

A R T I C L E S

Regulation of CO₂ Emissions From Existing Power Plants Under §111(d) of the Clean Air Act: Program Design and Statutory Authority

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Summary

EPA is establishing carbon dioxide (CO₂) emission standards for existing electric generating units (EGUs) under §111(d) of the Clean Air Act (CAA). The prospect of undertaking such a significant regulatory program under the authority of a little-used provision of the law has generated a number of questions about what EPA may and may not do in shaping this new regulatory policy. Although the CAA can be read to authorize EPA to require comprehensive, systemwide emission reductions from EGUs, the fact that so many fundamental legal questions about the scope of EPA's authority have not yet been conclusively resolved by the courts introduces a level of legal uncertainty that has seldom been seen in the Agency's 40-plus year history of regulating air pollution.

President Barack Obama has directed the U.S. Environmental Protection Agency (EPA) to use its authority under §111(d) of the Clean Air Act (CAA)¹ to limit carbon dioxide (CO₂) emissions from existing electric generating units (EGUs).² These emissions account for one-third of all greenhouse gas (GHG) emissions in the United States.³ This Article reviews the design choices EPA is likely to face in developing a rule under §111(d), and analyzes how questions relating to EPA's legal authority under this little-used section of the statute may shape EPA's policy and design choices.

Part I of the Article looks at the statutory and regulatory framework for §111(d) regulation. Section 111(d) establishes a federal-state process for regulating existing sources of certain pollutants. It directs EPA to develop a procedure under which each state submits to EPA a plan for establishing standards of performance for sources within its boundaries, and EPA determines whether the state plans are satisfactory. Section 111(d) provides that the procedure for development and review of state plans must be similar to that provided under §110 of the CAA for state implementation plans (SIPs) that are developed to meet national ambient air quality standards (NAAQS).

In 1975, EPA promulgated generic regulations to implement §111(d), which it has amended from time to time.⁴ Under these Implementing Regulations, EPA first issues an "emission guideline" for state plans, which includes a compliance schedule. A standard of performance under a state plan must be no less stringent than the emission guideline in most cases, although states may be able to grant variances based on unreasonable cost, physical impossibility, or other facility-specific factors.

Both the statute and the EPA Implementing Regulations define a standard of performance as an emissions limit achievable by the "best system of emission reduction" (BSER) that EPA has determined is "adequately demon-

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1. 42 U.S.C. §§7401-7671q, ELR STAT. CAA §§101-618.
2. Memorandum from President Barack Obama, to the Administrator of the U.S. Environmental Protection Agency, *Power Sector Carbon Pollution Standards* (June 25, 2013), available at <http://www.whitehouse.gov/the-press-office/2013/06/25/presidential-memorandum-power-sector-carbon-pollution-standards> [hereinafter June 25 Presidential Memorandum].
3. See U.S. EPA, Sources of Greenhouse Gas Emissions (Electricity), <http://www.epa.gov/climatechange/ghgemissions/sources/electricity.html> (last visited Mar. 18, 2014).
4. The regulations (which this Article refers to as the Implementing Regulations) are codified at 40 C.F.R. §§60.20-60.29 (2013).

strated” for the source type, taking cost and other factors into account.

Part II of the Article analyzes EPA’s statutory authority to adopt different policy designs for regulating CO₂ from existing EGUs, and explores the following questions:

Does EPA Have Authority to Regulate EGU CO₂ Emissions Under §111(d)? During amendments to the CAA in 1990, the U.S. Senate and the U.S. House of Representatives passed inconsistent amendments to §111(d). Both amendments were included in the final law, but were not reconciled. The Senate language, standing alone, would allow EPA to regulate CO₂ from existing power plants. The House language, on the other hand, can be read to prohibit EPA from using §111(d) to regulate any category of facilities that EPA already is regulating under §112 of the statute (which addresses hazardous air pollutant (HAP) emissions). Because EPA has issued the Mercury and Air Toxics Standards (MATS) rule⁵ regulating HAPs from power plants, the Agency arguably could not regulate power plants under §111(d) if the House language were found to be in force. EPA has previously interpreted the House and Senate amendments to §111(d) when it attempted to establish a cap-and-trade program for mercury emissions,⁶ and if EPA’s interpretation in that context were applied here, the Agency would be able to regulate CO₂ from existing power plants, notwithstanding the MATS rule.

