

ARTICLES

Preventing Significant Deterioration Under the Clean Air Act: The BACT Requirement and BACT Definition

by John-Mark Stensvaag

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Editors' Summary:

Major emitting facilities are required to comply with BACT standards for each pollutant subject to regulation under the CAA. This requirement—initially thought to be inconsequential—has now become a dominant feature of the PSD program, for the first time subjecting greenhouse gas emissions from stationary sources to federally mandated pollution control standards.

This is the fifth in a series of Articles examining implementation of the Clean Air Act's (CAA's)¹ prevention of significant deterioration (PSD) program.² The first two Articles³ explored the intricacies of baselines, increments, and ceilings—the core features designed to assure that concentrations of certain air pollutants in clean areas of the country do not rise to the levels otherwise permitted by the national ambient air quality standards (NAAQS).⁴ The third work examined the circumstances under which a new stationary source must obtain a PSD permit.⁵ The fourth Article addressed the area classification system established by the U.S. Congress to specify the degree of air quality deterioration permitted in specific areas of the United States and the process by which states and Native American tribes may redesignate certain areas to allow greater or lesser levels of degradation.⁶

This Article examines the requirement that emissions from major emitting facilities must be subject to “the best available control technology”⁷—a standard widely referred to as BACT—and the definition of BACT. Two companion Articles, the sixth and seventh in the series, will address the BACT determination process.

I. Background

A. The Surprising Significance of BACT

I have been researching and writing about environmental law for more than 30 years, and have been doing so about the PSD program for more than a decade. A theme

Editors' Note: This Article is the fifth in a series on the CAA's complex PSD program. The first four Articles, which appeared in the December 2005, January 2006, January 2008, and January 2011 issues of ELR News & Analysis, focused on baselines, increments and ceilings, on the permit triggers for new facilities, and on area classification and redesignation.

1. 42 U.S.C. §§7401-7671q, ELR STAT. CAA §§101-618.
2. For a description of the PSD program's origin and development, see John-Mark Stensvaag, *Preventing Significant Deterioration Under the Clean Air Act: Baselines, Increments, and Ceilings—Part I*, 35 ELR 10807, 10808 & nn.1-6 (Dec. 2005); Craig N. Oren, *Prevention of Significant Deterioration: Control-Compelling Versus Site-Shifting*, 74 IOWA L. REV. 1, 10 (1988).
3. Stensvaag, *supra* note 2; John-Mark Stensvaag, *Preventing Significant Deterioration Under the Clean Air Act: Baselines, Increments, and Ceilings—Part II*, 36 ELR 10017 (Jan. 2006).
4. This Article assumes a basic understanding of NAAQS, the concepts of attainment and nonattainment, and the role of the PSD program in precluding the significant degradation of air quality in attainment and unclassifiable areas. For an explanation of these CAA features, see Stensvaag, *supra* note 2, at 10808-12.
5. John-Mark Stensvaag, *Preventing Significant Deterioration Under the Clean Air Act: New Facility Permit Triggers*, 38 ELR 10003 (Jan. 2008).
6. John-Mark Stensvaag, *Preventing Significant Deterioration Under the Clean Air Act: Area Classification, Initial Allocation, and Redesignation*, 41 ELR 10008 (Jan. 2011).
7. CAA §165(a)(4), 42 U.S.C. §7475(a)(4).

of my research has been that one's "initial understanding of each modern environmental control scheme is misleading, because the scheme will be shown to be vastly different once the fine print has been explored."⁸ This has certainly been true of my encounter with the PSD program. And nowhere is this truer than when it comes to BACT.

Based on the text of the statute and the underlying regulations, I have always assumed (and taught) that the heavyweight in the PSD ring is the increment system. Had I been asked in 1974 when the PSD program was first fashioned by the U.S. Environmental Protection Agency (EPA), I would have predicted that the increment system would impose the most important constraint on industrial development in clean air areas. By contrast, I would have prophesied that the BACT requirement would quietly take its place as just one more acronym in the bewildering array of technology-based standards commanded by federal environmental statutes. After all, a great many major emitting facilities needing PSD permits would already be subject to New Source Performance Standards (NSPS).⁹ BACT might in theory be more demanding but, really, how much difference could it make? Even as I turned to focus my current PSD project on the BACT element, I feared that the research would be deadily dull and that the resulting Article would be a yawner.

A yawner it may be, but not because BACT is a dull topic, and certainly not because BACT is insignificant. I have demonstrated in earlier Articles that the increment system has turned out to be something of a dud, at least for now.¹⁰ BACT, however? As we will see, BACT is king of the hill. Who knew?

B. The Purpose of BACT

The core principle of the PSD program is that air quality in clean areas of the country must be prevented from degrading to the levels otherwise permitted by NAAQS.¹¹ The primary mechanism for achieving this goal is the statutory command that emissions of particulate matter up to 10 microns in size (PM₁₀), sulfur dioxide (SO₂), and nitrogen dioxide (NO₂) from new¹² major emitting facilities¹³ may not exceed the ceilings created by operation of

the increment system.¹⁴ This is one of the demonstrations that each new major emitting facility must make to qualify for a PSD permit.¹⁵ It is easy to see why such a demonstration is required. The PSD program is all about minimizing degradation, and compliance with an increment system focused on local air quality minimizes the deterioration of air quality.

Each applicant for a PSD permit must also make an additional demonstration: that its emissions will comply with BACT. What is the purpose of this additional requirement—a demonstration that focuses not on air quality but on pollution control technology?¹⁶

Early writers, including EPA, stressed that the BACT requirement was intended to strengthen the increment requirement and, in particular, to assure that increments were not handed out too easily to the first PSD permit applicants in an area. Thus, for example, EPA's 1978 Guidelines for Determining BACT declared: "The primary purpose of BACT is to optimize consumption of PSD air quality increments thereby enlarging the potential for future economic growth without significantly degrading air quality."¹⁷

It has also been said that "the purpose of BACT . . . is to promote the use of the best technologies as widely as possible."¹⁸ Prof. Melissa Powers rightly describes BACT as "a technology-enhancing regulatory regime."¹⁹ Other authors have criticized "best available" technology stan-

8. John-Mark Stensvaag, *The Not So Fine Print of Environmental Law*, 27 *LOY. L.A. L. REV.* 1093, 1103 (1994).

9. See CAA §111(b), 42 U.S.C. §7411(b).

10. See Stensvaag, *supra* note 3, at 10044-46.

11. See Stensvaag, *supra* note 2, at 10809.

12. The PSD program applies not only to new major emitting facilities but also to certain modifications of existing facilities. The circumstances in which modification activities trigger the need for a PSD permit are complex and highly controversial. See Stensvaag, *supra* note 5, at 10004 & n.9. This Article does not address those circumstances.

13. For an examination of what makes a new stationary source a major emitting facility, see Stensvaag, *supra* note 5.

14. See Stensvaag, *supra* note 6, at 10010. For a detailed examination of how the increment system has been implemented, including development of the ceilings and calculation of increment consumption, see Stensvaag, *supra* note 2, and Stensvaag, *supra* note 3.

15. See CAA §165(a)(3)(A), 42 U.S.C. §7545(a)(3)(A).

16. Prof. Craig Oren points out: "The BACT requirement can be seen as imposing 'technology-based' controls, while the increments impose a variable 'tertiary' air quality standard consisting of the baseline plus the increments." Oren, *supra* note 2, at 29.

17. 1978 Guidelines for Determining Best Available Control Technology (BACT), transmitted by Memorandum from David G. Hawkins to Regional Administrators (Jan. 4, 1979), at 3. See also *id.* at 12 ("it is important that . . . areas use . . . BACT determinations . . . to conserve the remaining increments as much as possible"); EPA Office of Air, Noise, and Radiation, Prevention of Significant Deterioration Workshop Manual at I-B-13 (Oct. 1980) ("the primary purpose of a BACT analysis . . . is to minimize the consumption of PSD increments and to preserve the ambient concentrations of criteria pollutants in order to maintain the potential for future economic growth"); 61 Fed. Reg. 38250, 38272 n.37 (July 23, 1996) ("The legislative history . . . indicates that an intended benefit of the BACT requirement is the minimization of the amount of increment consumed by any single source, thus allowing for greater growth in an area."); 45 Fed. Reg. 52676, 52722 (Aug. 7, 1980) (overly lenient BACT determinations by states and EPA Regional Offices are unlikely "since loose BACT determinations would result in accelerated consumption of increment").

18. In re General Motors, PSD Appeal No. 01-30, 10 E.A.D. 360, 2002 WL 373982, 2002 EPA App. LEXIS 2 (EPA EAB Mar. 6, 2002), at slip op. 10.

19. Melissa Powers, *Integrating The Clean Air Act With Cap-and-Trade*, 37 *RUTGERS L. REC.* 150, 159 (2010). Professor Powers' article is a splendid exploration of the virtues of NSPS and BACT, and argues convincingly that a cap-and-trade approach to greenhouse gases (GHG) should not preempt the powerful technology-based limitations approach of the existing CAA.

dards in general as tending “to select, more or less arbitrarily, relatively few pollutants and devot[ing] enormous administrative and control resources to regulating them to the hilt.”²⁰

For reasons we will discover in this Article and its companions, the purpose of BACT has evolved during the past 35 years and has taken us in directions that were only dimly foreseen—if at all—at the time of its adoption.

C. Heading Off Confusion

The BACT element of the PSD program has been called “the most misunderstood and the least correctly applied”²¹ of all new source review (NSR)²² processes. Perhaps it is. In any event, it is helpful to break our consideration of this confusing element into three components: (1) the BACT requirement; (2) the BACT definition; and (3) the BACT determination.

The BACT *requirement* is the federal command that emissions of certain pollutants from certain stationary sources must comply with a specified standard. The BACT *definition* is the articulation of what that standard must be. The BACT *determination* is the process in which concrete emission limitations are developed and applied during the issuance of a PSD permit. We address in this Article the first two components: the BACT requirement and the BACT definition. In two companion Articles, we analyze the third and final component: BACT determination.

II. The BACT Requirement

As is true with many features of the CAA, the BACT requirement is codified in two locations—the statute and the implementing regulations. Ordinarily, statutory requirements are enacted before the promulgation of their regulatory counterparts. This sequence was reversed for the PSD program because EPA was ordered by the court in *Sierra Club v. Ruckelshaus*²³ to create a PSD program from scratch. Accordingly, the BACT requirement first appeared in 1974 regulations²⁴ promulgated pursuant to the court’s mandate. Congress ratified the requirement by incorporating it—with certain changes—into the 1977 CAA

Amendments,²⁵ and EPA implemented the congressional changes by revising the regulations.²⁶

A. The Statutory BACT Requirement

The statutory command seems straightforward enough: no major emitting facility²⁷ may be constructed²⁸ in an area governed by the PSD program²⁹ “unless . . . the proposed facility is subject to the best available control technology for each pollutant subject to regulation under [the CAA] emitted from, or which results from, such facility”³⁰ We refer to this clause as the statutory BACT requirement. If the requirement is omitted from any state or tribal implementation plan, that portion of the state implementation plan (SIP) or tribal implementation plan (TIP) must be disapproved by EPA.³¹

B. To Which Pollutants Does BACT Apply?

The key difference between the original regulatory BACT requirement promulgated by EPA in 1974 and the statutory BACT requirement enacted by Congress in 1977 has to do with the universe of pollutants to which BACT applies. The 1974 PSD regulations limited application of the BACT requirement to particulates and SO₂.³² Had this approach persisted, BACT would today be a trivial feature in the PSD landscape.

For reasons that are not entirely clear,³³ Congress chose in the 1977 CAA Amendments to extend the reach

20. Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1360 (1985).

21. Improving New Source Review (NSR) Implementation, Memorandum from J. C. Potter, Assistant EPA Administrator for Air & Radiation, to Regional Administrators, Regions I-X, at 3 (Dec. 1, 1987), available at http://www.epa.gov/NSR/ttnnsr01/psd2/p8_23.html (last visited Apr. 27, 2011).

22. EPA and environmental attorneys frequently use the terms “new source review (NSR)” and “NSR permit” to refer jointly to the PSD and nonattainment permit programs.

23. 344 F. Supp. 253 (D.D.C.), *aff’d without opinion*, 4 Env’t Rep. Cas. (BNA) 1815 (D.C. Cir. 1972), *aff’d by an equally divided Court sub nom. without opinion* Fri v. Sierra Club, 412 U.S. 541 (1973).

24. EPA’s initial regulations, published at 39 Fed. Reg. 42514 (Dec. 5, 1974), were formerly codified at 40 C.F.R. §52.21 (1977). The BACT requirement was set forth in §52.21(d)(2)(ii).

25. See CAA §165(a)(4), 42 U.S.C. §7475(a)(4).

26. The BACT requirement is currently codified in 40 C.F.R. §51.166(j)(2) and 40 C.F.R. §52.21(j)(2). EPA’s PSD regulations are echoed in two places. The provisions in 40 C.F.R. §51.166 set forth the items that must be included in any state implementation plan (SIP) for a state (or tribal implementation plan (TIP) for a Native American tribe) wishing to take over and administer the PSD program; the provisions in 40 C.F.R. §52.21 establish the PSD requirements applicable for those states or Native American lands whose PSD programs are not approved or fully approved by EPA. See 62 Fed. Reg. 27158, 27158 (May 16, 1997). Thus, for example, if EPA finds it necessary to disapprove any PSD portion of a state or tribe’s implementation plan, the provisions of 40 C.F.R. §52.21 automatically take effect as necessary to fill the regulatory gap. See 40 C.F.R. §52.21(a)(1).

27. For a thorough discussion of when a new stationary source qualifies as a major emitting facility requiring a PSD permit, see Stensvaag, *supra* note 5.

28. “Construction” is defined in CAA §169(2)(C), 42 U.S.C. §7479(2)(C), to include “modification” of an existing facility. See *supra* note 12.

