 0°F. Table 7 of the Air Plan Application indicates that the turbine will have a maximum power output of 8,664 hp when operating in a temperature range of 0°F to -20°F.

The Weymouth area has an average of 12 hours per year in the extreme temperature range of 0°F to -20°F.⁸ Accordingly, 12 hours per year at the higher output rating was included in the air dispersion modeling. The second paragraph on page 3 of the proposed Air Plan Approval discusses the assumptions made for operation during extreme temperatures. Additionally, Table 8B of the proposed Air Plan Approval identifies the elevated emissions associated with the extreme temperatures, which are also presented in Tables B-1Ai and B-1Aj of the Air Plan Application. Table 9, provision 1 of the proposed Air Plan Approval requires the Permittee to continuously monitor the turbine inlet [air] temperature at all times the turbine is in operation. The Air Plan Approval requires the Permittee to track actual emissions from the turbine based on actual ambient temperature.

Comment 16: A significant number of commenters questioned the use of background monitors located in Boston instead of Weymouth. Concerns were raised that the air monitoring data was taken from a monitor that is more than five miles away from the proposed compressor station site. Commenters were concerned that the monitor would not reflect local sources of industrial emissions.

Response 16: Monitor selection criteria include proximity to the significant impact area of the facility, similarity of emission sources impacting the monitor to the emission sources impacting the airshed surrounding the proposed compressor station, and the similarity of the land use / land cover and exposure surrounding the monitor and proposed facility. The data quality criteria refers to the monitor being an approved State and Local Air Monitoring Station ("SLAM") or similar monitor type subject to the quality assurance requirements in 40 CFR Part 58 Appendix A. Data

⁷USEPA TANKS 4.09d program for Worcester, MA

⁸USEPA TANKS 4.09d program for Worcester, MA (worst case of Worcester, Boston, and Providence, RI).

currentness refers to the fact that the most recent three complete years of quality assured data are preferred.

The Harrison Avenue monitor and the Von Hillern Street monitor were determined to be representative based upon consideration of all of the factors. They are both exposed to industrial, commercial and mobile source air emissions of the type accounted for in the regional inventory that would also impact the proposed location in Weymouth. Both monitors are located in topographical settings, i.e., fairly flat terrain, similar to the area around the compressor station location and there are no significant terrain features between the station location and the monitor locations. Furthermore, there are no significant sources of criteria air pollutants near the Weymouth compressor station that were not accounted for directly in the dispersion modeling (i.e., the modeling included both the proposed new sources as well as the major criteria pollutant-emitting existing sources in the area). Given this, the two monitors provide air quality data that is representative of background concentrations in the Facility area. The selected monitors are also the closest available ambient monitors for the pollutants of interest. The Von Hillern St. monitor is located approximately 11.7 km from the Facility area and the Harrison Avenue monitor site is located approximately 13.6 km from the Facility area. While there is a monitoring station at the top of Blue Hill that is closer than the Harrison Avenue monitor (approximately 13 km from the proposed facility), the Blue Hill monitor has a special purpose designation given its higher elevation and data collected there is not representative of the Facility area. Therefore, the closest EPA approved monitors as part of the MassDEP's ambient monitoring network were used to establish ambient background concentrations for the criteria pollutants evaluated.

In addition, the air dispersion modeling included maximum emissions from the significant sources in the Fore River area, which was added to the background data from the Boston monitoring stations, so that the effect of nearby sources that may not be reflected in the Boston monitoring station data was accounted for in the cumulative modeling demonstration of NAAQS compliance.

Comment 17: Some comments were received relative to the use of the rural dispersion coefficients option within the AERMOD dispersion modeling.

Response 17: AERSURFACE (13016) was used to determine whether the rural or urban option should be used based on the Auer methodology. The analysis for land use utilized 1992 National Land Cover Data (NLCD) and a three-kilometer radius around the proposed compressor station. The center of the analysis was based on the location of the turbine stack, the largest source included in this analysis. Land use categories 22 (high intensity residential) and 23 (commercial/industrial/transportation) are the only urban classifications under NLCD 1992. The analysis determined that the area surrounding the Facility location is only 13.8 percent urban. Although the area has clearly become more urbanized since 1992, the changes are not significant enough to make the area predominantly urban. As such, the rural option was used within AERMOD.

