COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF APPEALS AND DISPUTE RESOLUTION

September 29, 2020

In the Matter of	OADR Docket Nos. 2019-008, 2019-009, 2019-010, 2019-011, 2019-012 and 2019-013
Algonquin Gas Transmission LLC	Air Quality Plan Approval Weymouth, MA

PRE-FILED DIRECT TESTIMONY OF GLENN KEITH

I, Glenn Keith, hereby state as follows:

1. My name is Glenn Keith. I have been employed by the Massachusetts Department of Environmental Protection (MassDEP) since 1989. I have been the Director of the Division of Air and Climate Programs within MassDEP's Bureau of Air and Waste since October 2018. As Director I am responsible for administering air quality pollution control programs for the Commonwealth. Prior to my role as Director, I was a Deputy Director in the Division of Air and Climate Programs for 18 years. Prior to my role as a Deputy Director, I was a Branch Chief for Waste Planning for 3 years. Prior to my role as Branch Chief, I was a Regional Planner in the Bureau of Waste Site Cleanup for 9 years. I received a Bachelor of Arts in Communication from the University of Massachusetts at Amherst in 1988. I also have taken numerous technical and regulatory training courses sponsored by MassDEP, the U.S. Environmental Protection Agency (EPA), and the Northeast State for Coordinated Air Use Management (NESCAUM). A copy of my resume is attached as Exhibit 1.

2. MassDEP determined that an Electric Motor Drive (EMD) is properly excluded in Step 1 of the Top-Down Best Available Control Technology (BACT) analysis because it would redefine the source proposed in Algonquin Gas Transmission LLC's (Algonquin) Non-major Comprehensive Plan Application for the Compressor Station in Weymouth, MA. In making this determination MassDEP relied on 310 CMR 7.00, MassDEP's BACT Guidance, EPA's NSR Workshop Manual (EPA Manual), the pre-filed direct testimony of Wendy Mertz, and the Applicant's July 24, 2020 Addendum to the Application (Addendum). MassDEP also considered public comments received on redefining the source.
3. MassDEP's regulations at 310 CMR 7.02 require a plan approval prior to the construction of a facility or emission unit that may emit pollutants to the ambient air. The regulations do not confer on MassDEP the role of determining what type of facility or emission unit will be built or of dictating the purpose and design of a proposed facility or emission unit through the BACT analysis. Instead, MassDEP looks to the applicant to define a proposed facility's or emission unit's purpose and basic design in its plan application. Relevant to this matter, Algonquin proposed construction of a natural gas compressor station that included a natural gas-fired combustion turbine, referred to as "Emission Unit 1" in the Plan Application. Following EPA's Manual, MassDEP requires BACT to be determined for each emission unit. Therefore, the question that MassDEP considered is "What is BACT for a natural gas-fired combustion turbine used to compress pipeline natural gas?"
4. MassDEP has permitted numerous natural gas-fired combustion turbines for the purpose of compressing natural gas. There are two recognized ways to control emissions from a natural gas-fired combustion turbine that have been considered in BACT analyses for

these projects – innovative fuel combustion techniques (such as use of a SoLoNOx combustion turbine that has inherently lower emissions of nitrogen oxides) and add-on controls (such as selective catalytic reduction).

5. Prior to this matter, MassDEP had never received a plan approval application for a combustion turbine for a compressor station that listed an EMD as a potential control technology, and MassDEP had never required consideration of an EMD in the BACT analysis for a combustion turbine.
6. MassDEP's BACT Guidance does not explicitly address "redefining the source."[1] In the absence of state-specific guidance on this topic, MassDEP relies upon the EPA Manual to determine whether an alternative technology would redefine the source.
7. According to the EPA Manual, the first step in the BACT process is to identify all available control options. The EPA Manual states "Available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation."[2]
8. In this case, an EMD is not a control technology or technique that can be "applied to" the combustion turbine. An EMD would be a complete replacement of the combustion turbine, and since an EMD does not have any emissions, there would no longer be an emissions unit. Therefore, an EMD would redefine the source since it would be a wholesale replacement of the proposed combustion turbine with a fundamentally different technology.