29. For an examination of the PSD permit trigger’s geographic component, see Stensvaag, *supra* note 5, at 10006-07.

30. CAA §165(a)(4), 42 U.S.C. §7475(a)(4).

31. See, e.g., 74 Fed. Reg. 48467, 48472 (Sept. 23, 2009) (proposing to disapprove a Texas SIP revision that would remove the requirement that all new major emitting facilities meet BACT as defined by the Act).

32. See 39 Fed. Reg. 42510, 42514 (Dec. 5, 1974), formerly codified at 40 C.F.R. §52.21(d)(ii) (1977). The 1974 regulations further provided that BACT was equivalent to any applicable NSPS. See 39 Fed. Reg. 42510, 42514 (Dec. 5, 1974), formerly codified at 40 C.F.R. §52.01(f) (1977). These provisions were upheld by the D.C. Circuit in *Sierra Club v. EPA*, 540 F.2d 1114, 1133-34, 6 ELR 20669 (D.C. Cir. 1976).

33. The *Alabama Power* court noted that “the legislative history is not entirely unambiguous . . . [but] the House specifically rejected an amendment offered to restrict PSD coverage to sulfur oxides and particulates. See 122 Cong. Rec. 29568-69 (1976).” *Alabama Power Co. v. Costle*, 636 F.2d 323, 406 n.81, 10 ELR 20001 (D.C. Cir. 1979). The court further noted that “[t]he final bill passed by the Senate after conference applied BACT to ‘each pollutant subject to regulation’ under the Act” *Id.*

of the BACT requirement to “each pollutant subject to regulation” under the Act. Although no one seemed to attribute significance to it at the time, this language has helped catapult the BACT requirement into today’s position of prominence.

C. The Multi-Layered Challenge of Interpreting “Each Pollutant Subject to Regulation”

Industry initially tried to convince the U.S. Court of Appeals for the District of Columbia (D.C.) Circuit that the statutory BACT requirement left EPA’s 1974 regulatory approach undisturbed. The court in *Alabama Power Co. v. Costle* was not impressed: “The statutory language leaves no room for limiting the phrase ‘each pollutant subject to regulation’ to sulfur dioxide and particulates.”³⁴

The court was surely correct in concluding that the statute’s words could not bear the narrow two-pollutant interpretation sought by industry. Nevertheless, the statutory language poses three surprisingly difficult interpretive questions.

First, what did Congress mean by the phrase “subject to”? As we will see, the ambiguity of this phrase permits good-faith arguments that the universe of pollutants requiring BACT is small, but also permits good-faith arguments that the universe is vast.

Second, what is meant by the term “regulation”? If EPA has required certain actors to monitor and report their emissions of a specific pollutant, is that pollutant being regulated? Does “regulation” require something more than the collection and reporting of information?

Third, did Congress mean to limit the phrase “subject to regulation” to the specific major emitting facility being considered? Or does BACT apply when a pollutant emitted by the major facility is being regulated elsewhere in connection with some other actor’s activities?

Given the sparse legislative history behind the phrase “subject to regulation,” these legitimate issues of statutory construction do not have obvious answers. We address each of the multi-layered interpretive issues in the following pages.

D. The Meaning of “Subject to”

The statutory BACT requirement applies to each pollutant “subject to” regulation. The phrase “subject to” is sufficiently ambiguous so that it might mean either of two quite different things.³⁵

First, the phrase “subject to regulation” could refer to those pollutants that EPA has chosen to regulate under the CAA—in other words, pollutants *currently being subjected to regulation* under the Act. If this is the correct interpretation

of the phrase, the universe of pollutants to which BACT applies is finite and comparatively small. Moreover, the list of pollutants currently being subjected to regulation under the Act is reasonably well-known to federal and state regulators, to industry actors, to environmental advocates, and to CAA attorneys: the criteria pollutants,³⁶ additional pollutants regulated through NSPS,³⁷ and hazardous pollutants.³⁸

Second, and alternatively, the phrase “subject to regulation” could refer to any pollutant that *could be subjected to* regulation under the Act. If this is the correct interpretation of the phrase, the universe of pollutants requiring BACT is open-ended and breathtakingly large,³⁹ because EPA is effectively empowered by the CAA to regulate any and all air pollutants, and the Act’s definition of “air pollutant” is extraordinarily broad.⁴⁰ Under this second, more expansive reading of the phrase “subject to regulation,” BACT would be required for each and every substance emitted into the ambient air by a major emitting facility.

Each of these contradictory readings of the statute can be justified by resort to dictionary definitions of the word “subject.”⁴¹ Moreover, each reading can be justified on policy grounds.⁴²

36. The criteria pollutants (carbon monoxide, lead, nitrogen dioxide, ozone, PM_{2.5}, PM₁₀, and SO₂), are primarily regulated under CAA §108-110, 42 U.S.C. §7408-7410.

37. Such pollutants are called “designated pollutants from designated facilities.” See *infra* notes 103-09 and accompanying text.

38. The hazardous air pollutants are regulated under CAA §112, 42 U.S.C. §7412. Congress effectively provided in the 1990 CAA Amendments that they are exempt from the BACT requirement. See CAA §112(b)(6), 42 U.S.C. §7412(b)(6); *infra* notes 95-96 and accompanying text.

39. This interpretation would make the phrase—“each pollutant subject to regulation”—in the statutory BACT requirement synonymous with language in §169(1) defining major emitting facilities as those that emit more than certain amounts of “any air pollutant.” See CAA §169(1), 42 U.S.C. §7479(1). For an analysis of which pollutants count under the major emitting facility definition, see Stensvaag, *supra* note 5, at 10008-14.

40. See CAA §302(g), 42 U.S.C. §7602(g) (“any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive . . . substance or matter which is emitted into or otherwise enters the ambient air”).

41. Prof. Robert Glicksman correctly notes:

At least one dictionary defines “subject to” as “[c]apable of being or liable to be subjected to judgment or test,” rather than as actually being liable or covered by a judgment or test. [citing Webster’s Online Dictionary] Under this reading of the statute, [a pollutant] is “subject to regulation” under the CAA, even though it is not currently being regulated by EPA, because it is “capable of being” regulated.

Robert L. Glicksman, *Coal-Fired Power Plants, Greenhouse Gases, and State Statutory Substantial Endangerment Provisions: Climate Change Comes to Kansas*, 56 U. KAN. L. REV. 517, 585 n.381 (2008). Another dictionary defines “subject” as “one that is placed under authority or control.” Merriam-Webster Online, <http://www.merriam-webster.com/dictionary/subject> (last visited Aug. 20, 2011). A pollutant not yet regulated under the Act is arguably not yet “placed under authority or control.” No one, and certainly not Professor Glicksman, suggests that the interpretive problem can be resolved by consulting dictionaries.

42. See, e.g., Utah Chapter of Sierra Club v. Air Quality Bd., 226 P.3d 719, 729-30 (Utah 2009) (“the language itself does not compel a particular interpretation,” but “it would be impractical to complete a BACT analysis for carbon dioxide without any governing standards or rules”); Longleaf Energy Associates, LLC v. Friends of Chattahoochee, Inc., 681 S.E.2d 203 (Ga. App. 2009) (BACT standard would require state agency “to invent in a vacuum CO₂ emission controls for permits”).

34. *Alabama Power Co. v. Costle*, 636 F.2d 323, 406, 10 ELR 20001 (D.C. Cir. 1979).

35. For a discussion of the “subject to regulation” ambiguity in another context—contrasting it with the wide-open “any air pollutant” trigger of the major emitting facility definition in CAA §169(1), 42 U.S.C. §7479(1)—see Stensvaag, *supra* note 5, at 10009-10.

When it rejected industry's claim that the statutory clause referred only to particulates and SO₂, the *Alabama Power* court suggested that the first, narrower interpretation of the phrase "subject to" is the correct one: "This phrase encompasses each pollutant for which EPA has promulgated . . . [a] . . . standard."⁴³ It is important not to read too much into this interpretation, however, because the court was distinguishing its construction from industry's claim that the phrase should be construed even more narrowly.⁴⁴ The court did not seem to have considered the possibility that the phrase could be read even more broadly to reach nonregulated pollutants that could be regulated under the Act in the future.⁴⁵

More than three decades ago, leading CAA scholar Prof. David Currie struggled with the statutory ambiguity, concluding that "subject to regulation" under the Act must mean pollutants actually regulated "since it otherwise would be as comprehensive as if there were no qualifying clause."⁴⁶

43. *Alabama Power v. Costle*, 606 F.2d 1068, 1086, 9 ELR 20400 (D.C. Cir. 1979).

44. Occasionally, industry representatives repeat variations on their *Alabama Power* argument that the phrase "subject to regulation" includes only a narrowly circumscribed and unchangeable subset of pollutants. See, e.g., 41 [Curr. Dev.] ENV'T. REP. (BNA) 1818 (2010) (describing American Chemistry Council argument that only criteria pollutants trigger the PSD process); Robert A. Wyman Jr., *National Climate Coalition White Paper for EPA Climate Change Workgroup, Applying the PSD Program to Greenhouse Gas Sources, in Global Warming, Climate Change and the Law*, SR039 ALI-ABA 147 (Jan. 6, 2010); Roger R. Martella Jr., *Climate Change Legislation and Regulation: Impacts on Transportation and Manufacturing*, 40 ELR 10572, 10577 (June 2010) ("the CAA dictates that only NAAQS pollutants should trigger the need for a PSD permit"); 41 [Curr. Dev.] ENV'T. REP. (BNA) 664 (2010) (since the PSD program was designed to assure compliance with NAAQS, "greenhouse gas emissions may be taken into account in PSD, if at all, only in the context of a project that triggers PSD based on its emissions of criteria pollutants").

These arguments have no merit as a matter of statutory interpretation and were implicitly rejected by the *Alabama Power* court. See 75 Fed. Reg. 77698, 77706 (Dec. 13, 2010) (rejecting the premise that PSD can only be triggered for NAAQS pollutants); 75 Fed. Reg. 31514, 31551 n.44 (June 3, 2010) ("[h]ad Congress intended a narrower focus, they would have specified any NAAQS pollutant or any pollutant subject to regulation under this Part (PSD)").

Moreover, the statutory language supports EPA's position that "the CAA requirements for PSD applicability are . . . automatically updating, that is, whenever EPA regulates a previously unregulated pollutant, PSD applies at that time to that pollutant without further regulatory action by EPA." 75 Fed. Reg. 77698, 77707 (Dec. 13, 2010). See also 75 Fed. Reg. 82536, 82542 (Dec. 30, 2010) ("since the enactment of the PSD provisions, EPA has periodically subjected pollutants to control for the first time, thereby triggering PSD applicability"); 75 Fed. Reg. 31514, 31562 n.44 (June 3, 2010):

over the years, EPA has established significance levels for fluorides, sulfuric acid mist, hydrogen sulfide, TRS, reduced sulfur compounds, municipal waste combustor organics, municipal waste combustor metals, municipal waste combustor acid gases, and municipal solid waste landfill emissions [and] . . . the basis for all these actions is PSD's applicability to these non-NAAQS air pollutants.

45. See *In re Deseret Power Electric Cooperative*, 2008 WL 5572891, 2008 EPA App. LEXIS 47 (EPA EAB Nov. 23, 2008) at slip op. 60 ("The *Alabama Power* court . . . did not consider, and therefore did not decide [whether] . . . the PSD program applies to a pollutant that is neither mentioned in CAA section 166 nor subject to emissions control under another provision of the Act.").

46. See David P. Currie, *Nondegradation and Visibility Under the Clean Air Act*, 68 CALIF. L. REV. 48, 57 (1980). See also *id.* at 66 ("EPA seems correct" in interpreting the phrase "subject to regulation" to mean "pollutants subject to existing regulations").

From the beginning, EPA adopted the narrower interpretation of "subject to regulation," construing it to apply only to those pollutants actually being regulated under the Act.⁴⁷ The Agency has persisted in this interpretation through all six presidential administrations since enactment of the statutory "subject to regulation" language in 1977.⁴⁸

E. The Greenhouse Gas Controversy

In an earlier Article, we declared: "it has long been settled that the BACT requirement . . . applies only to those pollutants currently being regulated by EPA."⁴⁹ It seemed a safe thing to say at the time, especially given EPA's unwavering 30-year commitment to this interpretation.⁵⁰

Nevertheless, Prof. Robert Glicksman correctly observed that at least some actors believed this supposedly long-settled issue to remain unresolved.⁵¹ In a series of cases challenging PSD permits, environmental organizations asserted that the BACT requirement applied to the greenhouse gas (GHG)⁵² emissions of major emitting

47. The EPA's adoption of the narrow interpretation dates back to 1977:

The Administrator believes that the proposed interpretation published on November 3, 1977, is correct and is today being made final. As mentioned in the proposal, "subject to regulation under the Act" means any pollutant regulated in [40 C.F.R. Subchapter C] for any source type. This then includes all criteria pollutants . . . pollutants regulated under [NSPS] . . . [hazardous] pollutants regulated under [NESHAPs] . . . and all pollutants regulated under Title II of the Act regarding emission standards for mobile sources.

43 Fed. Reg. 26388, 26397 (June 19, 1978). The Agency's detailed justification for consistently rejecting the broader interpretation is set forth in 74 Fed. Reg. 51535, 51537-47 (Oct. 7, 2009).

48. See 75 Fed. Reg. 31514, 31550 (June 3, 2010) ("since the inception of the program following the 1977 CAA Amendments, EPA has interpreted the statutory PSD applicability provisions to apply more narrowly—to any air pollutant subject to regulation—than their literal meaning (any air pollutant)"); *In re South Shore Power*, 2003 WL 21500413, 2003 EPA App. LEXIS 13 (EPA EAB Jun 4, 2003), at slip op. 27-30 (concluding that ammonia odors are a nonregulated air pollutant and hence not subject to BACT). See also 39 [Curr. Dev.] ENV'T. REP. (BNA) 2540 (2008) (noting, because of EPA's long-standing interpretation, "[a] substance may be an air pollutant without being regulated under the Act").

