

Best Available Control Technology/Clean Air Act: Federal Appellate Court Addresses Challenge to Natural-Gas-Fired Turbine Air Permit



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The United States Court of Appeals for the First Circuit (“Court”) addressed in a December 17th Decision the issuance of an air permit by the Massachusetts Department of Environmental Protection (“DEP”) to Algonquin Gas Transmission (“AGT”) for a natural gas compressor station (“Station”). See No. 21-1131.

The key issue addressed was whether DEP correctly concluded that an electric motor was not best available control technology (“BACT”) for the Station.

AGT had applied for the issuance of an air permit for the Station which would be located in Weymouth, Massachusetts. DEP approved AGT’s proposal to power the Station using a natural-gas-fired turbine. The turbine would emit nitrogen oxide (“NO_x).

The City of Quincy, Towns of Braintree and Hingham, and a group of citizens (collectively “the City”) argued in a prior appeal before the Court that DEP:

. . . did not follow its own established procedures when it eliminated an electric motor as a possible alternative to the gas-fired turbine.

The Court remanded to DEP requesting that it assess whether an electric motor was in fact BACT for the Station. DEP again concluded that an electric motor was not BACT for the Station. The air permit was issued and the City appealed this decision to the Court.

The Court undertakes a discussion of what constitutes BACT, (i.e., an emission limitation based on the maximum degree of reduction of any regulated air contaminant emitted from or which results from any regulated facility). The term further includes what DEP:

. . . determines is achievable for such facility through application of production processes and available methods, systems and techniques for control of each such contaminant.

The United States Environmental Protection Agency’s (“EPA”) five-step/top-down process for determining BACT was then discussed.

By way of summary, the five steps include:

1. Identify all available control technologies that have a practical potential for application to the emissions unit and regulated pollutant under evaluation
2. Eliminate any technically infeasible options
3. Rank the remaining control alternatives not eliminated in Step 2 based on their effectiveness in reducing controlled pollutant emissions
4. Evaluate energy, environmental, and economic impacts of each control option and eliminate controls that do not meet certain effectiveness criteria
5. The most effective control option that has not been eliminated is selected

DEP is stated to have adopted EPA's BACT five-step guidance. Using this guidance, DEP evaluates BACT on a case-by-case basis.

The Court notes that AGT had proposed to use a "SoLoNOx" natural-gas-fired combustion turbine at the Station.

Because the City raised the possibility of using an electric motor during the air permit process, AGT revised its application to address this possibility.

The BACT analysis identified various reasons for not utilizing it, which included the high cost of installing and operating an electric motor. However, AGT is stated to have previously not submitted a detailed BACT analysis for the electric motor option. The Court in its prior decision ultimately held that DEP's failure to exclude an electric motor as not BACT without performing a cost-effective calculation was arbitrary and capricious.

As a result, AGT subsequently submitted a detailed technical amendment to its air permit application providing a more extensive BACT analysis. It concluded that the electric motor could be excluded at either Step 1 (because it would redefine the source) or Step 4 (because it was not cost-effective).

DEP agreed with this analysis and the City again objected. The DEP Hearing Officer agreed with AGT's BACT analysis.

The Court in addressing this second appeal determines that DEP did not act arbitrarily and capriciously when it eliminated the possibility of an electric motor at Step 4 of the BACT analysis. An analysis of the economic impact of the control alternatives which remain after Step 3 was undertaken. The Court notes:

. . . The economic feasibility of a control option is measured by the technology's cost-effectiveness at reducing emissions of regulated pollutants -- with effectiveness "measured in terms of tons of pollutant emissions removed" and cost "measured in terms of annualized control costs.

Further, the Court notes the guidance provides that cost-effectiveness calculations can be conducted on an average or incremental basis. DEP and AGT assessed the average cost-effectiveness of an electric motor in their BACT analysis.

The average cost-effectiveness calculations resulted in DEP concluding that an electric motor was not BACT for the Station because its average cost-effectiveness exceeded the range set by the state agency.

The Court rejected the City's arguments that an electric motor should not be excluded at Step 4 of the BACT analysis as cost-infeasible. Those arguments had included:

- DEP used an incorrect baseline emissions rate for the gas-fired turbine in the denominator of the cost-effectiveness calculations
- DEP improperly considered the cost of electricity in the numerator of the formula as an annual operating cost of an electric motor

- DEP's acceptance of AGT's calculation for the total capital and infrastructure of installing an electric motor was not supported by substantial evidence
- An unrealistic interest rate was applied by DEP to calculate annualized capital costs of an electric motor
- DEP improperly relied on its guidance by evaluating the electric motor's cost-effectiveness against an outdated average cost-effectiveness range that was unadjusted for inflation

The Court cites the EPA guidance which is stated to indicate that electricity and other utility costs can be factored into the assessment of the operating costs of a proposed control technology, noting:

. . . in including the cost of electricity as an annual operating cost for an electric motor, DEP simply followed its established guidance and procedures.

The Court concludes that because DEP's determination that an electric motor could be excluded at Step 4 of the BACT analysis was neither arbitrary nor capricious, there is no need to also decide whether an electric motor could be excluded at Step 1.

The Court upholds DEP's issuance of the air permit.

A copy of the Decision can be downloaded [here](#).