Comment 18: Commenters raised the concern that the project is being considered without due consideration of the pollution and sufficient testing. Commenters requested testing that accounts

for the fugitive pollution sources and the current levels of all HAPs. Commenters contended that the modeling analysis of individual HAPs should have taken into account all local mobile and point sources of air pollution emissions. Commenters criticized the air dispersion modeling report because it only provides a cumulative analysis of the NAAQS and it did not include a cumulative analysis of HAPs such as benzene, formaldehyde, toluene and hexane. Commenters also contended that the modeling did not consider emissions from the Citgo Petroleum Terminal, which is another source of HAPs that is located approximately one mile from the proposed compressor station site. Commenters complained that, given that the proposed compressor station is sited in close proximity to other local industrial sources of pollution and it will be located in a densely populated area, air monitoring should have been conducted in the local area before this Application received further consideration. Otherwise, MassDEP cannot conclude that the maximum impacts from the proposed compressor station will be below AALs and TELs.

Response 18: As noted in Response 2, MassDEP conducted several months of VOC monitoring at and near the compressor station as part of the HIA to determine existing conditions for pollutants such as benzene, formaldehyde. This monitoring showed that levels were consistent with those monitored by MassDEP in Boston and Lynn and at concentrations typical of urban/suburban background. The VOC air dispersion modeling also demonstrated that maximum VOC emissions from the facility would contribute concentrations below MassDEP's AALs and TELs, and that these low concentrations decreased significantly as one moves away from the immediate facility site. Regarding the cumulative analysis of HAPs, please refer to Response 3 of this document.

Comment 19: Comment was received regarding the exclusion of the turbine's startup and shutdown emissions from the emissions modeling. Specifically:

"The permit application states there will be 416 startups/shutdowns per year, with startups and shutdowns lasting nine minutes and three and one half minutes respectively. This equates to 86.7 hours per year of startup and shutdown collectively. This is less than the apparent amount approved by the proposed plan approval (125 hours per consecutive 12-month period). Startup/shutdown emissions do increase pollutant concentrations, so startup/shutdown should be modeled for at least benzene and formaldehyde for the 125-hour period before the DEP approves any additional startup/shutdown emissions."

"EPA guidance allows for some discretion for modeling startup/shutdown for criteria pollutants having probabilistic air quality standards (NO₂, SO₂). The modeling report cites this guidance as support for not modeling startup/shutdown conditions. However, we are not aware of any EPA or state level guidance which grants discretion to permit applicants to decide whether or not to model air toxics (like benzene and formaldehyde) for startup/shutdown. Further, the Massachusetts Ambient Allowable Levels (AALs) for air toxics are not probabilistic standards. Therefore, there is no basis for not modeling startup/shutdown for air toxics in an area with elevated ambient concentrations of air toxics."

Response 19: The need to include startup and shut down emissions, which only last a few minutes when assessing longer term impacts, is relatively diminished. This is because the amount of time these emissions exist relative to the impact period is very small (less than 1% of the time for one startup/shutdown in a 24-hour period and approximately 1% of the time for all 416

startups/shutdowns in an annual period). As a result, when assessing longer-term ambient impacts, start-up and shut down emissions are not typically included since the emissions would have a negligible effect on the actual long-term concentration level attributable to the facility. Additionally, it would not be appropriate to model a startup/shutdown condition at a steady-state emission rate for all hours in the five-year modeling period because this is not representative of the way the facility will operate and is overly conservative. The air toxic modeling performed included all combustion and fugitive emissions from the proposed compressor station and existing M&R station is more than adequate to address worst-case long-term impacts.

Comment 20: Several commenters questioned why modeling was not performed for “transient events.” The plan approval refers to “transient events,” which the DEP states will be limited to 50 hours per month and 125 hours per consecutive 12-month period. The permit application refers to startup and shutdown as transient events. However, the modeling report does not mention transient events. Hence, it is not clear if transient events represent startup/shutdown or if they represent blowdowns or other events entirely different from startup/shutdown. Either way, the air quality impacts appear to be further understated

Response 20: The addendum to the Air Plan Application, which the Permittee submitted to MassDEP in May 2018, contains a letter, which provides a detailed discussion of transient events and the basis for exclusion from air dispersion modeling.⁹ Both the Application addendum and footnote 4 on page 3 of the proposed Air Plan Approval provide a definition: “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.”

Emissions from the turbine are based on manufacturer’s data and are guaranteed for all turbine loads greater than 50%. Per the application addendum and on page 3 of the proposed Air Plan Approval, “Solar programs the turbine monitoring system to measure numerous operating parameters in order to verify the turbine is achieving the conditions upon which the emissions guarantee is established. If the turbine monitoring system detects that these conditions are not achieved, the mode of the SoLoNOX™ combustor will indicate ‘inactive.’” Table 9, Provision 5 of the proposed Air Plan Approval requires tracking each occurrence when the SoLoNOX mode is inactive (i.e. a transient event) and the duration of each event. Table 10, Provision 4 requires the Permittee to maintain records of each transient event and associated emissions.

