

**COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION**

In the Matter of	)	
	)	OADR Docket Nos. 2019-008 - 2019-013
	)	DEP File No.: Air Quality Application
	)	No. SE-15-027
Algonquin Gas Transmission, LLC	)	Weymouth, MA

PRE-FILED DIRECT TESTIMONY OF WENDY MERZ

I, Wendy Merz, hereby state as follows:

1. I am a Principal Consultant at Trinity Consultants (“Trinity”). My business address is 211 Welsh Pool Road, Suite 238, Exton, PA 19341. Trinity is the environmental consulting firm that worked with the Applicant to prepare the Non-Major Comprehensive Plan Approval (“NMCPA”) application and subsequent submittals with respect to the construction and operation of a natural gas-fired compressor station and associated facilities in Weymouth, Massachusetts (the “Facility” or “Compressor Station”). I am providing this testimony on behalf of the Applicant Algonquin Gas Transmission, LLC (“Algonquin”).^{1/}

2. I have a MS in Environmental Engineering from the University of Cincinnati and a BS in Chemical Engineering from Lehigh University.

3. I have worked for Trinity for 13 years and have an additional 7 years of experience focusing on air quality while working for other environmental firms. My environmental consulting

^{1/} Algonquin is a subsidiary of Enbridge.

experience has always focused on air permitting and Clean Air Act compliance. My responsibilities at Trinity have included managing air permitting and compliance projects for clients in a wide variety of industries, including all sectors of the natural gas industry. In addition, I opened a new Trinity office in the Philadelphia area and managed it for seven years. In my current role, I manage several clients and, in that capacity, I provide oversight on Trinity's projects for Enbridge in the Northeastern United States. I assumed the Project Manager role for the air permitting of the Facility in 2017.

4. As part of my responsibilities, and consistent with my knowledge and experience, I routinely conduct analyses of the best available (air pollution) control technology ("BACT") and this includes analyses for a number of natural gas compressor stations.

5. Pursuant to the Massachusetts Department of Environmental Protection ("MassDEP") Commissioner Suuberg's June 12, 2020 and June 24, 2020 Orders, Algonquin submitted on July 24, 2020 an Addendum to its Non-major Comprehensive Plan Application (the "Addendum") with respect to the Facility. The Addendum demonstrates that an electric motor drive ("EMD") alternative is not BACT for the natural gas-fired SoLoNO_x Taurus 60 turbine element of the Facility. I personally participated in the completion of the Addendum.

6. As a condition of issuing an Air Quality Plan Approval for a NMCPA under 310 CMR 7.02(5), MassDEP determines BACT for the Facility that is the subject of the application. An applicant may provide, among other things: (a) a Top-Down, case-by-case analysis of BACT; or may propose (b) Top Case BACT (a level of control from the most recent plan approval or other action issued by MassDEP). *See, e.g.*, Best Available Control Technology (BACT) Guidance June 2011, <https://www.mass.gov/files/documents/2016/08/oo/bactguid.pdf>.

7. Based upon my participation, input, analysis, and expertise, and in coordination with Algonquin, the Addendum includes a Top Case BACT analysis of an EMD alternative to the natural gas-fired SoLoNO_x Taurus 60 turbine. Specifically, I have been asked to provide testimony concerning the Top Case BACT analysis, which is set forth in Sections 3.1 and 3.2 of the Addendum. The Addendum identifies the use of SoLoNO_x combustion technology to achieve NO_x emissions of no greater than 9 ppmvd @ 15% O₂ during normal operating conditions and the use of oxidation catalyst to achieve emissions of no greater than 1.25 ppmvd CO @ 15% O₂ and 5 ppmvd VOC (as propane) @ 15% O₂ during normal operating conditions as the appropriate “level of control from the most recent plan approval or other action issued by the Department” for simple cycle turbines used as natural gas fired compressor drivers and therefore the appropriate Top Case BACT.

8. Alternatively, and as an additional ground for excluding EMD as BACT, the Addendum includes a top-down BACT analysis demonstrating that EMD is not BACT for two independent reasons: (1) in Step 1 of the top-down BACT analysis, EMD would improperly substitute or redefine the source under Massachusetts regulations and guidance; and (2) under Step 4 of the top-down BACT analysis, EMD is not a cost-effective control and would have other significant energy and environmental impacts. I have been asked to provide testimony concerning Step 1 of this analysis, which was prepared with my participation, input, analysis, and expertise and in coordination with Algonquin.

9. I participated in or directed the development of Sections 3.1, 3.2, and 4.1 of the Addendum and determined that their substance was accurate and appropriate for this purpose.