49. See Stensvaag, *supra* note 5, at 10009-10. We further noted that EPA has chosen to dovetail the "any air pollutant" element of the major emitting facility definition and the "subject to regulation" element of the BACT requirement. As a result: "[T]he universe of pollutants with the power to trigger major emitting facility status and the universe of pollutants subject to BACT standards are now precisely the same. Only pollutants currently being regulated by EPA are subject to BACT standards, and only such pollutants may trigger major emitting facility status." Stensvaag, *supra* note 5, at 10010.

50. See 75 Fed. Reg. 31514, 31562 n.44 (June 3, 2010) ("the agency has been proceeding in essentially this fashion for over 30 years").

51. See Glicksman, *supra* note 41, at 585 n.381.

52. EPA has defined GHGs as "the aggregate group of six greenhouse gases: Carbon dioxide (CO₂), nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride . . ." 40 C.F.R. §51.166(b)(48)(i); 40 C.F.R. §52.21(b)(49)(i). Because CO₂ is the most common of these pollutants, the terms GHG and CO₂ are often used interchangeably in the air pollution control context. See 39 [Curr. Dev.] ENV'T. REP. (BNA) 2540 (2008) ("The primary greenhouse gas emitted as a result of human activities in the United States is carbon dioxide, representing approximately 85 percent of total greenhouse gas emissions."). Other GHGs, however, are far more potent in driving global warming, and have been assigned a factor—the pollutant's "carbon dioxide equivalent"—to account for the differences. See 40 [Curr. Dev.] ENV'T. REP. (BNA) 2859 (2009) ("methane has a global warming potential that is 21 times that of carbon dioxide . . . [so that]

facilities—not because such pollutants were actually being regulated under the CAA, but because these substances are air pollutants that *could be regulated* under the Act.⁵³ These mostly unsuccessful challenges—building on the U.S. Supreme Court’s 2007 ruling that GHGs are “air pollutants”⁵⁴ within the meaning of the CAA—renewed the debate over whether the narrow or the expansive interpretation of “subject to” regulation is the correct one.

In their efforts to insist on a broad interpretation of “subject to regulation,” environmental advocates seemed to have obtained the greatest success in proceedings before EPA’s Environmental Appeals Board. In *In re Deseret Power Electric Cooperative*,⁵⁵ the Board concluded that it could not sustain EPA Region 8’s issuance of a PSD permit lacking a BACT standard for carbon dioxide (CO₂). The Board explained:

The basic question before the Board is whether the Region clearly erred by stating that it lacked the authority to impose a CO₂ BACT limit in the Permit. . . . We find that the statute is not so clear and unequivocal as to preclude Agency interpretation of the phrase subject to regulation under this Act, and therefore does not dictate whether the Agency must impose a BACT limit for CO₂ in the Permit. . . .

Accordingly, we remand the Permit for the Region to reconsider whether or not to impose a CO₂ BACT limit in light of the Agency’s discretion to interpret, consistent with the CAA, what constitutes a pollutant subject to regulation under this Act. . . . [W]e recognize that this is an issue of national scope that has implications far beyond this individual permitting proceeding. The Region should consider whether interested persons, as well as the Agency, would be better served by the Agency addressing the interpretation of the phrase subject to regulation under this Act in the context of an action of nationwide scope, rather than through this specific permitting proceeding.⁵⁶

1,190 tons of methane is approximately equal to 25,000 tons of carbon dioxide equivalent”); 39 [Curr. Dev.] ENV’T. REP. (BNA) 2540 (2008) (sulfur hexafluoride has “a global warming potential of 22,200 times that of carbon dioxide”).

53. See, e.g., *Longleaf Energy Assocs., LLC v. Friends of the Chattahoochee, Inc.*, 681 S.E.2d 203, 209 (2009) (notwithstanding CO₂’s status as an air pollutant, it was not subject to regulation under the Act); *Powder River Basin Res. Council v. Wyo. Dep’t of Env’t. Quality*, 226 P.3d 809, 824-25 (Wyo. 2010) (agency’s conclusion that CO₂ was not subject to regulation was fully consistent with EPA’s longstanding position); *Appalachian Voices v. State Air Pollution Control Bd.*, 693 S.E.2d 295, 301 (Va. Ct. App. 2010) (“Because no provision of the CAA or Virginia law controls or limits CO₂ emissions, CO₂ is not a pollutant subject to regulation”); *Utah Chapter of Sierra Club v. Air Quality Bd.*, 226 P.3d 719 (Utah 2009) (rejecting argument that major emitting facility must comply with BACT for CO₂).
54. *Massachusetts v. EPA*, 549 U.S. 497, 528-29, 37 ELR 20075 (2007).
55. See *In re Deseret Power Electric Cooperative*, 2008 WL 5572891, 2008 EPA App. LEXIS 47 (EPA EAB Nov. 23, 2008).
56. *Id.* at slip op. 123. See also *In re Northern Michigan University Ripley Heating Plant*, 2009 WL 443976, 2009 EPA App. LEXIS 5 (EPA EAB Feb. 18, 2009), at slip op. 123-24 (permit remanded on the basis of *Deseret Power*).

F. The Meaning of “Regulation”

In the cases challenging the omission of CO₂ BACT standards, environmental advocates initially relied on the argument that the term “subject to” must read broadly to include all pollutants that could be subjected to regulation under the CAA—in other words “any air pollutant.”⁵⁷ Eventually, they developed a second argument based on the language of the statutory BACT requirement, this time focusing on the meaning of the term regulation.

EPA had taken a position faithful to the reading of the *Alabama Power* court⁵⁸—that the only pollutants subject to “regulation” were those for which the Agency had established a standard.⁵⁹ Asserting that such an approach represented too narrow a reading of the term regulation, environmental advocates argued that CO₂ was subject to regulation under the CAA—notwithstanding the lack of any emission standards—because EPA had, since 1993, imposed monitoring, reporting, and recordkeeping requirements for this pollutant.⁶⁰

As with the phrase “subject to,” the dispute about the meaning of “regulation” has no obvious answer.⁶¹ Nevertheless, the courts upheld the Agency’s view that directives to collect and report information do not rise to the level of regulation.⁶² Even in the *Deseret Power* case, in which environmental advocates achieved their greatest success, the Environmental Appeals Board declared: “we find no evidence of a Congressional intent to compel EPA to apply BACT to pollutants that are subject only to monitoring and reporting requirements.”⁶³

G. EPA’s Response to *Deseret Power*: The Johnson Memo

Following the *Deseret Power* remand and the Environmental Appeals Board’s suggestion that EPA address the statutory BACT requirement’s applicability to GHGs in

57. See, e.g., *Utah Chapter of Sierra Club v. Air Quality Bd.*, 226 P.3d 719, 728-31 (Utah 2009). See also Glicksman, *supra* note 41, at 585 n.381.

58. See *Alabama Power v. Costle*, 606 F.2d 1068, 1086, 9 ELR 20400 (D.C. Cir. 1979), *quoted supra* note 43 and accompanying text.

59. See, e.g., 43 Fed. Reg. 26388, 26397 (June 19, 1978), *quoted supra* note 47.

60. See *Longleaf Energy Assocs., LLC v. Friends of the Chattahoochee, Inc.*, 681 S.E.2d 203, 207-09 (2009); *Powder River Basin Res. Council v. Wyo. Dep’t of Env’t. Quality*, 226 P.3d 809, 824-25 (Wyo. 2010); *Appalachian Voices v. State Air Pollution Control Bd.*, 693 S.E.2d 295, 299-300 (Va. Ct. App. 2010); *Utah Chapter of Sierra Club v. Air Quality Bd.*, 226 P.3d 719 (Utah 2009). The monitoring, reporting, and recordkeeping standards are set forth in 40 C.F.R. §75.1, *promulgated in* 58 Fed. Reg. 3590 (Jan. 11, 1993).

61. See *In re Deseret Power Electric Cooperative*, 2008 WL 5572891, 2008 EPA App. LEXIS 47 (EPA EAB Nov. 23, 2008) at slip op. 54-55 (contrasting one dictionary’s definition of “regulation” as a rule “having the force of law” with another dictionary’s definition as “[t]he act or process of controlling by rule or restriction”).

62. For example, the court in the *Longleaf Energy* case declared: “[W]e find that . . . subject to regulation . . . refers to pollutants which . . . are subject to regulation by actual controls or limits on their emissions. Nothing shows that a wider sense was intended.” *Longleaf Energy Assocs., LLC v. Friends of the Chattahoochee, Inc.*, 681 S.E.2d 203, 209 (2009).

63. *In re Deseret Power Electric Cooperative*, 2008 WL 5572891, 2008 EPA App. LEXIS 47 (EPA EAB Nov. 23, 2008) at slip op. 122.

a “nationwide” manner, EPA Administrator Stephen L. Johnson responded by issuing a memorandum clarifying EPA’s interpretation of the troublesome phrase “subject to regulation.”⁶⁴ This document, widely known as the “Johnson Memo,”⁶⁵ declared:

As of the date of this memorandum, EPA will interpret [“subject to regulation under the Act”]⁶⁶ to exclude pollutants for which EPA regulations only require monitoring or reporting but to include each pollutant subject to either a provision in the Clean Air Act or regulation adopted by EPA under the Clean Air Act that requires actual control of emissions of that pollutant.⁶⁷

Thus, the Johnson Memo formally committed the Agency to a narrow interpretation of “subject to” and to a narrow interpretation of “regulation.” It has been subsequently characterized as the “actual control interpretation”⁶⁸—a pollutant is not subject to regulation unless it is actually controlled by a CAA provision or a regulation issued pursuant to it.

The Johnson Memo was controversial for several reasons. First, in the view of many environmental advocates, Administrator Johnson had dragged his feet in complying with the Supreme Court’s *Massachusetts v. EPA*⁶⁹ mandate that the Agency either determine whether GHGs “cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare”⁷⁰ or justify the Agency’s inability to make such a determination.⁷¹ Second, the Johnson Memo was issued after the 2008 elections and 33 days before the inauguration of President Barack Obama; notice of the memo’s availability was not published in the Federal Register until December 31, 2008.⁷²

On January 15, 2009, the Sierra Club filed a petition for reconsideration of the Johnson Memo and challenged it in the D.C. Circuit; in response, Administrator Lisa Jackson promised to “vigorously review” the memo.⁷³

H. Review and Reaffirmation of the Johnson Memo

While reviewing the Johnson Memo, the Obama EPA took two significant regulatory steps that radically altered the regulatory status of GHGs. First, on December 15, 2009, EPA issued its finding that six GHGs endanger the health and welfare of the general public, and that emissions

of these gases from motor vehicles contribute to GHG air pollution.⁷⁴ Second, on May 7, 2010, EPA and the National Highway Traffic Safety Administration issued a joint final rule establishing motor vehicle fuel economy and GHG emission standards.⁷⁵

The issuance of motor vehicle GHG standards removes CO₂ and three other GHGs⁷⁶ from the battle over the meaning of the statutory BACT requirement’s language. Even under the narrow definition of “subject to regulation” set forth in the Johnson Memo, from and after the effective date of the new motor vehicle standards, these pollutants have undeniably become “subject to . . . regulation . . . that requires actual control of emissions. . . .”⁷⁷

Nevertheless, the meaning of the ambiguous statutory BACT requirement is still potentially important for future controversies involving other unregulated pollutants. Moreover, even if environmental advocates had achieved their goal of “regulated” status for the GHGs, the Johnson Memo was sufficiently controversial that its reconsideration by the Obama Administration retained significance.

On April 2, 2010,⁷⁸ Administrator Jackson published “final action” on the reconsideration of the Johnson Memo.⁷⁹ The ruling affirmed the Johnson Memo⁸⁰ with one clarification, having to do with the timing⁸¹ for when

74. 74 Fed. Reg. 66496 (Dec. 15, 2009). The gases are those listed in *supra* note 52.

75. 75 Fed. Reg. 25324 (May 7, 2010). The standards cover passenger cars, light-duty trucks, and medium-duty passenger vehicles starting with model year 2012.

76. There are separate motor vehicle standards for nitrous oxide, methane, and CO₂, with certain credits based on reductions of hydrofluorocarbons: “EPA did not set any standards for [perfluorocarbons] or [sulfur hexafluoride], as they are not emitted by motor vehicles.” 75 Fed. Reg. 31514, 31520 (June 3, 2010). The lack of “actual control” over the latter two pollutants suggests that they cannot be triggering pollutants when determining whether a source is a major emitting facility, and that they are also not covered by the BACT requirement.

77. Johnson Memo, *supra* note 64, at 1, *quoted supra* note 67 and accompany text. Now that the GHGs are pollutants subject to regulation under the Act, they are triggering pollutants for purposes of major emitting facility status. Under the statute, new stationary sources with the potential to emit 100 or 250 tons of such pollutants would seem to need a PSD permit. See CAA §169(1), 42 U.S.C. §7479(1); see Stensvaag, *supra* note 5. Recognizing that strict adherence to the statutory 100/250 ton cutoffs would sweep vast numbers of small facilities into the PSD program, the EPA has promulgated a Tailoring Rule, specifying much higher major emitting facility cutoff values for GHGs; one set of values took effect on January 2, 2011, and a second set took effect on July 1, 2011. See 40 C.F.R. §51.166(b)(48); 40 C.F.R. §52.21(b)(49), *promulgated in* 75 Fed. Reg. 31514 (June 3, 2010). We do not deal here with the complex details and ramifications of the Tailoring Rule. Not surprisingly, the Tailoring Rule has been challenged in court. See 41 [Curr. Dev.] ENV’T REP. (BNA) 1818 (2010).

78. Even though this publication preceded issuance of the motor vehicle standards by approximately 35 days, environmental advocates knew, because of the prior proposal of those standards, see 74 Fed. Reg. 49454 (Sept. 28, 2009), that GHGs would soon have “regulated” status.

79. See 75 Fed. Reg. 17004 (Apr. 2, 2010).

80. See 75 Fed. Reg. 17004, 17006 (Apr. 2, 2010) (“EPA has concluded that the actual control interpretation is not only consistent with decades of past practice, but provides the most reasonable and workable approach to developing an appropriate regulatory scheme to address newly identified pollutants of concern.”).