In addition, under EPA’s long-standing interpretations of §111(d), the Agency may not regulate existing sources under §111(d) unless *new* sources are regulated under §111(b). If EPA’s proposed CO₂ new source performance standards (NSPS) for new EGUs⁷ is not finalized, or is vacated, then—under this interpretation—EPA may not be able to enforce regulations for existing EGUs under §111. However, there are several alternative interpretations under which EPA might still be able to regulate existing EGUs, even if the NSPS for new EGUs is vacated at some point in the future.

Who Sets the Applicable Emission Limit: EPA or the States? Section 111(d) directs EPA to establish a procedure similar

to §110, under which states establish standards of performance and EPA evaluates the plans to determine whether they are “satisfactory.” EPA’s existing interpretation of this mandate can be found in its 1975 Implementing Regulations, which provide that EPA first establishes a benchmark for state plans in the form of the “emission guideline.”⁸

Were EPA to follow its Implementing Regulations in promulgating an emission guideline for state plans to regulate existing EGUs, it is possible that some states and EGU owners would challenge the emission guideline and the Implementing Regulations, arguing that EPA has overstepped its statutory role under §111(d) by overly constraining the discretion of states to develop their plans. A line of cases interpreting §110 has emphasized the breadth of state compliance planning discretion.

Such a legal dispute would first involve a determination of whether the Implementing Regulations are, at this time, insulated from a petition for review. Even if the Implementing Regulations were not insulated from challenge, EPA nevertheless would have robust legal arguments that its approach is consistent with the statute. EPA could argue that the U.S. Congress, by giving EPA authority to determine the BSE and by directing the Agency to evaluate whether state plans are “satisfactory,” implicitly authorized EPA to set some reasonably uniform benchmark criteria for that evaluation—and that Congress thus intended the Agency to have the final word on the adequacy of the performance standards in state plans.

May “Beyond-the-Unit” Measures Be Used for Compliance Purposes or in Setting an Emission Guideline? A central design question for the §111(d) program is the respective roles of “at-the-unit” and “beyond-the-unit” emission reduction measures. “At-the-unit” measures include improving generation efficiency, fuel-switching, and other actions taken at the EGU. “Beyond-the-unit” measures include deployment of renewable energy, end-use energy efficiency and other actions taken beyond the facility’s fence line. Part II looks at three questions related to use of “beyond-the-unit” measures: First, are beyond-the-unit measures a permissible means of compliance with §111(d) performance standards? Second, may states allow EGUs to comply via a trading or averaging regime that relies on measures that could reduce emissions at some EGUs while allowing other EGUs to exceed the numerical emission guideline? Third, may (or must) the stringency of the guideline be based on the availability of beyond-the-unit measures or crediting programs that allow regulated units to reduce emissions without necessarily installing new equipment or employing other “at-the-unit” emission reduction measures?

5. See National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, Final Rule, 77 Fed. Reg. 9304 (Feb. 16, 2012).

6. See Reconsideration of Certain New Source Issues: National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, Final Rule, 78 Fed. Reg. 24073 (Apr. 24, 2013).

7. Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units, Proposed Rule, 79 Fed. Reg. 1430 (Jan. 8, 2014) [hereinafter 2014 Proposed Rule].

8. 40 C.F.R. §§60.20-60.29.