The transient events are brief, lasting only several minutes. Page 2 of the addendum states:

“... air dispersion modeling is typically not required for sources that are intermittent and operated only for short periods of time. The United States Environmental Protection Agency’s required air dispersion models (AERSCREEN and AERMOD) are designed to represent impacts on a one hour average. Since the transient events generally occur for a matter of minutes, these regulatory air dispersion models do not accurately represent such sub-hourly events. Therefore, possible

⁹ See document Application Addendum: Algonquin Gas Transmission LLC on MassDEP’s website at <http://www.mass.gov/eea/agencies/massdep/air/approvals/algonquin.html>

transient events have not been included in any of the modeling conducted for the Weymouth Compressor Station as part of the permit application submittal.”

MassDEP agrees with the Applicant’s determination that including transient events in the air emission dispersion model is not necessary. Determining compliance with the 1-hour NO₂ NAAQS is based on comparing the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour values to the standard of 100 ppb. Based on the probabilistic format of the 1-hour NO₂ NAAQS, it is inappropriate to assume continuous operation using emission factors that are applicable for a few minutes. The most appropriate data to use for compliance demonstrations for the 1-hour NO₂ NAAQS are those based on emissions scenarios that are continuous enough or frequent enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations.¹⁰

The revised Air Plan Application dated May 25, 2018 includes a thorough discussion of transient events in Section 3.1.4 “Turbine Transient Operation Hourly Emissions.” Additionally, the Applicant submitted a revised Air Plan that reduced the proposed hourly limitations for transient events to 25 hours per month and 50 hours per year. The Air Plan Approval, as issued, reflects these revised hourly limitations.

Comment 21: Comments were received regarding the monitoring of emissions and operation of the emissions control equipment. The applicant is required to continuously monitor the flow of gas combusted in the turbine, the temperature at the catalyst inlet, and the pressure drop across the catalyst. However, the Proposed Plan Approval does not require the applicant to submit for DEP approval the specifications of any monitoring equipment. Further, it also does not include any catalyst management requirements such as the frequency and type of inspections when the equipment is on-line, inspections when the equipment is off-line, provisions for catalyst cleaning, provisions for catalyst replacement, calibration of monitoring sensors. The Air Plan approval should not be issued, as long as these measures are not proposed to be implemented.

Response 21: The catalyst bed temperature and pressure drop across the catalyst bed need to remain with the manufacturer’s specified ranges for the catalyst manufacturer to guarantee that the equipment will achieve the specified control efficiencies for CO and VOC. Should the pressure drop across the catalyst bed or catalyst temperature deviate from the approved range, it is incumbent on the Permittee to take any necessary corrective actions, which could include washing or replacing the catalyst. Therefore, it is MassDEP’s position that additional requirements regarding catalyst inspections or replacement are not necessary.

Table 12, Special Terms and Conditions, Provision 2 requires that the oxidation catalyst be operated and maintained in accordance with the manufacturer’s recommendations. Based on comment received, Provision 2 has been updated to require submission of the catalyst manufacturer’s recommended standard operating and maintenance procedures.

¹⁰See EPA Memo “Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO₂ National Ambient Air Quality Standard” dated March 1, 2011.

MassDEP does not approve monitoring equipment, although the equipment must be capable of monitoring the parameters within the required range, MassDEP's scope of review and approval does not extend to selection of specific monitoring equipment, but the Plan Approval includes requirements for monitoring.

Comment 22: Several commenters question why the turbine emissions testing requirements did not include a requirement to test for air toxics, specifically benzene and formaldehyde. This Plan Approval requires emission testing for NO_x, CO, PM_{2.5}, and VOCs. However, as mentioned, a number of specific air toxics (benzene and formaldehyde) were shown in the applicant's modeling to be approaching (or possibly exceeding) their respective standards. Therefore, we recommend that DEP require testing of benzene and formaldehyde to demonstrate that their standards will not be exceeded.

Response 22: The air toxics in question are a subset of VOCs. In the proposed Plan Approval MassDEP required post-construction compliance testing of NO_x and CO emissions and VOCs. MassDEP's initially did not require testing for specific the VOCs because of their low emission rates. However, based on public comment and due to the high level of public concern, MassDEP included a requirement for emissions testing for both benzene and formaldehyde in the final Plan Approval.