81. The document states:

EPA will henceforth interpret the date that a pollutant becomes subject to regulation under the Act to be the point in time when a control or restriction that functions to limit pollutant emissions takes effect or becomes operative to control or restrict the regulated

64. Memorandum of Stephen L. Johnson, EPA’s Interpretation of Regulations That Determine Pollutants Covered by Federal Prevention of Significant Deterioration (PSD) Permit Program (Dec. 18, 2008), *available at* http://www.epa.gov/NSR/documents/psd_interpretive_memo_12.18.08.pdf (last visited Aug. 20, 2011).

65. See, e.g., 41 [Curr. Dev.] ENV’T REP. (BNA) 530 (2010).

66. Technically, the Johnson Memo purported to be interpreting the term “regulated NSR pollutant,” a phrase that appears in the EPA’s BACT regulations and that is designed to serve as a clarification on the statutory “subject to regulation” language. See *infra* notes 91-98 and accompanying text.

67. Johnson Memo, *supra* note 64, at 1.

68. See, e.g., 75 Fed. Reg. 17004, 17006 (Apr. 2, 2010).

69. 549 U.S. 497, 528-29, 37 ELR 20075 (2007).

70. The quoted language is from CAA §202(a)(1), 42 U.S.C. §7521(a)(1).

71. See, e.g., 39 [Curr. Dev.] ENV’T REP. (BNA) 1483 (2008).

72. See 73 Fed. Reg. 80300 (Dec. 31, 2008).

73. See 40 [Curr. Dev.] ENV’T REP. (BNA) 376 (2009).

a pollutant could be said to be “subject to regulation.” The publication stated: “EPA does not believe it is necessary to codify its interpretation in the regulatory text.”⁸²

I. Codification of the “Actual Control” Interpretation

As is true of much federal environmental legislation, the statutory BACT requirement has been interpreted, implemented, and refined in administrative regulations promulgated by EPA. The regulatory BACT requirement has gone through a series of changes over the past 37 years.

As we have noted, EPA’s initial 1974 regulations applied the BACT requirement to only two pollutants: particulates and SO₂.⁸³ Following enactment of the 1977 Amendments, the regulation was changed to track the statutory language: “A new major stationary source^[84] shall apply best available control technology for each pollutant subject to regulation under the Act that it would have the potential to emit in significant amounts.”⁸⁵ This language was faithful to the statute but provided little interpretive guidance, merely choosing to echo the statute’s ambiguity.

In 2002, EPA decided to tinker somewhat with the regulatory language governing both BACT applicability and the major emitting facility pollutant trigger. As a result, both aspects of its regulations have referred thereafter to “regulated NSR pollutants.”⁸⁶

When Administrator Jackson published her April 2010 review of the Johnson Memo, she expressed the view that codification of the Agency’s interpretation was not necessary. However, when EPA promulgated its GHG Tailoring Rule⁸⁷ in June 2010, it added a new paragraph to the regulations, setting forth a definition of “subject to.” In part, the new definition was designed to clarify unique GHG cutoff values to avoid throwing large numbers of small sources into the major emitting facility category, thereby accomplishing the so-called tailoring.⁸⁸

But the opening clause of the new definition also had the effect of codifying the “actual control” interpretation of the Johnson Memo, as refined by Administrator Jackson:

Subject to regulation means, for any air pollutant, that the pollutant is subject to either a provision in the Clean

Air Act, or a nationally-applicable regulation codified by the Administrator in subchapter C of this chapter, that requires actual control of the quantity of emissions of that pollutant, and that such a control requirement has taken effect and is operative to control, limit or restrict the quantity of emissions of that pollutant released from the regulated activity.⁸⁹

This regulation, unless successfully challenged in court, resolves the two great ambiguities of the statutory BACT requirement concerning the meaning of “subject to” and the meaning of “regulation.”

As a result, it should henceforth be a relatively simple matter to determine which pollutants emitted by major emitting facilities must be governed by a BACT standard.

J. The Regulatory BACT Requirement

We have seen that the statutory BACT requirement is approximately 16 words in length, specifying that BACT must be applied to “each pollutant subject to regulation under [the CAA] emitted from, or which results from, such facility.”⁹⁰

The regulatory BACT requirement is considerably more verbose. It begins with the command: “A new major stationary source shall apply best available control technology *for each a regulated NSR pollutant* that it would have the potential to emit in significant amounts.”⁹¹ The regulatory BACT requirement then goes on to define “regulated NSR pollutant” to mean:

- i. Any pollutant for which a national ambient air quality standard has been promulgated and any pollutant identified under this paragraph . . . as a constituent or precursor for such pollutant . . .⁹²

activity. . . [T]his date may vary depending on the nature of the first regulatory requirement that applies to control or restrict emissions of a pollutant.

75 Fed. Reg. 17004, 17016 (Apr. 2, 2010). Thus, for example, the motor vehicle GHG standards took effect on January 2, 2011, because that was the earliest date that a 2012 model-year vehicle could be introduced into commerce. See 75 Fed. Reg. 31514, 31521 (June 3, 2010).

82. 75 Fed. Reg. 17004, 17015 (Apr. 2, 2010).

83. See *supra* note 32 and accompanying text.

84. The PSD regulations repeatedly refer to “major stationary source.” We explain elsewhere why this is unfortunate. See Stensvaag, *supra* note 5, at 10008. The correct term, based on the statute, is “major emitting facility.”

85. 40 C.F.R. §51.166(j)(2); 40 C.F.R. §52.21(j)(2) (2001).

86. Major emitting facilities are defined as those having the potential to emit 100 (or 250) tpy or more of “a regulated NSR pollutant.” 40 C.F.R. §51.166(b)(1)(i); 40 C.F.R. §52.21(b)(1)(i). The significance of this language in ascertaining major emitting facility status is explored in Stensvaag, *supra* note 5, at 10011-14.

87. See *supra* note 77.

88. See 40 C.F.R. §51.166(b)(48)(i)-(v); 40 C.F.R. §52.21(b)(49)(i)-(v).

89. 40 C.F.R. §51.166(b)(48), promulgated in 75 Fed. Reg. 31514, 31606 (June 3, 2010). See also 40 C.F.R. §52.21(b)(49). The definition then goes on to provide in considerable detail when GHGs are not to be considered “subject to regulation,” based on the quantities and masses emitted after specified dates. See 40 C.F.R. §51.166(b)(48)(i)-(v); 40 C.F.R. §52.21(b)(49)(i)-(v).

90. CAA §165(a)(4), 42 U.S.C. §7475(a)(4). See *supra* notes 27-31 and accompanying text.

91. 40 C.F.R. §52.21(j)(2); 40 C.F.R. §51.166(j)(2) (emphasis added).

92. The paragraph goes on to say:
Precursors identified by the Administrator for purposes of NSR are the following:

- (a) Volatile organic compounds and nitrogen oxides are precursors to ozone in all attainment and unclassifiable areas.
- (b) Sulfur dioxide is a precursor to PM_{2.5} in all attainment and unclassifiable areas.
- (c) Nitrogen oxides are presumed to be precursors to PM_{2.5} in all attainment and unclassifiable areas, unless the State demonstrates to the Administrator’s satisfaction or EPA demonstrates that emissions of nitrogen oxides from sources in a specific area are not a significant contributor to that area’s ambient PM_{2.5} concentrations.
- (d) Volatile organic compounds are presumed not to be precursors to PM_{2.5} in any attainment or unclassifiable area, unless the State demonstrates to the Administrator’s satisfaction or EPA demonstrates that emissions of volatile organic compounds from sources in a specific area are a significant contributor to that area’s ambient PM_{2.5} concentrations.

40 C.F.R. §51.166(b)(49)(i); 40 C.F.R. §52.21(b)(50)(i).

- ii. Any pollutant that is subject to any standard promulgated under section 111 of the Act.
- iii. Any Class I or II substance subject to a standard promulgated under or established by title VI^[93] of the Act.
- iv. Any pollutant that otherwise is subject to regulation under the Act as defined in paragraph (b)(48) of this section.^[94]
- v. Notwithstanding paragraphs (b)(50)(i) through (iv) of this section, the term regulated NSR pollutant shall not include any or all hazardous air pollutants^[95] either listed in section 112 of the Act, or added to the list pursuant to section 112(b)(2) of the Act, and which have not been delisted pursuant to section 112(b)(3) of the Act, unless the listed hazardous air pollutant is also regulated as a constituent or precursor^[96] of a general pollutant listed under section 108 of the Act.^[97]

Thus, EPA has sought to clarify the reach of the BACT requirement by expressly providing that it applies only to a defined universe of materials called “regulated NSR pollutants.” In a further effort to clarify the open-ended nature of Clause (iv) of the regulated NSR pollutant definition—a clause which reintroduces the “subject to regulation” ambiguity—the Agency has defined that phrase to mean only those pollutants for which a provision in the Act or a nationally applicable regulation “requires actual control of the quantity of emissions of that pollutant. . . .”⁹⁸ Today, therefore, the regulatory BACT requirement applies only to NSR pollutants as expressly defined in the regulations.

K. “Subject to Regulation” Where?

Through the foregoing historical developments and regulatory revisions, the statutory BACT requirement has now become much more lucid. Two of its great interpretive mysteries have been resolved. There remains, however, one lingering question: did Congress mean to limit the phrase “subject to regulation” to the specific major emitting facility being considered, or does BACT apply when a pollutant emitted by the major emitting facility is being regulated elsewhere under the Act in connection with some other actor’s activities?

EPA’s position is clear. As long ago as 1980, when making final its PSD regulation revisions in response to the *Alabama Power* decision, EPA declared: “BACT is required for net significant increases of any pollutant regulated under the Act, regardless of the category of source involved or the emissions standards generally applicable to it.”⁹⁹ This approach is consistent with the language of the statute and the regulations. Nothing in the statute or regulations suggests that the BACT requirement is limited to pollutants that are regulated under the Act at the specific major emitting facility or in that specific industry category. Indeed, nothing suggests that the BACT requirement is limited to pollutants that are regulated at stationary sources. The BACT requirement is triggered for each pollutant governed by an actual control standard against any category of actor anywhere.

There is no better clue to EPA’s attitude on this issue than its approach to GHGs. We have seen the Agency’s position that a pollutant is not subject to regulation within the meaning of the Act unless it is governed by a statutory or regulatory provision requiring actual control. The only actual controls on GHGs today under the Act are those governing emissions from new motor vehicles—specifically model years 2012 and thereafter.¹⁰⁰ Nevertheless, EPA insists that new PSD permits for major emitting facilities must now include BACT standards for GHG emissions.¹⁰¹ Thus, actual controls at *mobile* sources are sufficient to trigger the statutory BACT requirement at *stationary* sources.¹⁰²

This broad reading of “subject to regulation” is consistent with EPA’s long-standing approach to pollutants governed by NSPS. “Designated pollutants at designated facilities”¹⁰³ are noncriteria pollutants uniquely chosen for control at specific stationary source categories when NSPS are promulgated pursuant to §111.¹⁰⁴ If EPA chooses to

93. Title (or Subchapter) VI of the CAA deals with stratospheric ozone protection. See CAA §§601-618, 42 U.S.C. §§7671-7671q. Because the production and phase-out of Class I and Class II substances is mandated by the statute, see CAA §§604-605, 42 U.S.C. §§7671c-7671d, a new stationary source with the potential to emit 100 (or 250) tpy or more of a Class I or Class II substance would seem unlikely. But see 61 Fed. Reg. 38250, 38307 (July 23, 1996) (emissions of CAA §602 “ozone-depleting substances,” when counted for PSD purposes, should be aggregated and treated as a single pollutant, in a manner similar to the way in which volatile organic compound (VOC) emissions are summed for purposes of PSD applicability). In any event, the BACT requirement applies to Class I and Class II substances emitted by a major emitting facility.

94. The meaning of “subject to regulation” is defined in 40 C.F.R. §51.166(b)(48); 40 C.F.R. §52.21(b)(49), quoted *supra* note 89 and accompanying text.

95. Prior to 1990, the phrase “subject to regulation” applied to hazardous air pollutants. See Stensvaag, *supra* note 5, at 10012-13. In the 1990 CAA Amendments, Congress added CAA §112(b)(6), 42 U.S.C. §7412(b)(6), declaring that the provisions of the PSD program “shall not apply to pollutants listed under” §112.

96. For a discussion of the language in Clause (v) providing that some listed hazardous air pollutants may be NSR pollutants for purposes of the major emitting facility trigger and BACT applicability, notwithstanding the language of CAA §112(b)(6), see Stensvaag, *supra* note 5, at 10012-14.

97. 40 C.F.R. §51.166(b)(49); 40 C.F.R. §52.21(b)(50). The regulations then provide how to count “gaseous emissions . . . which condense to form particulate matter at ambient temperatures” (“condensable particulate matter”). See 40 C.F.R. §51.166(b)(49)(vi); 40 C.F.R. §52.21(b)(50)(vi).

98. See 40 C.F.R. §51.166(b)(48); 40 C.F.R. §52.21(b)(49), quoted *more fully supra* note 89.

99. 45 Fed. Reg. 52676, 52723 (Aug. 7, 1980).

100. See *supra* note 75 and accompanying text.

101. See 75 Fed. Reg. 31514, 31516 (June 3, 2010).

102. Industry representatives have raised many arguments against applying BACT to GHGs, but we have not encountered the claim that pollutants governed only by mobile emission standards fail to meet the “subject to regulation” language of the statutory BACT requirement.

103. For a description of designated pollutants from designated facilities and their unique role in expanding the universe of regulated pollutants beyond criteria and hazardous air pollutants, see John-Mark Stensvaag, MATERIALS ON ENVIRONMENTAL LAW 371-72 (1999). See also 55 Fed. Reg. 38545 (Sept. 19, 1990).