We conclude that states and EGUs would have strong arguments that, in general, beyond-the-unit measures may be used for compliance, and that EPA can allow EGUs to comply using emission averaging and various forms of crediting and trading. Whether EPA can consider beyond-the-unit measures in setting the stringency of the guideline is a somewhat closer question. Neither the language of the statute nor the available case law clearly prohibits EPA from setting the emission guideline based on the availability of beyond-the-unit measures (including emissions averaging, trading, and crediting). Construing §111 to allow EPA to consider emission averaging among regulated EGUs and trading of credits for EGU emission reductions when setting the emission guideline likely would represent a reasonable interpretation of the statute. In addition, EPA could present sound arguments for basing its emission guideline on measures not implemented at or among the regulated EGUs (such as investments in end-use energy efficiency or renewable generation resources). However, if it did so, the risk that a reviewing court would find EPA had exceeded its authority would be elevated—especially if the availability of these measures depended on the participation of nonregulated entities (e.g., electricity customers or renewable energy developers) who are outside the control of regulated EGUs, or if the court found that EPA lacked sufficient record support for a finding that EGU compliance via such beyond-the-unit measures has been “adequately demonstrated.”

May States Allow EGUs to Use “Beyond-the-Unit” Compliance Measures in Their Plans if EPA Does Not Consider Them in Setting the Emission Guideline? Even if EPA does not, or finds that it may not, consider beyond-the-unit measures in setting the emission guideline, states nevertheless would have strong arguments that they may include such measures in their plans because of their traditionally broad discretion in tailoring compliance plans to local circumstances.

Although it is difficult to predict either the content of EPA’s forthcoming rule for existing EGUs or its fate in the courts, we can make several observations about the legal framework under which EPA must regulate: First, the operative passages of §111(d) are relatively brief and do not contain much prescription or detail as to what EPA can or must do with respect to regulation of existing sources. Second, under traditional standards of judicial review of agency decisions, reviewing courts defer to an agency’s construction of ambiguous statutory language as long as the agency interpretation is reasonable. Third, there is no prior judicial precedent interpreting the provisions of §111(d), and thus no judicial guidance as to what is permissible; on the other hand, the lack of judicial precedent provides the Agency significant leeway in interpreting §111(d) to fit its desired approach. Fourth, EPA’s prior use of §111(d) has been very limited, so while there is no well-worn path to guide a “safe” approach, there is also little past practice that must be distinguished or explained before EPA adopts a new approach.

These observations indicate that EPA will have considerable latitude to construe the terms of §111(d) to support a broad range of policy approaches. However, the more ambitious EPA’s design becomes, the more expansive the statutory constructions and findings the Agency would have to make—particularly if EPA’s emission guideline level is based on a system of emission reductions that assumes the availability of beyond-the-unit measures. The sheer number of findings and interpretations the Agency would have to make to support a stringent, comprehensive rule that incorporates beyond-the-unit compliance measures could expose the Agency to a significant *aggregate* risk of reversal. Indeed, at some point, the absence of more detailed, prescriptive language from Congress could work against the Agency as it attempts to defend its rule from legal challenges.

I. Background: Statutory Framework and Legal Precedents for Regulation Under §111(d)

In this part of the Article, we review the statutory provisions of CAA §111(d), EPA’s Implementing Rules for §111(d), and the limited administrative precedent under that section. As we note, there is little judicial precedent interpreting §111(d), although decisions interpreting related provisions of the CAA may have some bearing on the design of any program to regulate CO₂ emissions under §111(d).

A. The Statutory Framework

Section 111 of the CAA provides for the establishment of “standards of performance” for emissions from any category of stationary sources that, in the EPA Administrator’s judgment, “causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.”⁹

Section 111 defines a “standard of performance” as:

[A] standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.¹⁰

I. Section 111(b) Regulation of New and Modified Sources

Section 111(b) directs the agency to: (1) maintain a list of categories of stationary sources that are significant contributors to air pollution that may endanger public health or welfare¹¹; and (2) for each category, promulgate a standard(s) of performance for *new* and *modified* sources

9. 42 U.S.C. §7411(b)(1)(A) (2006 & Supp. V 2011).

10. *Id.* §7411(a)(1).