Comment 23: Numerous commenters stated that the proposed Plan Approval did not comply with Section 7 of the Global Warming Solutions Act (GWSA), which amended the MEPA statute to state that MassDEP and other state agencies must "consider reasonably foreseeable climate change impacts, including additional greenhouse gas emissions..." when issuing permits.

Response 23: Under EEA policy, a GHG analysis is performed at MEPA for only those projects that are large enough to qualify for MEPA review and agencies are then directed to include findings pursuant to Section 7 of the GWSA, incorporated into Section 61 of MEPA. However, due to the level of public concern about GHG emissions from this Project, MassDEP conducted an additional analysis of all aspects of this project to address reasonably foreseeable climate change impacts. The Air Plan Application contains an evaluation of the Facility's impact on climate change and the proposed and final Plan Approval contain explicit, enforceable requirements addressing the Facility's impact.

The GWSA required the Executive Office of Energy and Environmental Affairs (EEA), in consultation with other state agencies and the public, to set economy-wide greenhouse gas (GHG) emission reduction goals for Massachusetts that will achieve reductions of:

- Between 10 percent and 25 percent below statewide 1990 GHG emission levels by 2020.
- 80 percent below statewide 1990 GHG emission levels by 2050.

The primary GHG emitted from this project are 1) carbon dioxide ("CO₂"), which is a by-product of combustion and 2) methane, which is a component of the natural gas. The Air Plan

Application includes an evaluation of GHGs.¹¹ The GHG analysis evaluated CO₂ emissions from the natural gas-fired combustion turbine, natural gas-fired heaters, and the natural gas-fired emergency generator. The GHG analysis also evaluated methane emissions from piping component leaks, gas releases, separator vessels, condensate storage tanks, truck loading and the parts washer. Table 5-1 “Summary of GHG Potential Emissions from the Site” in the Application identifies each emission unit’s contribution to the Facility’s over-all GHG emissions.

In evaluating CO₂ emissions, MassDEP concluded that a simple cycle turbine emits the least CO₂ compared to alternative compressor prime movers.

MassDEP considered turbine efficiency, where the Solar Taurus 60-7802 turbine, with an efficiency of 32.4%, is among the most efficient turbines available in its class. A similar turbine, the Siemens model SGT-100 is marginally more efficient, but the Solar turbine has the advantage of having a lower NO_x emissions guarantee than the Siemens unit.

MassDEP considered turbine fuel choice, where natural gas has lower CO₂ emissions relative to other available fuels, such as oil.

When considering CO₂ emissions for the turbine, MassDEP considered good combustion practices, which includes lean pre-mix technology and the turbine’s automation systems, both of which ensure the unit is operating in the most fuel-efficient manner possible.

Finally, MassDEP considered capture and control of emitted CO₂, including Carbon Capture and Sequestration (“CCS”). CCS requires the ability to separate CO₂ from the exhaust stream, transport the CO₂ to a storage facility, and ultimately provide long-term storage (sequestration) of the CO₂. Although technically feasible, there are no commercially available CO₂ transportation networks or sequestration facilities in this country, so this technology was eliminated from further consideration.

With respect to process emissions of methane, MassDEP evaluated emissions from piping and fittings, as well as gas releases also known as blowdown.

MassDEP considered “leakless” technology for valves and fittings but concluded that, despite its name, such equipment was not truly leakless. MassDEP also found that leakless technology has not been demonstrated in practice in the gas transmission industry as its use has been limited to highly specialized purposes.

The Facility will be subject to the EPA’s New Source Performance Standards (“NSPS”) at 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. Subpart OOOOa requirements, enforced by EPA, include leak detection and repair for equipment with potential to emit fugitive methane.

¹¹ Refer to Air Plan Application, Section 5-7

MassDEP also considered a leak detection and repair program (“LDAR”), which has been explicitly incorporated into the Plan Approval. Although the LDAR program has been established as BACT for VOC, the LDAR program will effectively address GHG as well. The LDAR program is an enhanced variation of the LDAR requirements of Subpart OOOOa, but by virtue of having been incorporated into the CPA, will be enforceable by MassDEP. The LDAR program defines emission rates that constitute a leak, and establishes repair requirements. The LDAR program utilizes handheld detection equipment, optical gas imaging equipment and the human senses of sight, sound, and smell to identify leaks. Taking into consideration public comment and the high level of public concern about health impacts and impacts to climate change, MassDEP has enhanced the requirements of the LDAR program in the Plan Approval so that it exceeds the requirements of Subpart OOOOa by establishing monitoring and repair requirement of all equipment, including pipelines in liquid service, whereas the requirements of Subpart OOOOa are only applicable to pipelines in gas service. MassDEP also is requiring the LDAR program to explicitly address the use of audio, visual, or olfactory (“AVO”) methods (the human senses of sight, sound and smell) in identifying potential leaks at the Facility. Additionally, based on the results on the Health Impact Assessment, the frequency of the required testing has been increased to monthly AVO inspections, which is more frequent than the quarterly inspection requirement of Subpart OOOOa.