104. The list of designated pollutants from designated facilities, or §111(d) pollutants, must be gleaned by searching through the NSPS of 40 C.F.R.

regulate a noncriteria pollutant for a category of new stationary sources through NSPS, the states are required by §111(d) to develop standards governing the emissions of the same pollutants at existing sources in the same category.¹⁰⁵ For shorthand, we refer to these substances as §111(d) pollutants.¹⁰⁶

EPA takes the position that §111(d) pollutants are governed by the BACT requirement, “regardless of the category of the source emitting such pollutants.”¹⁰⁷ Stated another way, the so-called designated pollutants are governed by BACT, even when emitted by sources that are not in the class of designated facilities for which the pollutants are regulated under §111. Thus, for example, fluorides emitted by any major emitting facility are governed by BACT, even though the NSPS for fluorides applies only at new primary aluminum reduction plants and wet-process phosphoric acid plants.¹⁰⁸

The Agency’s position on the §111(d) pollutant issue is codified in Clause (ii) of the NSR-regulated pollutant definition, which refers to “[a]ny pollutant that is subject to any standard promulgated under section 111.”¹⁰⁹ This approach to the §111(d) pollutants further confirms EPA’s view that BACT applies to pollutants currently being regulated under the Act, even though the relevant standards for such pollutants might not apply to the source for which the permit is sought.¹¹⁰

L. The De Minimis Exemption

We have now explored the meaning of “subject to regulation” in the statutory and regulatory BACT requirements, and have learned that BACT must be met for each pollutant subject to actual control anywhere and at any type of

emission source under the Act. From the beginning of the PSD program, however, EPA has sought to exempt from the BACT requirement those pollutants emitted by major emitting facilities in less than certain amounts.

When first revising its PSD regulations to implement the 1977 CAA Amendments, the Agency proposed to limit BACT to those pollutants emitted in major amounts.¹¹¹ Thus, EPA effectively adopted a BACT de minimis criterion coinciding with the 100- and 250-ton major emitting facility emission thresholds.¹¹² The *Alabama Power* court struck down this limitation as unlawful under the plain language of §165(a)(4), but invited the Agency to formulate rationally based de minimis amounts.¹¹³

On remand, EPA amended its regulations to provide: “A new major stationary source shall apply best available control technology for each pollutant subject to regulation under the Act that it would have the potential to emit in significant amounts.”¹¹⁴ The current regulations use similar language, but use the clarifying phrase “each NSR pollutant” rather than “each pollutant subject to regulation.”¹¹⁵ The regulations therefore provide a BACT exemption for any pollutants for which the facility does not have the potential to emit “significant amounts.”¹¹⁶ We call this the de minimis exemption.¹¹⁷

The meaning of “significant amounts” is effectively defined in another portion of the regulations setting forth unique significance values for specific pollutants, along with a catch-all provision for unnamed pollutants.¹¹⁸

§§60.30b through 60.4420 for noncriteria pollutants. Examples are fluorides at primary aluminum reduction plants and wet-process phosphoric acid plants, *see* 40 C.F.R. §§60.192, 60.202, and total reduced sulfur at Kraft pulp mills. *See* 40 C.F.R. §60.283. For a summary of the list, *see* Stensvaag, *supra* note 5, at 10011-12.

105. *See* CAA §111(d), 42 U.S.C. §7411(d). It may be helpful to think of such state standards as ESPs—Existing Source Performance Standards—paralleling their NSPS counterparts. *See* Stensvaag, *supra* note 5, at 10009-10 & n.64. EPA has published a comprehensive list showing the steps that each state has taken to comply with its §111(d) duties. *See* 40 C.F.R. §§62.100-62.1360.

106. EPA has considered adding GHGs to the pollutants to be governed in revised NSPS for specific stationary source categories. *See* Martella, *supra* note 44, at 10577:

EPA was believed to be planning to propose the first NSPS with controls for [greenhouse gases] . . . for the Portland cement source category . . . [but] appears . . . to be deferring . . . until 2011, at which time it likely will turn to the NSPS for electric-generating units (including coal-fired power plants) and petroleum refineries.

If and when EPA does so, §111(d) will kick in. For example, if EPA promulgates GHG NSPS standards for coal-fired power plants, the states will be required by §111(d) to establish EPSP governing GHGs for existing coal-fired power plants.

107. 56 Fed. Reg. 5488, 5502-03 (Feb. 11, 1991) (“Regarding pollutants for which emissions limits were established under section 111 . . . for particular source categories, EPA has treated them as ‘regulated’ for PSD purposes regardless of the category of source emitting such pollutants.”).

108. *See* 40 C.F.R. §§60.192, 60.202.

109. 40 C.F.R. §51.166(b)(49)(ii), 40 C.F.R. §52.21(b)(50)(ii), *quoted more fully supra* notes 92-93 and accompanying text.

110. *See also* Currie, *supra* note 56, at 66.

111. *See* 40 C.F.R. §§51.24(i)(1) and 52.21(i)(1) (1978), *promulgated in* 43 Fed. Reg. 26380, 26385 (June 19, 1978).

112. *See* *Alabama Power v. Costle*, 636 F.2d 323, 404-05, 10 ELR 20001 (D.C. Cir. 1979).

113. *Id.* 636 F.2d at 405. *See also* *Alabama Power v. Costle*, 606 F.2d 1068, 9 ELR 20400 (D.C. Cir. 1979) (“EPA has authority to apply de minimis thresholds . . . [b]ut such exemptions must be formulated with reasoned consideration for their context, with attention to the nature of the pollutant involved”); Currie, *supra* note 56, at 67.

114. 40 C.F.R. §52.21(j)(2) (1981). *See also* 40 C.F.R. §52.24(j)(2) (1981).

115. *See* 40 C.F.R. §51.166(j)(2); 40 C.F.R. §52.21(j)(2), *quoted more fully supra* note 91 and accompanying text.

116. *See* *In re Deseret Power Electric Cooperative*, 2008 WL 5572891, 2008 EPA App. LEXIS 47 (EPA EAB Nov. 23, 2008), at slip op. 28 (“a facility may emit many air pollutants, but only one or a few may be subject to BACT review, depending upon, among other things, the amount of projected emissions of each pollutant . . . [because only] [r]egulated pollutants emitted in amounts defined by the regulations as significant must be subject to a BACT emissions limit”).

117. EPA has explained:

With respect to *new* major stationary sources, BACT will be required for each regulated pollutant emitted in excess of specified de minimis amounts. Application of BACT is also required, in the case of major *modifications*, for each regulated pollutant emitted for which there is a significant net emission increase (greater than de minimis amounts) at the source.

45 Fed. Reg. 52676, 52722 (Aug. 7, 1980) (emphasis added).

118. When it promulgated its 1980 PSD regulation revisions in response to *Alabama Power*, EPA explained:

There were three basic alternatives available for specifying de minimis cutoffs—one based solely on air quality impact, one based solely on emissions rate, and one based on a combination of these . . . The Administrator has chosen to specify de minimis cutoffs in terms of emissions rate for applicability, BACT and air quality analysis purposes, with no provisions for case-by-case demonstration of a source’s air quality impact.

45 Fed. Reg. 52676, 52707 (Aug. 7, 1980).

- (i) Significant means, in reference to a net emissions increase or the potential of a source to emit any of the following pollutants, a rate of emissions that would equal or exceed any of the following rates:

Pollutant and Emissions Rate

Carbon monoxide: 100 tons per year (tpy)

Nitrogen oxides: 40 tpy

Sulfur dioxide: 40 tpy

Particulate matter: 25 tpy of particulate matter emissions, 15 tpy of PM₁₀ emissions

PM_{2.5}: 10 tpy of direct PM_{2.5} emissions; 40 tpy of sulfur dioxide emissions; 40 tpy of nitrogen oxide emissions unless demonstrated not to be a PM_{2.5} precursor under paragraph (b)(49) of this section

Ozone: 40 tpy of volatile organic compounds or nitrogen oxides

Lead: 0.6 tpy

Fluorides: 3 tpy

Sulfuric acid mist: 7 tpy

Hydrogen sulfide (H₂S): 10 tpy

Total reduced sulfur (including H₂S): 10 tpy

Reduced sulfur compounds (including H₂S): 10 tpy

Municipal waste combustor organics (measured as total tetra-through octa-chlorinated dibenzo-p-dioxins and dibenzofurans): 3.2×10^{-6} megagrams per year (3.5×10^{-6} tpy)

Municipal waste combustor metals (measured as particulate matter): 14 megagrams per year (15 tpy)

Municipal waste combustor acid gases (measured as sulfur dioxide and hydrogen chloride): 36 megagrams per year (40 tpy)

Municipal solid waste landfill emissions (measured as nonmethane organic compounds): 45 megagrams per year (50 tpy).

- (ii) Significant means, in reference to a net emissions increase or the potential of a source to emit a regulated NSR pollutant that paragraph (b)(23)(i) of this section does not list, any emissions rate.

- (iii) Notwithstanding paragraph (b)(23)(i) of this section, significant means any emissions rate or any net emissions increase associated with a major stationary source or major modification, which would construct within 10 kilometers of a Class I area, and have an impact on such area equal to or greater than $1 \mu\text{g}/\text{m}^3$ (24-hour average).¹¹⁹

In its GHG Tailoring Rule, EPA has established a complicated, phased regime for defining which sources will be considered to be major emitting facilities based on their quantities of GHG emissions and for specifying which quantities of GHG emissions at major emitting facilities must be controlled by BACT standards and which quantities will effectively qualify for the de minimis exemption.¹²⁰

119. 40 C.F.R. §51.166(b)(23). See also 40 C.F.R. §52.21(b)(23).

120. See 40 C.F.R. §51.166(b)(48)(i)-(v) (specifying the conditions under which GHGs will be considered to be "subject to regulation" for PSD purposes);

EPA has provided the following illustration of how the de minimis provision works in practice:

Suppose a new source subject to PSD would emit 275 tons of SO₂, but only 5 tons per year of PM and 50 tons per year of both nitrogen dioxide (NO₂) and volatile organic compounds (VOC). A BACT analysis would be necessary for SO₂, NO₂, and VOC but not for PM.¹²¹

III. The BACT Definition

We have now fully explored the BACT requirement—the statutory and regulatory language specifying which pollutants must be governed by BACT standards through the issuance of PSD permits. But what is meant by BACT? What is a BACT standard?

A. The Statutory BACT Definition

As with the BACT requirement, the BACT definition is codified in two locations: the statute and the regulations implementing the statute. The statute provides:

The term best available control technology means an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from any major emitting facility, which the permitting authority, 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, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant. In no event shall application of best available control technology result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to section 7411 or 7412 of this title.¹²²

40 C.F.R. §52.21(b)(49)(i)-(v); 75 Fed. Reg. 31514, 31522-24 (June 3, 2010).

121. 44 Fed. Reg. 51924, 51938 (Sept. 5, 1979). See also In the Matter of Hawaiian Commercial & Sugar, Permit No. HI-89-01, PSD Appeal No. 92-1, 1992 WL 191948, 4 E.A.D. 95 (EPA EAB July 20, 1992), at slip op. 15 ("BACT was not required for SO₂ because the facility's emissions . . . will not exceed the significance levels for SO₂ which would trigger a BACT review").

122. CAA §169(3), 42 U.S.C. §7479(3). The statute goes on to provide: "Emissions from any source utilizing clean fuels, or any other means, to comply with this paragraph shall not be allowed to increase above levels that would have been required under this paragraph as it existed prior to November 15, 1990." *Id.* The term "clean fuels" was added to the statutory BACT definition by the 1990 CAA Amendments, as was the clause quoted directly above. See Pub. L. No. 101-549 §403(d), 104 Stat. 2399, 2631-32 (Nov. 15, 1990). The purpose of the quoted language is difficult to discern, but it seems to be related to the acid rain provisions of CAA Title IV, also established by the 1990 Amendments. The Senate Committee Report simply declares: "The Committee intends that the [clean fuels] amendment will not result in an increase in the level of emission rates found to meet BACT, when compared on a case-by-case basis to BACT determinations under current law." S. REP. NO. 101-228, at 279 (1989).

We call this the statutory BACT definition. If an SIP or TIP fails to conform to the statutory BACT definition (or define BACT in a more stringent manner), that portion of the SIP or TIP must be disapproved by EPA.¹²³

There are a number of things to note about this definition: (1) the statutory BACT definition expressly declares that BACT means “an emission limitation”; (2) the BACT standard must be based on what technology can do, and the statute suggests a broad notion of technology; (3) the statute enumerates factors that must be taken into account when selecting the BACT standard; (4) BACT for any given major emitting facility and pollutant must be determined on a case-by-case basis; and (5) the statute establishes two ceilings based on other CAA provisions, limiting the maximum allowable emissions that may be authorized by the BACT standard.

B. The Statutory Requirement of an Emission Limitation

The statutory definition expressly declares that BACT means “an emission limitation.” Even though BACT must be based on what technology can do, the statute envisions a performance standard (specifying maximum allowable emissions) rather than a specification standard (requiring the major emitting facility to use specific pollution control technology).¹²⁴ Unlike the statutory provision for NSPS,¹²⁵ the statutory BACT definition does not have a clause expressly prohibiting the articulation of BACT as a specification standard. Nevertheless, the prohibition seems implied by the requirement that BACT be an emission limitation.¹²⁶

On a theoretical level, at least, this aspect of the statutory BACT definition is significant. When EPA promulgates a performance standard rather than a specification standard, the major emitting facility’s engineers are free to search out, discover, and implement whatever pollution control technology they may wish, as long as that technology achieves compliance with the emission limitation. The freedom of the PSD permittee to find alternative, less expensive means to achieve a predetermined end may encourage innovation by engineers at the facility, may level the playing field for competing pollution control vendors,

and may spur the development of improved technologies. In reality, however, the record of published BACT determinations suggests that the selection of each emission limitation is inextricably linked to a specific pollution control technology.¹²⁷ Accordingly, BACT commands that appear in form to be performance standards tend to operate as specification standards—at least initially.¹²⁸ Presumably, this is also happening with many of the other technology-based standards required by the major federal environmental statutes, such as NSPS. This is not necessarily a bad thing. Standards effectively driving facilities to use specific technologies help create a reliable market for vendors. They also provide confidence to stationary source operators, who should not need to worry about compliance once they have installed the preferred technology. Nevertheless, the close linkage between performance standards and the technologies on which they are based does undercut somewhat the theoretical virtues of performance standards. And it may greatly impede the development of new technologies.¹²⁹

127. In the Matter of Hibbing Taconite Company, PSD Appeal No. 87-3, 1989 WL 266359, 2 E.A.D. 838 (EPA EAB July 19, 1989), at slip op. 13 (“Although BACT is defined as an ‘emission limitation,’ it is also, as its name implies, keyed to a specific control technology.”). See, e.g., *Alaska Dept. of Environmental Conservation v. EPA*, 540 U.S. 461, 34 ELR 20012 (2004) (disagreement between EPA and state over whether to use selective catalytic reduction (SCR) or low-NO_x to establish BACT standard for NO_x from diesel electric generator); *Sierra Club v. Wisconsin Dept. of Natural Resources*, 787 N.W.2d 855 (Wis. App. 2010) (quarrel over whether BACT for SO₂ should be based on wet flue gas desulfurization (FGD) or dry FGD).