11. *Id.* §7411(b)(1)(A).

in the category.¹² For the new and modified sources, EPA may set different standards for different “classes, types, and sizes” of sources within a category.¹³ The statute directs EPA to review §111(b) performance standards every eight years and to revise them as necessary.¹⁴

EPA has promulgated numerous §111(b) regulations over time, including five that are currently applicable to new or modified EGUs.¹⁵ In previous rulemakings under §111(b), EPA has traditionally set the standard of performance for EGUs as an allowable rate of emissions per one million British thermal units (MMBtu) of fuel input or per megawatt hour (MWh) of electrical output.

In addition, EPA traditionally has subcategorized EGUs, and set different standards of performance for coal-fired and natural gas-fired EGUs, respectively, and for different types of gas and coal facilities.¹⁶ EPA’s January 2014 Proposed Rule to establish CO₂ emission standards for new EGUs would follow this pattern, with two separate standards for EGUs based on whether they burn natural gas or other fossil fuels.¹⁷

2. Section 111(d) Regulation of Existing Sources

CAA §111(d) addresses the establishment of “standards of performance” for *existing* sources (i.e., sources other than new and modified sources).¹⁸ The term “standard of performance” has the same meaning in both §111(b) and §111(d). Section 111(d)(1) provides:

The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 110 under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 108(a)

[or 112(b)] [or emitted from a source category which is regulated under section 112]¹⁹ but (ii) to which a standard of performance under this section would apply if such existing source were a new source, and (B) provides for the implementation and enforcement of such standards of performance. Regulations of the Administrator under this paragraph shall permit the State in applying a standard of performance to any particular source under a plan submitted under this paragraph to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies.²⁰

Pollutants and Sources Covered. EPA can regulate pollutants from existing facilities under §111(d) under two conditions. First, EPA has interpreted §111(d)(1) to authorize regulation of an air pollutant only if it is not regulated under CAA §§108-109 (criteria pollutants) or CAA §112 (HAPs).²¹ CO₂ is neither a regulated criteria pollutant nor a regulated HAP. However, because of ambiguity in the 1990 CAA Amendments,²² there is some controversy over the limitations on EPA’s §111(d) authority in this regard. In the 1990 CAA Amendments, Congress enacted two separate and inconsistent amendments to §111(d). Under one reading of the amended statute, EPA would be barred from regulating any emissions from EGUs under §111(d), because emissions from the EGU source category are now subject to regulation under the MATS rule. We discuss this controversy in Part II, below.

Section 111(d) has long been interpreted to require regulation of only those existing sources to which a §111(b) standard of performance for the pollutant in question would apply if the sources were new sources. Because of this limitation, if EPA forgoes regulation of a pollutant from a particular type of new source under §111(b), existing sources of that type arguably may not be regulated under §111(d). Moreover, if EPA’s proposed rule to regulate new EGU CO₂ emissions is not promulgated or is vacated on judicial review, EPA arguably would not have authority to regulate CO₂ emissions from existing EGUs.²³

12. *Id.* §7411(b)(1)(B).

13. *Id.* §7411(b)(2).

14. *Id.* §7411(b)(1)(B).

15. See 40 C.F.R. part 60, subparts D, Da, Db, Dc, and KKKK (2013).

16. See, e.g., 40 C.F.R. §§60.43Da, 60.44Da (establishing separate sulfur dioxide (SO₂) and nitrous oxide (NO_x) performance standards for electric generating units based on primary fuel source and geography); 40 C.F.R. part 60, subpart KKKK (establishing separate performance standards for stationary combustion turbines).

17. 2014 Proposed Rule. The 2014 Proposed Rule replaces EPA’s 2012 proposed rule to regulate CO₂ from EGUs. See Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22392 (Apr. 13, 2012).

18. The relevant text of §111(d)(2) provides,

(2) The Administrator shall have the same authority—

(A) to prescribe a plan for a State in cases where the State fails to submit a satisfactory plan as he would have under section 110(c) of this Act in the case of failure to submit an implementation plan, and

(B) to enforce the provisions of such plan in cases where the State fails to enforce them as he would have under sections 113 and 114 of this Act with respect to an implementation plan.

In promulgating a standard of performance under a plan prescribed under this paragraph, the Administrator shall take into consideration, among other factors, remaining useful lives of the sources in the category of sources to which such standard applies.