[1] MassDEP has a BACT policy available on MassDEP's website at https://www.mass.gov/doc/best-available-control-technology-bact-guidance/download

[2] EPA's New Source Review Workshop Manual, B.5

9. The EPA Manual categorizes control alternatives in three ways: Inherently Lower-Emitting Processes/Practices, Add-on Controls, and Combinations of Inherently Lower-Emitting Processes and Add-on Controls. The EPA Manual further states: "Lower-polluting processes should be considered based on demonstrations made on the basis of manufacturing identical or similar products from identical or similar raw materials or fuels."[3] For the compressor station, a natural gas-fired combustion turbine is the means for producing compressed gas, and uses a portion of the natural gas as fuel. An EMD could be the means for producing compressed gas but not by means of an identical or similar fuel (it runs on electricity), and therefore would not need to be considered under the EPA Manual.
10. The EPA Manual states "Historically, EPA has not considered the BACT requirement as a means to redefine the design of the source when considering available control alternatives. For example, applicants proposing to construct a coal-fired electric generator have not been required by EPA as part of a BACT analysis to consider building a natural gas-fired electric turbine although the turbine may be inherently less polluting per unit product (in this case electricity)."[4]
11. Similar to EPA, MassDEP does not consider the BACT requirement as a means to redefine the design of the source. Instead, MassDEP evaluates BACT for the emission unit that is proposed by the applicant and does not require consideration of technologies with a fundamentally different design.
12. While EPA's Manual does not preclude state discretion in its own permitting programs regarding BACT analysis, states must follow their own regulations, guidance, and

[4] EPA's New Source Review Workshop Manual, B.13

established practices. As stated above, MassDEP does not use the BACT requirement as a means to redefine the source.

13. When considering if a technology redefines the source, MassDEP considers the basic design proposed and evaluates which design elements are inherent to the applicant's purpose and that could be changed without disrupting the basic design.

14. The basic design of Algonquin's proposed emission unit is a natural gas-fired combustion turbine that uses as fuel part of the natural gas flowing through the facility. As set forth in the pre-filed direct testimony of Wendy Merz, Algonquin proposed "a stationary combustion turbine fired by the natural gas flowing through the Facility."[5] An EMD does not operate on natural gas and requires a completely different design compared to a combustion turbine design.

15. A key reason Algonquin proposed a natural gas-fired combustion turbine is that natural gas fuel for the combustion turbine is co-located within the facility, and therefore the emission unit was designed to rely on the readily available natural gas fuel source. As set forth in the pre-filed direct testimony of Wendy Merz "Natural gas pipeline facilities are co-located with the Facility and provide readily available fuel for the compressor driver and other ancillary equipment at the site. Therefore, the facility is designed to combust a portion of the natural gas that it is compressing to achieve the basic purpose of increasing gas pressure in the pipeline at that location."[6] Requiring Algonquin to consider an EMD, which does not operate on natural gasl, would disrupt Algonquin's stated business purpose of the compressor station, which is to compress natural gas using the readily available fuel at hand to drive the compressor.

---

[5] Pre-filed Direct Testimony of Wendy Merz, paragraph 23.

[6] Pre-filed Direct Testimony of Wendy Merz, paragraph 29.

16. After considering the basic design and business purpose of the facility, MassDEP determined that an EMD would disrupt the basic design and business purpose of the facility and would constitute redefining the source. The proposed emission unit in this instance is a natural gas combustion turbine that is part of a natural gas compressor station where the emission unit is designed to rely on the readily available natural gas that is co-located within the facility. An EMD is not a control technology that can be applied to the natural gas combustion turbine, but would require a completely different design and would not rely on the readily available natural gas fuel source.
17. Therefore, it is MassDEP's determination that an EMD is not a potential control technology that should be considered in the BACT analysis for the proposed natural gas-fired combustion turbine because an EMD would redefine the source. This determination is consistent with MassDEP's interpretation of its regulations and BACT guidance, and practice of not using BACT to redefine the source.