128. After reviewing six case studies in specific industries, Byron Swift of the Environmental Law Institute concluded in 1998:

[A]n emissions limit can lead to a situation where EPA has approved only one technology—catalytic oxidation in [the case of the baking industry]—that can meet the standard. This demonstrates how an emissions limit actually becomes a technology standard if it is set at a level that only one technology can achieve. This problem has grown as standards have become stricter over the past decades, because the stricter the standard, the greater the probability that only one existing technology can achieve it. . . .

Byron Swift, *Barriers to Environmental Technology Innovation and Use* 13 (Environmental Law Institute Research Report 1998).

129. When standards such as BACT must be hammered out on a case by case basis, the dominance of one complying technology poses special hurdles for innovators:

[E]missions limits and discharge rates tend to dictate a single technology because they preclude the normal development and refinement process most new technologies require to achieve their greatest performance. . . . Most technologies are developed, not invented, and they require a period of research, bench-scale demonstration, commercial demonstration, and scale-up before full commercialization is possible. Setting a standard that only one existing technology can meet precludes this development process and may freeze innovation. . . .

The essential problem is that, when a permitting system requires a permit writer to review a firm’s technology choices under standards such as BACT . . . it consumes significant amounts of effort and time to gain permit approval. As shown in the baking industry study, due to the conservative nature of permitting agencies and the regulatory restrictions on acceptable technologies and test methods, it took much longer to convince the permitting authority than the using business of the merit of a viable new technology. Then, having surmounted these barriers at great effort in one state, the innovator faced them again in each new permitting jurisdiction.

Byron Swift, *supra* note 128, at 13-14, 18. A brief summary of Mr. Swift’s findings may be found in Byron Swift, *Barriers to Environmental Technology Innovation and Use*, 28 ELR 10202 (Apr. 1998).

123. See, e.g., 74 Fed. Reg. 48467, 48472 (Sept. 23, 2009) (proposing to disapprove a Texas SIP revision because “the State PSD SIP must both require BACT and apply the federal definition of BACT (or one that is more stringent) to be approved pursuant to part C and Section 110(l) of the Act”).

124. See *In re Three Mountain Power*, PSD Permit No. 99-PO-01, PSD Appeal No. 01-05, 2001 WL 624778 (EPA EAB May 30, 2001), at slip op. 37 (“BACT ‘means an emission limitation’ . . . rather than a particular pollution control technology”). For a discussion of the contrasts between performance standards and specification standards, see Stensvaag, *supra* note 103, at 163.

125. See CAA §111(b)(5), 42 U.S.C. §7411(b)(5) (“Except as otherwise authorized under subsection (h) . . . nothing in this section shall be construed to require, or to authorize the Administrator to require, any . . . source to install and operate any particular technological system . . . to comply with any [NSPS]”). Subsection (h) refers to design or work practice standards. See *infra* notes 165-86 and accompanying text.

126. But see *infra* notes 165-86 and accompanying text (design or workplace standards authorized by the regulatory BACT definition).

C. *The Technology-Based Focus of BACT*

The BACT standard must be based on what technology can do. The statute declares that BACT must be “based on the maximum degree of reduction . . . which the permitting authority . . . determines is achievable,”¹³⁰ taking into account a host of factors. Even though one of the enumerated factors is environmental impacts, BACT is not aimed at assuring a certain level of protection to public health or to the environment.¹³¹

The statute suggests a broad notion of technology. In fact, it does not use the term technology at all. Instead, the statute refers to “production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each . . . pollutant.”¹³² This means that the control options to be considered when establishing BACT are not narrowly constrained to end-of-pipe alternatives.

D. *The Factors to Be Taken Into Account*

The statute enumerates factors that must be taken into account when selecting the BACT standard: “energy, environmental, and economic impacts and other costs.” These factors greatly complicate what is already a challenging ad hoc determination by the permit issuing authority.

There is a limited but useful database of administrative and judicial decisions involving cases in which BACT determinations have been challenged. It seems clear from reading these decisions that selecting the technology or other approach to controlling any given pollutant that represents the “maximum degree of reduction . . . achievable” and translating the known capabilities of that technology into an enforceable emission limitation would be a difficult enough undertaking, even if the permit issuing agency did not have to cope with the statutory factors.

Once the factors are added to the brew, the task of any agency charged with establishing BACT is an unenviable one. To make matters even more difficult, the statute does not provide any suggestion for how to weigh and balance the various factors. We address these factors in two companion Articles on the BACT determination.

E. *The Case-by-Case Nature of BACT*

The statute expressly provides that BACT for any given major emitting facility and pollutant must be determined on a case-by-case basis. This means that the content of each BACT standard will be hammered out in the process of obtaining a PSD permit, often as part of the public hear-

ing required by §165(a)(2).¹³³ Particularly when coupled with the amorphous nature of the factors to be taken into account and the statute’s broad conception of technological options, the case-by-case nature of the process means that BACT determinations are likely to be messy, inconsistent,¹³⁴ unpredictable, and easily contested by opponents of a major emitting facility. All of these attributes have proven true.

F. *The Relationship Between BACT and NSPS*

The statute establishes two ceilings on the maximum allowable emissions that may be authorized by the BACT standard. The first of these declares that emissions permitted by BACT may not exceed emissions allowed by any applicable NSPS under §111. This language, which dates to the 1977 CAA Amendments, represents a sharp departure from the approach first adopted by EPA when it promulgated its court-ordered PSD regulations.

The 1974 regulations defined BACT to be identical to any applicable NSPS, directing that BACT be determined on a case-by-case basis only in the absence of an applicable NSPS.¹³⁵ Congress removed the equivalence between BACT and NSPS, specifying that BACT must always be determined on a case-by-case basis, and further specifying that BACT may be no less stringent than an applicable NSPS.

An EPA memorandum explains the reasoning behind the statute’s directive that NSPS represent maximum permissible emissions, but do not preclude a case-by-case determination that a more demanding BACT standard is needed:

The NSPS are established after long and careful consideration of a standard that can be reasonably achieved by new source anywhere in the nation. This means that even a very recent NSPS does not represent the best technology available; it instead represents the best technology available nationwide, regardless of climate, water availability, and many other highly variable case-specific factors. The NSPS is the least common denominator and must be met; there are no variances. The BACT requirement, on the other hand, is the greatest degree of emissions control that can be achieved at a specific source and accounts for site-specific variables on a case-by-case basis.

133. CAA §165(a)(2), 42 U.S.C. §7475(a)(2) (mandating for each PSD permit “a public hearing . . . with opportunity for interested persons . . . to appear and submit written or oral presentations on . . . control technology requirements”).

134. See John Quarles, *Federal Regulation of New Industrial Plants*, Env. Rep. (BNA) Monograph No. 28, at 10 (1979) (“The dangers of inconsistent requirements are apparent.”).

135. The 1974 regulations defined BACT to be “any emission control device or technique which is capable of limiting emissions to [NSPS] levels . . .” 40 C.F.R. §52.01(f), promulgated in 39 Fed. Reg. 42510, 42514 (Dec. 5, 1974). See also 38 Fed. Reg. 18986 (July 16, 1973) (explaining the agency’s logic). The D.C. Circuit concluded that EPA’s decision to make BACT equivalent to NSPS was “rational and in accord with the Clean Air Act.” *Sierra Club v. EPA*, 540 F.2d 1114, 6 ELR 20669 (D.C. Cir. 1976). The 1974 regulations also limited BACT to particulates and SO₂. See *supra* note 32 and accompanying text.

130. CAA §169(3), 42 U.S.C. §7479(3).

131. Compare CAA §108, 42 U.S.C. §7408 (primary NAAQS must be “standards the attainment and maintenance of which . . . are requisite to protect the public health”).

132. CAA §169(3), 42 U.S.C. §7479(3).

Since an applicable NSPS must always be met, it provides a legal “floor” for the BACT, which cannot be less stringent. *A BACT determination should nearly always be more stringent than the NSPS because the NSPS establishes what every source can achieve, not the best that a source could do.* In only a few BACT cases should you encounter the same criteria that limited the stringency of the NSPS, so BACT should usually be more stringent than the NSPS.¹³⁶

The reasoning behind this suggestion that BACT “should nearly always be more stringent than the NSPS” is compelling. It seems intuitively obvious that a technology-based NSPS established for an industry category may of necessity demand less in the way of pollution reduction than could readily be achieved by the specific major emitting facility seeking a PSD permit. It makes sense, therefore, that the BACT standard developed for the facility may be more demanding. It is also the case that BACT may apply to many pollutants that have never been governed by NSPS, even if the major emitting facility falls within a stationary source category for which NSPS have been promulgated. Here, too, BACT will be more demanding than the non-existent NSPS requirement.

Prof. Melissa Powers has provided further explanation for the relationship between BACT and NSPS:

The [NSPS] change only when EPA engages in rulemaking proceedings to revise them. As a result, NSPS standards tend to be somewhat static. That does not mean, however, that the technologies necessarily remain static as well. Regulated facilities may employ any available technologies to meet the applicable emissions standards and therefore have incentive . . . to invest in effective, cheap technologies to meet the standards. NSPS thus establishes a technological floor for covered facilities, but by no means limits the range of technologies facilities may employ to meet these baseline standards. . . .

[S]ince [BACT] is based on the maximum degree of reduction of each pollutant that is achievable at the time of permitting, it creates an incentive for companies that sell commercial pollutant control technology to invest in research and development to create new technologies. The more the companies develop new technologies, the more likely it is that regulators will mandate more rigorous technology-based standards through the BACT-setting process. While certain limitations apply to this assumption, BACT may be fairly described as a technology-enhancing regulatory regime.¹³⁷

136. Memorandum of Gary McCutchen to Richard Grusnick re BACT (July 28, 1987), reprinted at <http://www.envinfo.com/caain/ALLPSD.TXT> (last visited Aug. 20, 2011) (emphasis added). See also Oren, *supra* note 2, at 29 (“In effect, BACT is a site-specific NSPS”); 1978 Guidelines, *supra* note 17, at 3 (pointing out the substantial lag time between NSPS revisions); In the Matter of Columbia Gulf Transmission Company, PSD Appeal No. 88-11, 1989 WL 266361, 2 E.A.D. 824 (EPA EAB June 21, 1989), at slip op. 13-14 (“the applicable NSPS is ten years old and thus does not reflect the most current technological considerations”).

137. Powers, *supra* note 19, at 158-59 (2010).

G. Do NSPS Constrain BACT in Other Stationary Source Categories?

The relationship between BACT and NSPS does pose one potential riddle, however. NSPS are established for specific categories of stationary sources¹³⁸ and apply directly only to new sources in the category expressly defined in NSPS.¹³⁹ May BACT for a major emitting facility exceed the emission limitation set forth in NSPS for a different stationary source category? For example, imagine a new major emitting facility (a widget facility, let us say) falling within a stationary source category for which no NSPS has yet been established. May the BACT standard for particulate emissions from this new facility exceed NSPS for particulate emissions from primary copper smelters?

Restating the question in this concrete way demonstrates that there can be only one possible answer. Yes, the BACT standard may exceed NSPS for emissions from a completely different type of facility. NSPS for particulate emissions in the primary copper smelter category were promulgated based on what technology could accomplish in this precise industry category to reduce particulate emissions.¹⁴⁰ Accordingly, NSPS tell us nothing about what technology can accomplish by way of particulate reductions from a new major emitting facility in a different source category. Moreover, NSPS themselves for a given pollutant such as particulates vary considerably between the source categories. Thus, there is no single particulate NSPS to provide the ceiling for BACT emissions from the new major emitting facility.

This phenomenon—the category-specific nature of NSPS—merits one further observation about designated pollutants from designated facilities. We have seen that BACT applies to such §111(d) pollutants.¹⁴¹ Thus, for example, the PSD permit for a new major emitting facility with the potential to emit three or more tpy of fluorides¹⁴² must contain a BACT standard for that pollutant.¹⁴³ Unless the major emitting facility is a primary aluminum reduction

138. See, e.g., 40 C.F.R. §§60.160-166 (Standards of Performance for Primary Copper Smelters); *id.* §§60.290-297 (Standards of Performance for Glass Manufacturing Plants).

139. See, e.g., 40 C.F.R. §60.160(a) (“The provisions of this subpart are applicable to the following affected facilities in primary copper smelters: Dryer, roaster, smelting furnace, and copper converter”); *id.* §60.161 (defining “primary copper smelters,” “dryer,” “roaster,” “smelting furnace,” and “copper converter”); *id.* §60.290(a) (“Each glass melting furnace is an affected facility to which the provisions of this subpart apply”); *id.* §60.291 (defining “glass melting furnace”).