42 U.S.C. §7411(d)(2).

19. Pub. L. No. 101-549, §§108, 302, 104 Stat. 2399, 2467, 2574 (1990) [hereinafter 1990 CAA Amendments]. The final text of the 1990 CAA Amendments included two inconsistent amendments to §111(d). As we discuss below, these amendments have not been subsequently reconciled, and it is not immediately apparent from the context or legislative history which of the two amendments Congress intended to adopt. We indicate the ambiguity by providing the text of §111(d), above, as it would read if amended by each of the amendments. The text of the amendments is enclosed in brackets to clearly identify this ambiguity.

20. 42 U.S.C. §7411(d)(1) (modified to reflect conflicting language in the 1990 CAA Amendments, which we discuss in detail in Part II, below).

21. See U.S. EPA, *Background on Establishing New Source Performance Standards (NSPS) Under the Clean Air Act 2* (2013), <http://www.epa.gov/region09/air/listening/BackgroundEstablishingNewSourcePerformanceStds.pdf>.

[W]here EPA establishes a NSPS for new sources in a source category, a section 111(d) standard is required for existing sources in the regulated source category (except, in general, for pollutants regulated under the CAA section 109 requirements for national ambient air quality standards or regulated under the CAA section 112 requirements for hazardous air pollutants).

22. See 1990 CAA Amendments, *supra* note 19.

23. Note that EPA is expected to issue a separate rule under §111(b) for modified units concurrently with its existing source rule. See June 25 Presidential Memorandum. Section 111’s definition of “new source” includes modified

There are, however, interpretations of §111 under which EPA could still regulate existing sources, even if the 2014 Proposed Rule is vacated. We discuss this issue in Part II, below.

State Plans. Section 111(d) directs EPA to establish a “procedure similar to that provided by Section 110” of the CAA for imposing standards of performance on existing sources. CAA §110 addresses the development of SIPs for purposes of compliance with NAAQS for criteria air pollutants.

Section 111(d) further provides that the “§110-like” procedure must require each state to submit to EPA a plan that establishes standards of performance for the sources in the state. The plan must also include provisions for implementation and enforcement of such standards.²⁴

The EPA procedure must allow a state plan, in applying a standard of performance to any particular source, “to take into consideration, among other factors, the remaining useful life of the . . . source.”²⁵ The phrase “among other factors” is presumably a reference to the other relevant factors for establishing a standard of performance, such as cost and technical feasibility.

EPA Oversight. Although the state plan establishes the relevant standards of performance for existing sources, the statute makes clear that state standards and the plan itself are subject to review by EPA. While §111(d)(1) requires states to “establish standards of performance” for existing sources, §111(a)(1) defines a standard of performance in terms of the best system of emission limitation that EPA determines is adequately demonstrated. In addition, §111(d)(2) authorizes EPA to (1) prescribe its own plan for a state if the state fails to submit a “satisfactory” plan,²⁶ and (2) enforce the state plan if the state fails to enforce it.²⁷ If EPA prescribes a standard or standards of performance in lieu of a state, it must take into consideration, among other factors, the remaining useful lives of the sources subject to the standard(s).²⁸

Enforcement. Section 111(d) does not prescribe the kinds of enforcement measures that are included in state plans. However, the statute does require that plans include “standards of performance for any existing source” subject to §111(d) and measures to implement and enforce such standards. This language implies that, regardless of the mea-

sures in the state plan, the standards must ultimately be enforceable against the relevant sources.

Review and Revision of Standards. Although §111(b) provides that EPA must consider revising standards of performance for new and modified sources every eight years, §111(d) is silent on the issue of review and revision.

B. Section 111(d) Implementing Regulations

EPA first promulgated regulations in 1975 to establish the procedure for setting standards of performance for existing sources pursuant to §111(d).²⁹ The regulations (which this Article refers to as the Implementing Regulations) are codified in 40 C.F.R. part 60, subpart B, §§60.20-60.29. Specific regulations for existing sources in particular source categories can be found in subpart C and other sections of part 60.