MassDEP also considered that Algonquin will implement measures to minimize the volume of planned gas releases, techniques to lower gas pressure before maintenance, conducting annual emergency shutdown systems tests with isolation valves closed, and scheduling multiple planned maintenance activities concurrently.

In evaluating methane emissions from gas releases or blowdown, MassDEP considered pipeline pump-down. MassDEP noted that pump-down would require the use of a low-pressure gas pipelines or compressor pumps powered by microturbines. Therefore, pump-down was eliminated from additional consideration. MassDEP notes that the use of microturbines would create additional emissions as a by-product of combustion. These emissions would include criteria pollutants as well as the GHG CO₂.

Section 7 of the Global Warming Solutions Act also requires consideration of sea level rise. MassDEP notes that this Facility will be located at an elevation of 19 feet above sea level which will provide protection from the effects of sea level rise.

As described above, although the agency was not required to do so, MassDEP considered reasonably foreseeable climate change impacts, including additional greenhouse gas emissions. Nonetheless, MassDEP recognizes that the proposed Air Plan Approval did not explicitly acknowledge Section 7 of the GWSA. Therefore, an affirmative statement of MassDEP’s consideration of the reasonably foreseeable climate change impacts of the facility as required by Section 7 of the GWSA has been added to the Final Air Plan Approval.

Comment 24: Numerous people commented on the potential sound impacts of the Facility. Specifically, that the compressor will be heard throughout the entire Fore River area, especially since the proposed site is located right next to the water which can result in sound refraction and amplifying of sound.

Response 24: MassDEP believe the Air Plan Application adequately documented that the Facility's proposed noise mitigation will suppress sound to the maximum extent practical. The application also documents that operation of the Facility will not create a "pure tone" condition, i.e. when an octave band center frequency sound pressure level exceeds the two adjacent center frequency sound pressure levels by 3 decibels or more.

Noise mitigation at the Facility includes: 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.

Based on the public concerns raised, a second sound level impact assessment was conducted in October 2018.¹² As a result, additional sound mitigation measures were proposed as follows: 1. Lube oil cooler – quieter equipment and relocating behind an 8.5-inch concrete courtyard barrier wall; 2. 5-foot silencers on the gas turbine compressor building air intake fans; 3. A second compressor building roll-up door; 4. Replacing the metal skinned gas compressor building with an 8.5 inch thick concrete block building; and 5. Enhanced silencing features for the turbine intake and exhaust.

As presented in the revised sound level impact assessment report, the increase in sound over ambient (background) was established at seven locations, which were chosen to represent residences in various directions. The increase in sound over background at the seven locations ranged from 1 to 8 dB(A).

Comment 25: Numerous people commented on potential odor impacts from operation of the proposed facility.

Response 25: Natural gas is colorless, tasteless, and odorless. An odorant is added as required by the United States Department of Transportation, Pipeline and Hazardous Materials Safety Administration Regulations at 49 CFR §192.625(a), which states "A combustible gas in a distribution line must contain a natural odorant or be odorized so that at a concentration in air of one-fifth of the lower explosive limit, the gas is readily detectable by a person with a normal sense of smell." This is a performance based standard that does not specify the specific type or concentration of the odorant used. This odorant additive produces the familiar "natural gas smell."

¹²See *Sound Level Impact Assessment Report*, dated October 15, 2018.

The odorant additive to the natural gas would be the primary potential source of odor at the facility. The use of an odorant provides an important level of safety by providing the Facility operator and the public with a warning mechanism. The presence of odor at the Facility would be an indication that there is a malfunction or other non-routine operating scenario at the Facility.

The Plan Approval includes a Leak Detection and Repair (“LDAR”) program, which is designed to identify and repair leaks, which could be a source of odor. Based on the comments on odor, the MassDEP has modified the requirements for the LDAR program to specifically include the use of audio, visual, and olfactory (“AVO”) as indicators of a possible leak. Any odor would indicate that repairs are necessary, which would need to be completed in the timeframes specified in the LDAR program and Subpart OOOOa.