140. See CAA §111(a)(1), 42 U.S.C. §7411(a)(1) (“‘standard of performance’ means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable”); CAA §111(b)(2), 42 U.S.C. §7411(b)(2) (“The Administrator may distinguish among classes, types, and sizes within categories of new sources for the purpose of establishing such standards.”).

141. See *supra* notes 103-10 and accompanying text.

142. Emissions of less than this amount are not significant within the meaning of 40 C.F.R. §51.155(b)(23)(i) and 40 C.F.R. §52.21(b)(23)(i), *quoted supra* note 119 and accompanying text. Accordingly, they would qualify for the regulatory BACT requirement’s de minimis exemption. See *supra* notes 111-20 and accompanying text.

143. See 40 C.F.R. §60.192 (fluoride NSPS for primary aluminum reduction plants); *id.* §§60.202-60.242 (fluoride NSPS for several subcategories in the phosphate fertilizer industry category).

plant or falls within the phosphate fertilizer industry category, however, this BACT standard will not be constrained in any way by NSPS, because these are the only source categories for which fluoride NSPS have been promulgated.

H. *The Relationship Between BACT and the Hazardous Air Pollutant Standards*

The relationship between BACT and the §112 hazardous air pollutant standards poses two questions: (A) may BACT ever be more lenient than a hazardous air pollutant standard governing the same pollutant; and (B) may BACT ever be more stringent than a hazardous air pollutant standard governing the pollutant? It turns out that Question B is easy to answer, while Question A poses more of a puzzle. We address these questions in the next sections.

I. *May BACT Be More Lenient Than a Hazardous Air Pollutant Standard?*

The second of the two statutory ceilings on maximum allowable BACT emissions declares that such emissions may not exceed emissions allowed under §112 for hazardous air pollutants.¹⁴⁴ This provision seems to make sense. Hazardous air pollutants are thought to be the most dangerous of all air pollutants; it would be odd to permit a new major emitting facility to emit amounts greater than those allowed by the hazardous air pollutant standards.

It turns out, however, that today's hazardous air pollutant standards are quite different in kind from the standards that were promulgated under §112 when Congress first enacted the statutory language providing that BACT may not exceed §112 standards. This means that the relationship between BACT and the hazardous air pollutant standards is different today than when the statutory BACT definition was added by the 1977 CAA Amendments.

Prior to the 1990 CAA Amendments, Congress commanded that EPA establish national emission standards for hazardous air pollutants (NESHAPs) "at the level which in [the Administrator's] judgment provides an ample margin of safety to protect the public health . . ."¹⁴⁵ Accordingly, NESHAPs were health-based standards. Because the language in the statutory BACT definition prohibiting emission limitations exceeding those of §112 preceded the 1990 Amendments,¹⁴⁶ it referred originally to these health-based NESHAPs.¹⁴⁷

The 1990 CAA Amendments require EPA to establish maximum available control technology (MACT) standards for each category or subcategory of stationary

sources of hazardous air pollutants.¹⁴⁸ Even though the MACT label is widely used, EPA continues to refer to all hazardous air pollutant standards as NESHAPs, sometimes using the term interchangeably with MACT.¹⁴⁹ Accordingly, NESHAPs for hazardous air pollutants promulgated since 1990 are technology-based. The language in the statutory BACT definition prohibiting emission limitations exceeding those of §112 now also refers to these technology-based MACT standards.

For shorthand, we refer to the health-based NESHAPs—the ones promulgated prior to the 1990 CAA Amendments—as the Part 61 standards. We refer to the post-1990 technology-based MACT standards as the Part 63 standards.

For the health-based NESHAPs codified in Part 61, a reasonable argument can be made that BACT for a given hazardous air pollutant must never exceed the relevant NESHAP for that pollutant, regardless of the source category of the major emitting facility obtaining the PSD permit. The logic is simple and straightforward: if these NESHAPs have been set, as Congress commanded, "at the level which in [the Administrator's] judgment provides an ample margin of safety to protect the public health,"¹⁵⁰ BACT can surely not be permitted to exceed that level (endangering the public health), regardless of the stationary source categories enumerated in the NESHAPs. Thus, for example, BACT at any type of major emitting facility should not be permitted to exceed the Part 61 NESHAPs for beryllium¹⁵¹ even though the beryllium NESHAPs are directly applicable only to certain listed facilities.¹⁵² It is not clear to us that the statutory BACT definition has been construed in this manner.

To a large extent, however, that point becomes moot, because the dominant hazardous air pollutant standards today are those set forth in Part 63. The Part 63 MACT standards are based on what technology can accomplish at specific industry categories. Accordingly, the same logic compelling the conclusion that BACT may exceed an NSPS established for a source category other than the one occupied by the major emitting facility also compels the conclusion that BACT may exceed a MACT standard established for a source category other than that of the PSD permit applicant.

The one possible exception to this conclusion has to do with the residual risk standards of §112(f). EPA must establish a health-based NESHAP for a hazardous air pol-

148. See CAA §112(d), 42 U.S.C. §7412(d). The MACT standards are codified in 40 C.F.R. Part 63.

149. See, e.g., 40 C.F.R. §63.1(a)(2) ("This part contains . . . NESHAP established pursuant to section 112 of the Act as amended November 15, 1990."); 68 Fed. Reg. 1276 (Jan. 9, 2003) (proposing MACT standards for a specific industry category in a document entitled "Proposed NESHAPs").

150. CAA §112(b)(1)(B), 42 U.S.C. §7412(b)(1)(B) (1990).

151. 40 C.F.R. §§61.32 & 61.42 (1990).

152. See 40 C.F.R. §61.30(a) (1990) ("Extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, or beryllium-containing waste"); *id.* §61.30(b) ("Machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight"); *id.* §61.40 ("rocket motor test sites").

144. CAA §169(3), 42 U.S.C. §7479(3).

145. CAA §112(b)(1)(B), 42 U.S.C. §7412(b)(1)(B) (1990).

146. See CAA §169(3), 42 U.S.C. §7479(3) (1990).

147. The health-based NESHAPs promulgated under the Act as it existed prior to the 1990 Amendments are codified in 40 C.F.R. Part 61. They "remain in effect until they are amended, if appropriate, and added to this part." 40 C.F.R. §63.1(a)(2).

lutant under §112(f), if the Administrator concludes that the relevant MACT standards are insufficient to protect the public health.¹⁵³ Issuance of a PSD permit containing a BACT standard exceeding the emission levels permitted by a §112(f) residual risk standard would seem, by the very nature of the statutory scheme, to endanger the public health. One would think, therefore, that such a BACT standard would be forbidden, no matter what source category might fit the PSD permittee.

On the other hand, Congress has commanded that the health-based residual risk standards be promulgated for categories and subcategories of sources,¹⁵⁴ something that happened in the Part 61 standards under the pre-1990 version of the CAA¹⁵⁵ but which Congress had never before commanded. Section 112(f) thus establishes a blurring of technology-based and health-based standards that is difficult to unravel. The residual risk standards must be established “at the level which in [the Administrator’s] judgment provides an ample margin of safety to protect the public health,”¹⁵⁶ but will apply only to specified source categories, presumably because EPA is supposed to take into account the technological capabilities of those industry categories or at least the unique nature of the emission streams therefrom.

It is hard to conclude anything other than the following: emissions of hazardous air pollutants in amounts endangering the public health are permissible under the Act as long as those emissions are from facilities not subject to the health-based Part 61 NESHAPs or the §112(f) residual risk standards. It would follow, therefore, that BACT standards may permit the emissions of hazardous air pollutants in excess of what would be permitted by the health-based Part 61 NESHAPs, the technology-based Part 63 MACT standards, or by the §112(f) residual risk standards, as long as the major emitting facility falls within a source category not covered by the relevant standard.

J. *May BACT Be More Stringent Than a Hazardous Air Pollutant Standard?*

Because hazardous air pollutants are presumably regulated with great care under the Act, one might think that it would scarcely ever be appropriate to demand more in a BACT standard than has already been required by the §112 standards for a hazardous pollutant. Nevertheless, because the Part 63 MACT standards are technology-based, they share the same potential obsolescence as NSPS; a new major emitting facility may well have the ability to achieve a more stringent level of emission reductions due to the advance of technology. Moreover, the overlap between hazardous

air pollutants and other pollutants subject to BACT may lead to the conclusion that BACT requires more stringent reductions in a pollutant already controlled, in part, by a MACT standard.¹⁵⁷ Finally, a new major emitting facility emitting a hazardous air pollutant in significant amounts and therefore subject to the BACT requirement may fall within a stationary source category for which no MACT standard has been promulgated.

For all of these reasons, BACT for a hazardous pollutant may be more stringent—and frequently should be more stringent—than existing MACT standards governing the same pollutant.

K. *The Regulatory BACT Definition*

We have now explored the statutory BACT definition and many of its ramifications. As with the statutory BACT requirement, the statutory BACT definition is backed up by a regulatory counterpart. The regulation provides:

Best available control technology means an emissions limitation (including a visible emissions standard)^[158] based on the maximum degree of reduction for each . . . regulated NSR pollutant^[159] which would be emitted from any proposed major stationary source or major modification which the reviewing authority,^[160] on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning^[161] or treatment or innovative fuel

157. See, e.g., 68 Fed. Reg. 1276 (Jan. 9, 2003). In proposing NEHAPs for the plywood and composite wood products (PCWP category), EPA pointed out:

[T]he proposed PCWP rule is a rule that would regulate HAP [hazardous air pollutants]. Decisions on control levels and compliance demonstrations are based on HAP reductions. If decisions had been based on control of VOC, the control level may have been different. For example, this proposed rule requires 90 percent reduction of HAP from affected process units. Prevention of significant deterioration may require control efficiencies in excess of 90 percent. Another example is which process units require control. In the proposed PCWP rule, the level of control that represents the MACT floor for dry rotary dryers and hardwood veneer dryers is no emissions reductions. We determined that requiring controls was not cost effective for HAP. However, these process units emit more VOC than HAP; therefore, we may determine for PSD that dry rotary dryers and hardwood veneer dryers should be controlled.

Id. at 1304.

158. The clause about visible emissions standards does not appear in the statutory BACT definition. See CAA §169(3), 42 U.S.C. §7479(3).

159. The regulation substitutes “regulated NSR pollutant” for the statutory phrase “pollutant subject to regulation under [the Act].” Compare CAA §169(3), 42 U.S.C. §7479(3). This alteration is explained by the Agency’s efforts to clarify the meaning of the ambiguous statutory phrase. See *supra* notes 34-98 and accompanying text. The substitution does not occur in 40 C.F.R. §52.21(b)(12), which continues to use the statutory phrase. For an explanation of the reasons for two sets of PSD regulations, see *supra* note 26.

160. The regulation substitutes the phrase “reviewing authority” for the statutory phrase “permitting authority.” Compare CAA §169(3), 42 U.S.C. §7479(3).

161. Neither set of regulations has been amended to contain the phrase “clean fuels,” which was inserted into the statutory BACT definition after the phrase “fuel cleaning” by the 1990 CAA Amendments. See *supra* note 122. The Agency has explained: “EPA has not yet updated the definition of BACT in the PSD regulations to reflect the addition of the ‘clean fuels’ language that occurred in the 1990 amendments Nevertheless, EPA reads and applies

153. See §112(f)(2), 42 U.S.C. §7412(f)(2).

154. See §112(f)(2)(A) & (C), 42 U.S.C. §7412(f)(2)(A) & (C).

155. The health-based Part 61 NESHAPs have, in fact, been limited to specific types of stationary sources, see 40 C.F.R. Part 61 (1990), even though the pre-1990 statute did not seem to contemplate that approach. See CAA §112, 42 U.S.C. §7412 (1990).

156. CAA §112(b)(1)(B), 42 U.S.C. §7412(b)(1)(B) (1990), incorporated by reference in CAA §112(f)(2)(A), 42 U.S.C. §7412(f)(2)(A).

combination¹⁶² techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61.¹⁶³ If the reviewing authority determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.¹⁶⁴

We call this provision the regulatory BACT definition.

L. Design, Equipment, Work Practice, and Operational Standards

For the most part, the regulatory BACT definition tracks that of the statute.¹⁶⁵ However, the final two sentences of the regulatory definition, concerning design, equipment, work practice, or operational standards, have no antecedent in the statutory definition. In fact, as we have seen, the statute expressly requires that BACT be “an emission limitation.”¹⁶⁶

A BACT standard requiring no more than that the PSD permittee use particular equipment, follow a specified design, engage in a detailed work practice, or follow certain operational procedures, would seem to flunk the statutory requirement of an emission limitation, a phrase that

suggests numeric limits.¹⁶⁷ For shorthand, we will refer to design, equipment, work practice, or operational standards as “non-numeric standards.”¹⁶⁸

M. EPA's Power to Authorize Non-Numeric BACT Standards

Does EPA have the authority to create a non-numeric standards exception to the statutory principle that BACT must be an emission limitation? Stated another way, are the final two sentences of the regulatory BACT definition valid?

At least two arguments can be marshaled to support the validity of the non-numeric BACT exception. First, as a matter of policy, such an exception is a practical necessity.¹⁶⁹ Second, Congress expressly authorized non-numeric standards in at least two other portions of the Act mandating technology-based standards—those commanding the establishment of NSPS¹⁷⁰ and hazardous air pollutant stan-

167. One could argue that a non-numeric standard is an “emission limitation” within the meaning of the Act, because of the statutory definition of the latter phrase: “The terms ‘emission limitation’ and ‘emission standard’ mean a requirement established by the State or the Administrator which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis, including any . . . design, equipment, work practice or operational standard promulgated under this chapter.” CAA §302(k), 42 U.S.C. §7602(k). This language begs the question, however, because it merely includes within the definition of “emission limitation” non-numeric standards that *have been established* by a state or by the Administrator. It does not purport to empower the state or EPA to promulgate such standards as BACT. Moreover, it is difficult to argue that design, equipment, work practice, and operational standards are emission limitations when the language of §§111(h) and 112(h) suggests otherwise. *See infra* notes 170-71 and accompanying text.