The Implementing Regulations outline a procedure in which EPA first promulgates a “guideline document” that contains information to guide the development of state plans (which must be submitted to EPA for approval under §111(d)). The guideline document may include an “emission guideline.” States then have nine months to develop plans with standards of performance and compliance timetables that are of equivalent stringency to the EPA emission guideline, although state plans may vary from the guideline if the state shows that certain specified conditions are met.

I. EPA Guideline Document

The Implementing Regulations provide that the “guideline document” must include information to guide the development of state plans, such as: (1) information about endangerment caused by the relevant pollutants; (2) a description of adequately demonstrated systems of emission reduction; (3) information on reductions achievable by each system, together with costs; and (4) periods of time for design, installation, and startup of identified control systems.³⁰

Emission Guideline. The guideline document will also include an “emission guideline that reflects the application of the best system of emission reduction (considering the cost of such reduction) that has been adequately demonstrated for designated facilities, and the time within which compliance with emission standards of equivalent stringency can be achieved.”³¹ This language and the regulatory definition of “emission guideline,” parallel the statutory definition of “standard of performance,” although the regulatory definition does not

units. See 42 U.S.C. §7411(a)(2). Therefore, even if the recently proposed rule for new EGUs is vacated, EPA may be able to rely on the existence of the modified source rule to satisfy §111(d)’s requirement that existing source performance standards apply only to sources that would be subject to an NSPS if they were “new sources.” In addition, it is possible to read §111(d) as requiring EPA to regulate existing sources when *any* NSPS for *any* pollutant has been issued. We discuss these alternative interpretations of the §111(b) precondition and their relevance for EPA regulation of CO₂ from existing units in Part II, below.

24. 42 U.S.C. §§7411(d)(1)(A), (B).

25. 42 U.S.C. §7411(d)(1).

26. 42 U.S.C. §7411(d)(2)(A) (providing that EPA shall have the same authority to prescribe a plan for the state as the Agency would have under CAA §110(c), which describes EPA’s authority to impose “Federal Implementation Plans” in the context of NAAQS).

27. 42 U.S.C. §7411(d)(2)(B) (providing that EPA shall have the same authority to enforce state plans as it would have under CAA §§113 and 114).

28. 42 U.S.C. §7411(d) (last sentence).

29. Standards of Performance for New Stationary Sources; State Plans for the Control of Certain Pollutants From Existing Facilities, Final Rule, 40 Fed. Reg. 53340 (Nov. 17, 1975). EPA amended the regulations numerous times in the last 40 years. See 44 Fed. Reg. 65084 (Nov. 9, 1979); 54 Fed. Reg. 52028 (Dec. 20, 1989); 60 Fed. Reg. 65240 (Dec. 19, 1995); 65 Fed. Reg. 76384 (Dec. 6, 2000); 70 Fed. Reg. 28606 (May 18, 2005); 71 Fed. Reg. 33388 (June 9, 2006); 72 Fed. Reg. 59210 (Oct. 19, 2007); 77 Fed. Reg. 9304 (Feb. 16, 2012).

30. 40 C.F.R. §§60.22(b)(1)-(4).

31. 40 C.F.R. §60.22(b)(5).

refer to “energy requirements” or non-air environmental impacts.³² The guideline document must also outline a timetable for compliance.³³

Subcategorization. EPA’s Implementing Regulations further provide that the Agency will subcategorize among sources “when costs of control, physical limitations, geographical location, or similar factors make subcategorization appropriate.”³⁴ Under such circumstances, EPA “will specify” different emission guidelines, compliance times, or both for different “sizes, types, and classes of designated facilities.”³⁵

Timing. The Implementing Regulations provide that EPA will publish a draft emission guideline “[c]oncurrently upon or after proposal of [§111(b)] standards of performance for the control of a designated pollutant from affected facilities. . . .”³⁶ One possible reading of this language is that it creates a (self-imposed) obligation for the Agency to publish a new guideline after every proposed revision of a new/modified source standard of performance. Even under that reading, however, the Agency would not have a specific deadline for issuing emission guidelines (other than “after” the date on which the Agency proposes the revised §111(b) standard).³⁷