Top Case BACT Analysis

10. MassDEP's air regulations state that, "[i]n lieu of an emission unit-specific top-down BACT analysis, an applicant may propose an emission control limitation by using" one or more listed approaches, including: "[p]ropos[ing] a level of control from the most recent plan approval or other action issued by the Department (Top Case BACT)." 310 CMR 7.02(8)(a)(2)(a).

11. The most recent MassDEP Plan Approval for a simple cycle natural gas-fired stationary combustion turbine is the January 24, 2020 NMCPA Approval # WE-17-021 issued to Tennessee Gas Pipeline Company, LLC for its Agawam Compressor Station. This Plan Approval authorizes the installation of a Solar Taurus 70-10802S, or equivalent, natural gas-fired lean-burn premix simple cycle combustion turbine ("Agawam Plan Approval"). The Agawam Plan Approval is attached as Appendix A to the Addendum.

12. NO_x BACT for this turbine was determined to be the use of SoLoNO_x combustion technology to achieve emissions of no greater than 9 ppmvd @ 15% O₂ during normal operating conditions.

13. On February 26, 2019, MassDEP approved another NMCPA Application for a natural gas-fired stationary combustion turbine in Hopkinton ("Hopkinton Approval"), which is attached as Appendix B to the Addendum.

14. NO_x BACT for the natural gas-fired lean-burn premix simple cycle combustion turbine authorized in the Hopkinton Plan Approval was determined to be the use of SoLoNO_x combustion technology to achieve emissions of no greater than 9 ppmvd @ 15% O₂ during normal operating conditions. See Appendix B at 4.

15. Section 3.1 of the Addendum explains that, based on the Agawam Plan Approval, and consistent with the Hopkinton Plan Approval, MassDEP should determine that Top Case NO_x BACT for the Facility is the use of SoLoNO_x combustion technology to achieve NO_x emissions of no greater than 9 ppmvd @ 15% O₂ during normal operating conditions.

16. Section 3.2 of the Addendum explains how MassDEP's exclusion of EMD from the BACT Analysis in the Agawam and Hopkinton Approvals is consistent with its regulations and guidance.

17. Section 3.2.1 explains that MassDEP's definition of BACT does not support consideration of EMD as BACT for a natural gas combustion turbine because MassDEP regulations indicate that BACT is determined based on the applicant's proposed "facility" (See 310 CMR 7.00), the applicant's "specific application" and that BACT is "emission unit-specific" (See 310 CMR 7.02(8)(a)(2)). An EMD is not (1) an element of Algonquin's Facility; (2) the specific application proposed by Algonquin; or (3) the emission unit proposed by Algonquin.

18. Section 3.2.2 explains how MassDEP's Top Case Guidelines are further evidence that the regulations do not support EMD as BACT. MASS. DEP'T ENVTL. PROT., TOP CASE GUIDELINES (June 2011), *available at* <https://www.mass.gov/doc/top-case-bact-guidelines/download>. The Top Case Guidelines provide unambiguous examples of how MassDEP interprets its regulations to require the evaluation of BACT only for the facilities, applications, or emission units proposed by a permit applicant.

19. As Table 3-1 in the Addendum highlights, the Top Case Guidelines specify Top Case BACT for combustion sources by: (1) identifying different combustion sources (*e.g.*, simple cycle combustion turbines and combined cycle combustion turbines); (2) further distinguishing

those sources by the fuel combusted; and (3) then identifying BACT for those fuel-specific sources. MASS. DEP'T ENVTL. PROT., TOP CASE GUIDELINES (June 2011) "MassDEP Top Case BACT Guidelines – Combustion Sources," p. 15, <https://www.mass.gov/files/documents/2016/08/vc/bactcmb.pdf>.

20. No Top Case BACT specified in the Top Case Guidelines for any combustion source identifies a change in fuel (*e.g.*, from distillate oil to natural gas²), a substitution of one category of combustion source for another (*e.g.*, from a simple cycle turbine to a reciprocating engine), or a substitution of one energy source for another (*e.g.*, renewable for thermal generation). Nor do the Top Case BACT Guidelines specify EMD as a potential control technology for any combustion turbine or any other combustion source.

21. Section 3.2.2 explains that because application of Top Case BACT emissions limitations contained in the Top Case Guidelines may "preclude the need for applicants to prepare and submit a 'Top-down BACT analysis'" and the Top Case Guidelines do not identify an alternative fuel or power source as a possible control technology for any combustion source, the Top Case Guidelines demonstrate that EMD is properly excluded from Top Case BACT, thus precluding the need for any top-down analysis.