On the other hand, §302(k) also says that the term emission limitation includes “any requirement relating to the operation or maintenance of a source to assure continuous emission reduction . . .” CAA §302(k), 42 U.S.C. §7602(k). This language strongly suggests that operating requirements are emission limitations. *See infra* notes 178-81 and accompanying text.

168. *See In re Indeck-Elwood*, 2006 WL 3073109, 2006 EPA App. LEXIS 44 (EPA EAB Sept. 27, 2006), at slip op. 125 (referring to design, equipment, work practice, and operational standards as “non-numeric limitations”).

169. EPA has used the following illustration to explain why non-numeric BACT standards are sometimes justified:

[I]f the reviewing authority determines that there is no economically reasonable or technologically feasible way to accurately measure the emissions, and hence to impose an enforceable emissions standard, it may require the source to use source design, alternative equipment, work practices or operational standards to reduce emissions of the pollutant to the maximum extent. For example, if an immense pile of uncovered coal emits coal dust into the atmosphere, it would make little sense to impose an emission standard, since measuring the amount of coal dust rising off the pile is nearly impossible. A much more direct approach to controlling emissions is, for example, requiring the owner to wet the coal pile daily. This type of standard or practice will be equivalent to an emissions limitation for purposes of the BACT requirement.

45 Fed. Reg. 52676, 52678 (Aug. 7, 1980).

170. *See* CAA §111(h)(1), 42 U.S.C. §7411(h)(1). *See also* CAA §111(b)(5), 42 U.S.C. §7411(b)(5) (cross-referencing the §111(h) exception from the prohibition against articulating NSPS as a specification standard). In an early defense of the non-numeric BACT portion of the regulations, EPA responded to industry questions by saying:

Under Section 111 . . . such a standard . . . can be promulgated by the Administrator if in his judgment such a standard is achievable and a conventional standard of performance is not feasible. Since an applicable NSPS forms the minimum BACT requirement, it follows that the Administrator should be able to prescribe a design, equipment, work practice, or operational standard for BACT.

its regulations consistent with the terms of the Clean Air Act.” U.S. EPA Office of Air and Radiation, PSD and Title V Permitting Guidance for Greenhouse Gases at 27 n.75 (Mar. 2011). *See also* 58 Fed. Reg. 67330, 67332 (Dec. 21, 1993) (“EPA has interpreted the new statutory language regarding clean fuels as merely codifying present practice under the CAA, under which clean fuels are an available means of reducing emissions to be considered along with other approaches in identifying BACT-level controls.”).

In any event, EPA has struggled to reconcile the statutory command to consider “clean fuels” with its long-standing view that BACT cannot be used to “redefine the source.”

162. The word “combination” is probably a misprint; the statutory BACT definition refers to “innovative fuel combustion techniques.” CAA §169(3), 42 U.S.C. §7479(3). The parallel PSD regulation in 40 C.F.R. §52.21(b)(12) uses the word “combustion,” rather than “combination.”

163. The statutory BACT definition prohibits emission limits exceeding those established pursuant to §112. *See* CAA §169(3), 42 U.S.C. §7479(3). The regulation’s reference to Part 61 specifies only some of the hazardous air pollutant standards—the health-based standards promulgated under the pre-1990 version of the Act. Accordingly, the regulation omits any reference to the Part 63 technology-based MACT standards promulgated pursuant to the 1990 CAA Amendments. *See supra* notes 144-57 and accompanying text. This seems like a drafting oversight but, in any event, the statutory language independently forbids development of a BACT standard permitting emissions that would exceed any §112 standard.

164. 40 C.F.R. §51.166(b)(12). *See also* 40 C.F.R. §51.21(b)(12).

165. We note minor alterations or differences *supra* notes 158-63.

166. CAA §169(3), 42 U.S.C. §7479(3). *See supra* notes 124-27 and accompanying text.

dards.¹⁷¹ Thus, Congress is not opposed to non-numeric standards, and its failure to authorize them in the statutory BACT definition is probably just an oversight.

At least three counterarguments can be raised to assert that EPA lacks power to promulgate the non-numeric language set forth in the final two sentences of its regulatory BACT definition. First, the failure of Congress to expressly authorize the use of design, equipment, work practice, or operational standards in establishing BACT must be treated as purposeful, because Congress has shown in §§111 and 112 that it knows how to authorize such standards when it wishes to do so. Under this argument, all BACT standards must be in the form of emission limitations, because Congress said so and because Congress provided no exception.¹⁷²

Second, when Congress authorized the non-numeric standards approach to §§111 and 112, it did so only under certain conditions. When promulgating NSPS, Congress authorized the Agency to adopt design, equipment work practice, or operational standards only “if in the judgment of the Administrator, it is not feasible to prescribe or enforce a standard of performance.”¹⁷³ Section 112(h) contains similar triggering language.¹⁷⁴ The Agency’s decision to articulate a different trigger in its regulatory BACT definition¹⁷⁵ undercuts its argument that it has merely done what Congress would have done had it thought of the issue.

Third, Congress expressly provided that non-numeric standards under §§111 and 112 must be promulgated as specific numerical limits “whenever it becomes feasible to promulgate and enforce such standard in such terms.”¹⁷⁶ The regulatory BACT definition contains no such “sunset” provision.

It is hard to know what to make of the second and third arguments. It is true that the wording of the trigger for non-numeric BACT standards differs from the wording used for non-numeric §§111 or 112 standards. But the difference in wording seems quite minor. It is also true that the regulatory language authorizing non-numeric BACT

standards is not accompanied by the sunset provision established by Congress for such limits under §§111 and 112. This, too, seems like a trivial omission.

While there are good arguments for and against EPA authority, the courts have not ruled on the portion of the regulatory BACT definition authorizing non-numeric BACT standards. Perhaps the best that can be said is that, sensitively applied, it seems consistent with the purposes of the Act.

N. Challenges to Non-Numeric BACT Standards

We have not encountered any cases in which the authority of EPA to authorize non-numeric BACT standards has been directly challenged. In one administrative proceeding, however, the permit applicant insisted that EPA lacked power to impose production and process requirements *in addition to* emission limitations.¹⁷⁷ In the *In re CertainTeed* case, EPA’s Environmental Appeals Board noted:

According to the Applicant, when it is feasible to measure emissions, and therefore to set an emission level, the Region lacks the authority to prescribe process and production requirements. Applicant does not question the feasibility of the production and process requirements or the achievability of the emission level when adhering to those requirements. Nor does the Applicant contend that it knows of any presently existing techniques—other than the production and process requirements—which will enable it to meet the NO_x level.

Instead, the Applicant takes the position that inclusion of the requirements in the permit is an unwarranted intrusion in the production process. According to the Applicant, Congress simply wanted EPA to set emission levels, while leaving industry free to devise ways to meet those levels; it did not want EPA to tell industry how to achieve a particular level of pollution control—at least not when, as here, the emissions can be monitored at the stack on a continuous basis. . . .

The term “emission limitation” is defined in section 302(k) as, *inter alia*, a “requirement” which “relates” to the “operation and maintenance” of a source on a continuous basis. Therefore, the definition of “emission limitation” embraces the allowable emission level and also may include additional operational controls.¹⁷⁸

43 Fed. Reg. 26388, 26397 (June 19, 1978). The argument set forth in the final sentence of the Agency’s foregoing response is a non sequitur. There is no counterpart to §§111(b)(5) and 111(h) in §169.

171. See CAA §112(h)(1), 42 U.S.C. §7412(h)(1).

172. This logic is troubling, however, because it would compel the promulgation of an emission limitation to control airborne dust from an immense coal pile—an emission limitation for which compliance measurement would seem almost impossible. See *supra* note 169.

173. CAA §111(h)(1), 42 U.S.C. §111(h)(1).

174. See CAA §112(h)(1), 42 U.S.C. §7412(h)(1) (“if it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard”).

175. “If the reviewing authority determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible . . .” 40 C.F.R. §51.166(b)(12). See also 40 C.F.R. §51.21(b)(12). For an illustration justifying the EPA’s articulation of the non-numeric BACT standard trigger, see *supra* note 169. See also *In re Indeck-Elwood*, 2006 WL 3073109 (EPA EAB Sept. 27, 2006), at slip op. 137-38 (work practices and operational standards could not be justified during startup and shutdown, because there was no showing that emission measurement during these events was technologically or economically infeasible).

176. CAA §111(h)(4), 42 U.S.C. 7411(h)(4); CAA §112(h)(4), 42 U.S.C. 7412(h)(4).

177. See *In re CertainTeed*, 1 E.A.D. 743, 1982 WL 43349 (EPA EAB Dec. 21, 1982). The PSD permit prescribed as BACT an emission level for NO_x and specified the pollution control technology which the permittee would have to adopt and follow to meet that level. See *id.*

178. *In re CertainTeed*, 1 E.A.D. 743, 1982 WL 43349 (EPA EAB Dec. 21, 1982), at slip op. 4. See also *In the Matter of Brooklyn Navy Yard Resource Recovery Facility*, PSD Appeal No. 88-10, 1992 WL 80946, 3 E.A.D. 867 (EPA EAB Feb. 28, 1992), at slip op. 25-26.

It is common for PSD permits to include a combination of emissions standards and work practice standards in the emission limitation for a given pollutant . . . [as done] in this permit . . . by specifying an emission limit for lead to be met through the use of a baghouse, as well as a requirement for separation of motor vehicle batteries from the waste stream prior to combustion.

It is true that §302(k) defines emission limitation to include “any requirement relating to the operation or maintenance of a source to assure continuous emission reduction”¹⁷⁹ This provides support for the notion that operating standards are emission limits.¹⁸⁰ Nevertheless, the logic of the Appeals Board seems wobbly, particularly since the regulatory BACT definition provides for operational standards only where “technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible.”¹⁸¹

In an excellent 1990 article examining the BACT requirement, three authors criticized the Appeals Board’s reasoning in the *CertainTeed* case:

EPA’s interpretation of BACT in this case raises significant questions. . . . EPA’s own PSD regulations provide that BACT must consist of a numerical emission standard unless such an emission limitation is infeasible. . . .

The rationale for the limitation on the promulgation of operational standards is that Congress wanted to encourage the development of innovative pollution control technologies and recognized that such new technologies would not be developed if EPA imposed existing technologies. Congress’ strong preference for emission limitations (which industry can meet by any combination of technologies it desires) over work practice or operational standards (which specify particular technologies) reflects its desire to encourage such technological innovation.

One reason that EPA may have reached the conclusion it did in the *CertainTeed* Appeal is that the company did not claim that it knew of any presently available techniques, other than the prescribed production and process requirements, to meet the NO_x emission level. *CertainTeed* claimed only that it was developing alternative control techniques. It remains to be seen whether EPA will offer the same interpretation where an applicant can demonstrate that there are several available technologies to meet an emission limitation.¹⁸²

In one other reported administrative proceeding, the permit applicant seems to have been happy with a vague, loosely worded non-numeric standard, but environmental advocates opposed the standard. A state agency had included within the draft PSD permit a provision effec-

tively telling the facility to do its best to limit emissions during startup, shutdown, and malfunction events.¹⁸³ The Environmental Appeals Board rejected the condition as unacceptable:

In our view, this language is too infirm to comport with the relevant regulatory requirements, and nothing in it can reasonably be interpreted as requiring the permittee to employ measures that, at a minimum, will achieve a reduction in emissions equivalent to the level of reduction expected from the application of numeric limitations.¹⁸⁴

The Appeals Board insisted that the permitting authority must “set forth, to the extent possible, the emission reductions expected from the implementation of this approach.”¹⁸⁵ This ruling seems consistent with the final sentence of the regulatory BACT definition.¹⁸⁶

IV. The Remaining Task of BACT Determination

We have sought in this Article to explore the first two components of the PSD program’s BACT element: the BACT requirement and the BACT definition. It seems clear that neither Congress nor EPA anticipated today’s startling reach of the BACT requirement, extending—as we have seen—to GHG released by major emitting facilities. For this reason, the BACT definition was hammered out at a time when the BACT requirement was assumed to be relatively insignificant.

Ultimately, the BACT definition does little more than establish the parameters for the potentially contentious case-by-case process in which each BACT standard is actually determined. We will examine BACT determination—the third component of the PSD program’s BACT element—in our next two articles.

183. See *In re Indeck-Elwood*, 2006 WL 3073109 (EPA EAB Sept. 27, 2006), at slip op. 136 (“the permit only requires the permittee to minimize emissions”).

184. *Id.*, at slip op. 136. See also *In the Matter of Genesee Power Station*, PSD Appeal Nos. 93-1 through 93-7, 1993 WL 484880, 4 E.A.D. 832 (EPA EAB Oct. 22, 1993) (disapproving a vague requirement that the facility “visually inspect the wood received at the facility to ensure that ‘unacceptable’ wood waste is not burned at the facility,” stressing that this provision failed to include any means to determine the permittee’s compliance).

185. *In re Indeck-Elwood*, *supra* note 183, at slip op. 135. The Board continued: [The reductions should be equivalent to BACT, and the permitting authority must provide a methodology for compliance. The . . . conclusory assertion that [the non-numeric standard] better controls emissions during [startup, shutdown, and malfunction] events is not self-evident and lacks record support. . . . As currently drafted, the permit could arguably shield excess emissions arising from poor operation and maintenance or design.

Id. at 135, 139.

186. See 40 C.F.R. §51.166(b)(12), *quoted supra* note 164 and accompanying text.

179. CAA §302(k), 42 U.S.C. §7602(k).

180. The puzzle is this. Section 302(k) seems to say that operating standards are emission limits. Yet §§111(h)(1) and 112(h)(1) seem to say that operational standards are exceptional and are permitted only under limited circumstances. See *supra* note 167.

181. 40 C.F.R. §51.166(b)(12). See also 40 C.F.R. §52.21(b)(12).

182. Michael L. Wilson et al., *A Critical Review of the Environmental Protection Agency’s Standards for “Best Available Control Technology” Under the Clean Air Act*, 20 ELR 10067, 10073-74 (Feb. 1990).