2. State Plans

Emission Standard. The Implementing Regulations require states to submit plans in response to the guideline document published by EPA. The state plans must include “emission standards,” compliance schedules, and measures for implementation and enforcement.³⁸

The Implementing Regulations define an “emission standard” as taking one of three possible forms: an “allowable rate of emissions;” an “allowance system;” or prescribed equipment specifications.³⁹ However, §60.24(b)(1) of the regulations limits the use of equipment standards to only those situations in which using an allowance system or emission rate would be “clearly impracticable.”⁴⁰

EPA added the term “allowance system” to the §60.21(f) definition of “emission standard” and to §60.24(b)(1) as part of its promulgation of the 2005 Clean Air Mercury

Rule (CAMR),⁴¹ which included a cap-and-trade program. As discussed below, the 2005 CAMR was vacated by the U.S. Court of Appeals for the District of Columbia (D.C.) Circuit.⁴² Yet, the CAMR portions of the regulations continued to appear in subsequent editions of the *Code of Federal Regulations*. In 2012, when EPA promulgated the MATS rule, the Agency removed many of the provisions in the Implementing Regulations that were specific to the CAMR cap-and-trade program, including the definition of “allowance system.”⁴³ However, the Agency did not remove the references to “allowance system” found in §60.21(f) (defining “emission standard”) or §60.24(b)(1) (specifying permissible forms of an “emission standard”).⁴⁴ Because the remaining “allowance system” language originated with a rule that has since been vacated, it is not clear what continuing legal effect these references have (notwithstanding the fact that EPA decided not to remove these references when it issued the MATS rule).

Equivalency Requirement and Exceptions. Section 60.24(c) of the Implementing Regulations provides that—subject to certain exceptions—the emission standards in a state plan “shall be no less stringent than the corresponding emission guideline(s)” specified by EPA. Section 60.24(c) further provides that under state plans, “final compliance shall be required as expeditiously as practicable but no later than the compliance times” contained in the EPA-established emission guideline.

The Implementing Regulations outline several exceptions to this state equivalency requirement. One exception applies when EPA has determined that the relevant pollutant may cause or contribute to endangerment of public welfare, but has not been demonstrated to have adverse effects on public health. Under such circumstances, the state may balance the directives of the EPA emission guideline “against other factors of public concern” when setting emission standards and compliance schedules.⁴⁵ This exception likely would not apply for CO₂, because EPA has determined that CO₂ emissions endanger *both* public welfare and public health in the context of regulating motor vehicle emissions, and proposed such a finding for new EGUs.⁴⁶

Another exception to the equivalency requirement takes the form of case-specific exemptions (often referred to as “variances”), which states may include in their plans. The

32. See 40 C.F.R. §60.21(e) (defining “emission guideline”). In its 1975 rule-making, EPA explained that the use of the term “guideline” instead of “standard” or “limit” was intended to make clear that guidelines would not themselves be binding limits, but rather benchmarks for assessing whether a state plan is “satisfactory.” The Agency expressly compared its §111(d) procedure to the SIPs procedure under §110: “[L]ike the [NAAQS] under Section 109 and the [guidelines for SIPs] set forth in Section 110(a)(2)(A)-(H),” EPA explained, “[guidelines would] only be criteria for judging the adequacy of State plans.” Standards of Performance for New Stationary Sources; State Plans for the Control of Certain Pollutants From Existing Facilities, Final Rule, 40 Fed. Reg. at 53343.

33. 40 C.F.R. §60.22(b)(5).

34. *Id.*

35. *Id.*

36. 40 C.F.R. §60.22(a).

37. The Agency, however, may be subject to litigation if it unreasonably delays action.

38. 40 C.F.R. §60.24.

39. 40 C.F.R. §60.21(f).

40. 40 C.F.R. §60.24(b)(1).