Step 1 of the Top-Down BACT Analysis

22. I have also been asked to testify regarding Step 1 of the top-down BACT analysis in the Addendum, which evaluates whether EMD should be included in the top-down analysis.

² This is the case even though the Top Case BACT NO_x emission rate for combustion turbines firing distillate oil is 0.34 lbs/MWh, which is more than twice the emission rate of 0.14 lbs/MWh for combustion turbines firing natural gas.

23. Section 4.1.1. demonstrates that EMD must be excluded from Step 1 of the top-down BACT analysis because, under MassDEP's Regulations and guidance, it is not an appropriate control technology that should be evaluated in connection with the Facility proposed by Algonquin – a stationary combustion turbine fired by the natural gas flowing through the Facility.

24. Section 4.1.2 of the Addendum demonstrates that, even if MassDEP's Regulations and guidance were ambiguous regarding whether they support consideration of a control technology that would be a substitution for the proposed source, any such ambiguity would be resolved by the MassDEP BACT Guidance's incorporation of EPA guidance that excludes from consideration a technology that redefines the source.

25. The MassDEP BACT Guidance states:

*MassDEP needs to balance the many impacts of a project while reviewing its proposed emission limits. You must use a top-down procedure to determine BACT. * * * This procedure is . . . further described in the . . . October 1990 draft EPA New Source Review Workshop Manual.*

MassDEP BACT Guidance at 3.

26. The EPA's New Source Review ("NSR") Workshop Manual³ explicitly states: "Historically, EPA has not considered the BACT requirement as a means to redefine the design of the source when considering available control alternatives." NSR Workshop Manual at B.13.

27. Section 4.1.2 of the Addendum summarizes the EPA's two-part test for determining when the evaluation of an alternative production process as a control technology veers into an

³ See Env'tl. Prot. Agency, New Source Review Workshop Manual (Draft) (1990) (hereinafter "NSR Workshop Manual").

illegitimate redefinition of the source proposed by the permit applicant, and highlights two categories of cases that are most relevant to Algonquin's BACT analysis: (1) cases evaluating facilities co-located with sources of fuel, energy, or raw materials; and (2) cases evaluating switching a fuel or source of energy from that proposed by the applicant.

28. Section 4.1.3 of the Addendum applies the federal "Redefines the Source" guidance and concludes that MassDEP should determine that requiring an EMD would disrupt the Facility's basic design elements, which are inherent to Algonquin's purpose for the Weymouth Compressor Station. As detailed in Section 4.1.3 of the Addendum, the Facility, as a component of the Atlantic Bridge Project, is needed to provide the additional compression required to move gas into the higher-pressure pipeline due to its location between the lower pressure Algonquin system and the higher pressure system.

29. 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. In contrast, the electrical transmission facilities that would be necessary to power an EMD are neither available at the site nor co-located with the Facility and would require the development of substantial infrastructure to bring it to the Facility, as described in the pre-filed direct testimony of John Heintz.

30. The replacement of the natural gas-fired SoLoNO_x Taurus 60 with an EMD would also impermissibly switch the fuel or power source at the site from co-located natural gas to electricity provided by the grid. As this replacement would require a complete project redesign, it does not meet the intent of the NSR Manual guidance that consideration of a lower-polluting

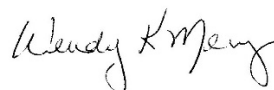
process be confined to equipment “*manufacturing identical or similar products from identical or similar raw materials or fuels.*” NSR Workshop Manual at B.10.

31. Furthermore, it would disrupt the basic business process of the facility as it was conceived from the start. As set forth in the pre-filed direct Testimony of Christopher Harvey, because EMDs are not used for compression on the Atlantic Bridge Project, there is no recovery of electric power costs included in the Atlantic Bridge Project Cost of Service & Rates or the rates Algonquin negotiated with its customers. The fuel type for the Facility is thus integral to the contract structure for Atlantic Bridge customers.

32. The Facility would also be unable to meet its basic business purpose with an EMD when power from the grid is unavailable. During electric power outages, Algonquin would not be able move gas into the higher-pressure pipeline. In contrast, the basic design for the Facility specified a natural gas fired compressor unit equipped with an emergency generator that is fueled by the same gas that the turbine is compressing, to provide the limited electric power necessary to run the compressor station in the event of an electrical outage, enabling Algonquin to deliver natural gas to contracted-for delivery points to the north.

33. For the reasons set forth in Section 4.1.3 of the Addendum, the selection of a SoLoNO_x turbine over EMD as a compressor driver is inherent to the basic design and cannot be changed without disrupting Algonquin’s stated business purpose for the Facility.

Signed under the pains and penalties of perjury on July 24, 2020.



Wendy Merz