Signed under the penalties of perjury this 29th day of September, 2020.

Glenn Keith

Glenn Keith

EXHIBIT 1

Glenn Keith

617-292-5874
glenn.keith@mass.gov

Deputy Director, Division of Air and Climate Programs **December 2000 – Present**
Bureau of Air and Waste
Massachusetts Department of Environmental Protection (MassDEP)

- Manage three division Branches containing 32 environmental analysts and engineers responsible for air quality planning, stationary source regulation, and air quality monitoring.
- Oversee development of State Implementation Plans (SIPs) to demonstrate compliance with federal Clean Air Act national ambient air quality standards and regional haze goals.
- Develop regulations and policies to improve air quality and reduce greenhouse gas emissions using a multi-pollutant approach.
- Align planning and regulatory efforts to support development of energy efficiency and renewable energy initiatives.
- Oversee statewide air pollution monitoring network and ensure federal monitoring regulations and data quality objectives are met.
- Provide the public with timely air quality information through forecasts, reports, and MassAir website.
- Participate in regional air planning efforts and represent Massachusetts interests in regional organizations, including NESCAUM, National Association of Clean Air Agencies, Mid-Atlantic/ Northeast Visibility Union, and Ozone Transport Committee.
- Secure adequate funding through federal grants to support air quality programs and achieve performance commitments.
- Managed the Toxics Use Reduction Act program, including development of regulations and guidance, certification of toxics use reduction planners, fees collection, outreach and training, chemical use tracking, compliance and enforcement, and coordination with partner agencies, Administrative Council, Advisory Committee, and Science Advisory Board.
- Established statewide asbestos program coordination, increased cooperation with Division of Occupational Safety licensing program, and developed plan for asbestos regulation reforms.
- Oversaw implementation of the Massachusetts Solid Waste Master Plan and other waste and toxics planning initiatives.

Chief, Waste Planning Branch **October 1998 – November 2000**
Bureau of Air and Waste, MassDEP

- Developed Beyond 2000 Solid Waste Master Plan that established the Commonwealth's Solid Waste Policy Framework for the new decade.
- Developed 1999 Solid Waste Master Plan amendments to address landfill capacity needs.
- Led efforts to integrate solid waste planning across MassDEP programs.
- Coordinated the activities of the Solid Waste Advisory Committee to ensure stakeholder input in waste program development.
- Developed annual program plans and MassDEP/U.S. Environmental Protection Agency (EPA) Performance Partnership Agreements and tracked and reported results.

Regional Planner **June 1989 – September 1998**
Bureau of Waste Site Cleanup, MassDEP

- Conducted comprehensive evaluation of the Chapter 21E Waste Site Cleanup Program.
- Coordinated Brownfields Advisory Committee efforts that led to 1998 Brownfields legislation.
- Developed policies, regulations, and program improvements to increase the effectiveness of the Waste Site Cleanup program.
- Developed annual program plans and MassDEP/U.S. EPA Performance Partnership Agreements and tracked and reported results.
- Coordinated the activities of the Waste Site Cleanup Advisory Committee to ensure stakeholder input into program development.
- Developed and implemented communication and outreach strategies to inform the regulated community about new policies, regulations, and program initiatives.
- Developed plans to involve the public in the cleanup of 21E waste sites.
- Coordinated the Bureau's response to proposed legislation affecting Chapter 21E.

Faculty **1995 – 2001**
Environmental, Health and Safety Program
Northeastern University, Boston, MA

- Developed and taught a 22-hour course on the Chapter 21E cleanup regulations for environmental professionals (three semesters per year).

EDUCATION

University of Massachusetts, Amherst, MA
Bachelor of Arts in Communication, 1988