As discussed in the Air Plan Application, the Plan Approval, and this RTC, the Facility could conduct up to 2 pipeline blowdowns per year. These blowdowns are existing operations and are associated with pipeline maintenance. The pipeline gas is vented through a portable carbon adsorption bed to remove any odorant prior discharging to the atmosphere. The Permittee has existing agreements with the local public safety departments, which require notification prior to any planned blowdown event, which would alert the community to possible odor impacts.

As such, there will be no odor impacts from routine operation of this Facility. The Permittee is required to submit a Leak Detection and Repair (LDAR) program to MassDEP for review and approval prior to startup. The LDAR program will be no less stringent than the EPA LDAR requirements.

Comment 26: Commenters raised the issue of project segmentation and claimed that a second planned combustion turbine should have been included in the plan application review.

Response 26: This Project, referred to as Atlantic Bridge (“AB”), is one of two projects presented to the FERC. At the time of the proposed Air Plan Approval, the second project, referred to as Access Northeast (“ANE”), was still under review by FERC and was not included as part of the Air Plan Application submitted to MassDEP. ANE, as proposed to the FERC, would include an additional compressor co-located at the Weymouth Facility. The Town of Weymouth’s assertion that the two projects are inappropriately segmented is based on a review of the Massachusetts Environmental Policy Act (“MEPA”) Regulations at 301 CMR 11.00.

In letters dated March 17, 2016 and June 28, 2016 Weymouth Mayor Robert Hedlund requested, among additional requests, that the two projects be evaluated for segmentation under the Massachusetts Environmental Policy Act (“MEPA”) regulations at 301 CMR 11.00¹³. In a response dated July 11, 2016, Secretary Beaton concluded “...that the two projects, which are part of an interstate gas pipeline system, are sufficiently distinct in purpose, design and scope that they

¹³In addition to requesting a determination on whether Algonquin was inappropriately segmenting the Atlantic Bridge and Access Northeast Projects, the letter requested a determination on whether the Atlantic Bridge Project triggered MEPA review as a separate Project and in the event that MEPA review is not triggered for Atlantic Bridge, the letter requested that the Secretariat implement the MEPA “Fail-Safe” regulations at 301 CMR 11.04(1).

have independent utility and can be reviewed separately, notwithstanding the potential co-location of compression infrastructure and project timelines.”

Additionally, Secretary Beaton stated “Another consideration in making a determination on segmentation is whether environmental impacts of projects that do not individually exceed a Mandatory EIR threshold would exceed a Mandatory EIR threshold if cumulative impacts were considered. Based on information provided in project applications, the cumulative impacts of activities proposed on the Weymouth site would not exceed ENF thresholds for wetland resource areas or air emissions...”

The plan approval thresholds for Comprehensive Plan Applications at 310 CMR 7.02(5)(a)3.b. states “Any *individual* [emphasis added] internal combustion engine, such as stationary combustion turbine or stationary reciprocating engine, installed on or after March 23, 2006 shall comply with the requirements of 310 CMR 7.26(40) through (44), Engines and Combustion Turbines, except as provided by 310 CMR 7.26(42)(a)1., 310 CMR 7.26(43)(a)2. and 310 CMR 7.26(43)(a)3.”

The Regulations at 310 CMR 7.26 set Industry Performance Standards, for subject equipment in lieu of permitting. The Regulations at 310 CMR 7.26(43)(a)2. state “The owner or operator of any engine or turbine subject to 310 CMR 7.26(43) to be operated as a peaking power production unit, a load shaving unit, a unit in an energy assistance program, a unit that produces mechanical power to run pumps, a unit used to compress natural gas at a pipeline compressor station, a unit burning landfill, digester, or biogas, or other biofuels, may comply with the requirements of 310 CMR 7.02(5)(c) for such unit in *lieu* of complying with the requirements of 310 CMR 7.26(43).”

As stated in the regulations at 310 CMR 7.02(5)(a)3.b. and at 310 CMR 7.26(43)(a)2, permitting applicability is based on the individual engine or turbine and is not defined based on the aggregation of multiple units. On this basis, the turbines for Atlantic Bridge and the Access Northeast projects do not need to be included in the same air plan application.

As stated in Secretary Beaton’s July 11, 2016 letter “The thrust of the segmentation provisions is to prevent improper segmentation to evade review.” Although the Air Pollution Control Regulations at 310 CMR 7.00 do not address segmentation, MassDEP applies this approach to ensure that evasion of review does not occur. To this end, MassDEP considered whether the Atlantic Bridge and the Access Northeast Projects, if reviewed concurrently, would result in an additional level of review.

MassDEP concluded that even if the projects were reviewed concurrently, the combined emissions would still be well below the applicability thresholds that would trigger review under either the Nonattainment New Source Review (“NSR”) program at 310 CMR 7.00 Appendix A or the Prevention of Significant Deterioration (“PSD”) program at 40 CFR 52.21.¹⁴ Additionally,

¹⁴In April 2011, an agreement for delegation of the federal PSD program was executed by EPA Region 1 to the MassDEP.

MassDEP concluded that even if both projects were evaluated concurrently, there would be no effect on the BACT finding. Finally, MassDEP concluded that if an application for a second turbine powered compressor were to be submitted, MassDEP would have the opportunity to ensure that the Facility, as a whole, would not cause an exceedance of the NAAQS. This would give MassDEP the opportunity to evaluate the combined ambient air impacts of both compressor turbines prior to taking action on the second unit.¹⁵

As discussed above, MassDEP considered the possibility of segmentation and found that the Atlantic Bridge and the Access Northeast projects were not impermissibly segmented. Moreover, if the projects were reviewed concurrently, there would be no additional requirements imposed on the projects than would otherwise be imposed by reviewing the projects independently.

On June 29, 2017, the Applicant submitted a letter to the FERC, withdrawing the Access Northeast project from further review. As such, the issue of segmentation is no longer germane.

Comment 27: Commenters requested further information as to whether the modeling analysis included the compressor station blowdowns that will occur at the facility. If the modeling analysis did not include these emissions, we would request that such analysis be performed. For example, an analysis as to the impacts of the level of HAPs that will be emitted during a release of 70 million standard cubic feet of gas (e.g., the amount emitted by another compressor station in December 2013) should be completed before it can be determined that the maximum impacts from the proposed compressor station will not exceed TELs.

Response 27: The air dispersion modeling did not include blowdowns. The planned blowdowns at the facility are infrequent and only last several minutes. Because they are so infrequent and short in duration, it would not be appropriate to model concentrations from blowdowns as if they were a steady-state emission, and it would not be appropriate to compare such short duration emissions to air quality standards that are based on 24-hour and annual exposures.

Comment 28: Commenters were concerned that the additional air pollution from the Spectra Compressor Station and its routine blowdowns -- when combined with the already high benzene levels in the Boston area air, which exceed the MassDEP's Ambient Air Limits -- would do harm to the health of Fore River residents and beyond. Commenters were concerned that these emissions would allow carcinogenic chemicals to be emitted into this densely populated area would be injurious and irresponsible. This gas is known to be an extremely adverse health hazard for anyone with breathing issues, especially those suffering from asthma. This compressor would be a direct violation of their rights to clean and uncompromised air, would without doubt get them sick and pollute their already overtaxed lungs.

Response 28: See Response to Comment 27 herein with regard to analysis of blowdowns that was required by MassDEP as part of the application process.

Comment 29: Regarding Algonquin/Spectra's capacity to properly monitor, test, and report, commenters expressed a lack of confidence in Algonquin/Spectra's ability to properly monitor, test, and report on this compressor. Commenters noted the opinion that Algonquin/Spectra could have prevented the leaks, malfunctions in the recent year with proper monitoring, repairs, upgrades, replacements, adequate and thorough testing. Commenters criticized Spectra for being reactive, not being proactive.

Response 29: The Plan Approval has enforceable conditions for monitoring, testing and reporting with which the Applicant is required to comply. Those conditions are in Tables 9 and 11 of the Plan Approval. The monitoring requirements include continuously monitoring the inlet temperature of the turbine, the quantity of natural gas in the turbine and the number of startups and shut downs. The testing requirements include emissions testing in accordance with USEPA test methods. The Applicant is required to report any scheduled maintenance that is expected to result in a blowdown greater than 10,000 scf. This notification will also be provided to Weymouth, Quincy and Hingham. Under the Special Terms and Conditions in Table 12, the Applicant is required to submit a Leak Detection and Repair (LDAR) program to MassDEP for review and approval prior to initial startup.

Comment 30: Commenters expressed numerous specific public safety concerns about the compressor station. Commenters noted that compressor stations have leaks, fires and periodic explosions. Commenters noted that a compressor station and highly pressurized gas pipeline of this size create what Spectra itself refers to as an Incineration Zone of 1000 feet, a Blast Zone of ½ mile, and an Evacuation Zone of 2 miles. Also noted were Spectra's SEC disclosure statements acknowledging the risk of terrorist attacks and pipeline explosions as sufficiently credible to warrant their disclosure to investors. Commenters contended that an explosion could damage the MWRA plant, and result in all of that sludge going into the waters of the bays and the river. Commenters expressed concern that an explosion could also kill people on and around the bridge, in the surrounding houses and businesses and create a domino effect with flammable toxins in the surrounding industries and tank farms and the gas station across the street. Commenters also expressed fears that any explosion would likely put the Fore River Bridge out of commission, either due to being damaged during the initial explosion or being otherwise inaccessible due to safety concerns, which would make the most immediate evacuation route virtually useless.

Response 30: MassDEP does not have jurisdiction over public safety. As noted above, the FERC incorporated public safety concerns into its approval for the facility. In addition, the Governor charged the Executive Office of Public Safety (EOPS) with investigating the public concerns regarding the risks to the public from potential events of fire and explosions from the facility and the risks presented to the surrounding area. EOPS is working with the surrounding municipalities and their public safety officials to address public safety concerns.

Comment 31: One particular area that should be looked at, is the Weymouth/Hingham Back River, which was designated as an Area of Critical Environmental Concern (ACEC) almost thirty-five years ago, and is less than 2 miles from the proposed site of the Compressor Station.

Response 31: Based on the low level of air emissions permitted from the proposed Project, MassDEP does not believe that the Project will have any impact on the Back River ACEC.

Comment 32: The housing values in the evacuation zones around existing compressor stations are historically much lower due to this proximity. As such, we need to assume that the values of houses in the evacuation zone of the proposed Weymouth compressor will yield a similar fate. This 'might' be ok if we were benefiting greatly in another way, but we are not. In fact, this compressor station is helping to send gas up to Nova Scotia to be exported to Europe. Only 15% of the gas will be utilized by that area, and we already have access to that amount with the existing Weymouth plant.

Response 32: The effect on housing values of a proposed facility is beyond the scope of MassDEP's Air Plan Application review.

Comment 33: An Environmental Impact Statement was never done despite the numerous sources of toxic fumes within a one mile radius of the proposed fracked gas compressor station, despite the thousands of residents that live, work and attend numerous schools in this immediate area and also despite the fact that per FERC's own guidelines that require an EIS be done if a proposed project includes construction of a new building. Nothing less than a full, truthful EIS of the actual air in the Fore River Basin should be done including information and proposals from all segments of this pipeline expansion project in order to evaluate the total truthful impact of these proposed projects on our actual air quality here in the Fore River Basin.

Response 33: The FERC EIS process is beyond the scope of MassDEP's Air Plan Application review.

Comment 34: A commenter suggested that MassDEP consider data from the non-profit Home Energy Efficiency Team (HEET), which has produced a map of natural gas leaks in Massachusetts. This data was compiled from reports issued by the utility companies. Weymouth and Quincy had a combined 747 natural gas leaks last year that were not repaired, as shown below:

Weymouth

- 295 unrepaired natural gas leaks in 2016
- 402 unrepaired natural gas leaks in 2015
- 656 unrepaired natural gas leaks in 2014

Quincy

- 452 unrepaired natural gas leaks in 2016
- 570 unrepaired natural gas leaks in 2015
- 613 unrepaired natural gas leaks in 2014

It is very important to point out that these numbers are higher than any other city or town in the state, excepting only the large cities of Boston, Worcester, and Springfield. This means that the Weymouth-Quincy area is already burdened with an extremely high level of fugitive natural gas emissions.

Response 34: Assessment of natural gas pipeline leaks is beyond the scope of MassDEP's Air Plan Application review.

Project information can be found at the following link:

<https://www.mass.gov/service-details/algonquin-natural-gas-compressor-station-weymouth>

MassDEP is providing copies (electronic or hard copy) of the Final Plan Approval and this RTC to local, state, and federal officials who commented on the Proposed Plan Approval. Copies of the Final Plan Approval may also be obtained by writing or calling MassDEP between the hours of 8:45 AM and 5:00 PM, Monday through Friday, excluding holidays:

MassDEP, Southeastern Regional Office
20 Riverside Drive
Lakeville, MA 02347
(508) 946-2700

Attachment A - List of Commenters on Proposed Non-Major Comprehensive Plan Approval for Natural Gas Compressor Station, Weymouth