41. See Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, Final Rule, 70 Fed. Reg. 28606 (May 18, 2005) [hereinafter CAMR], *vacated on other grounds by* New Jersey v. EPA, 517 F.3d 574 (D.C. Cir. 2008), *cert. denied sub nom.* Util. Air Reg. Grp. v. New Jersey, 555 U.S. 1169 (2009).

42. See *New Jersey*, 517 F.3d 574.

43. The definition was previously found in 40 C.F.R. §60.21(k).

44. See National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, Final Rule, 77 Fed. Reg. at 9447.

45. 40 C.F.R. §60.24(d).

46. See Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, Final Rule, 74 Fed. Reg. 66496, 66535 (Dec. 15, 2009); 2014 Proposed Rule, 79 Fed. Reg. at 1455.

Implementing Regulations provide that, unless EPA has specified otherwise in the emission guideline, a state may apply less-stringent emission standards or longer compliance schedules to particular facilities or classes of facilities if the state demonstrates any of the following for those facilities:

1. unreasonable costs of control resulting from plant age, location, or basic process design;
2. the physical impossibility of installing necessary control equipment; or
3. other factors specific to the facility (or class of facilities) that make application of a less stringent standard or final compliance time significantly more reasonable.⁴⁷

Submission and Approval of State Plans. The Implementing Regulations provide that states have nine months after the final issuance of a guideline document to adopt and submit a plan to EPA, although EPA may specify a different timetable.⁴⁸ In addition, the Agency may extend the submission deadlines for any plan.⁴⁹ EPA must approve or disapprove a state plan within four months after the submission deadline.⁵⁰

If a state fails to submit a plan or a revised plan by the prescribed deadline, or if EPA disapproves a state plan or a portion thereof because the requirements of the Implementing Regulations have not been met, the Agency will publish a proposed federal plan for the state within six months of the plan submission deadline.⁵¹ This federal plan must prescribe emission standards of the same stringency as those in the emission guideline, and require compliance no later than the compliance schedule specified in the emission guideline.⁵²

As explained above, the Implementing Regulations are EPA's response to the congressional mandate in §111(d) to establish a §110-like procedure for submitting state plans and determining whether a state has submitted a "satisfactory plan" that may be approved under §111(d).⁵³ Accordingly, the Implementing Regulations reflect the Agency's effort to integrate the federal-state division of labor embodied in §110—and that section's emphasis on broad state discretion—with the §111 directive to ensure that sources are subject to emission limits achievable by the BSER that the Administrator determines has been adequately demonstrated.⁵⁴

The legal status of the Implementing Regulations could be an issue in EPA's development of §111(d) regulations applicable to the power sector—particularly if the regulations draw legal challenges asserting that EPA's regulations impermissibly intrude on state discretion. For example, states might challenge EPA's authority to establish a numerical "emission guideline," or to require state plans to be no less stringent than the guideline. These issues are explored in greater detail in Part II of this Article.

C. Deviation From the Implementing Regulations

Although the Implementing Regulations are intended to provide a generic procedure for regulating under §111(d), EPA may, and has in the past, deviated from the Implementing Regulations in category-specific §111(d) regulations.⁵⁵ However, if EPA deviates from the Implementing Regulations, the Agency must justify its approach as consistent with the statute, and provide a reasoned basis for its departure from prior policy.⁵⁶

D. Past §111(d) Regulations for Source Categories

Limited Precedent. EPA has promulgated §111(d) regulations for specific source categories in 13 instances.⁵⁷ EPA has likely promulgated so few §111(d) regulations because, under the conventional interpretation of §111(d), that section only applies to major sources of pollutants that are neither criteria pollutants nor toxic pollutants (two categories that encompass the vast majority of known air

47. 40 C.F.R. §60.24(f).

48. 40 C.F.R. §60.23(a)(1).

49. 40 C.F.R. §60.27(a) ("The Administrator may, whenever he determines necessary, extend the period for submission of any plan or plan revisions or portion thereof.")

50. 40 C.F.R. §60.27(b).

51. 40 C.F.R. §60.27(d).

52. 40 C.F.R. §60.27(e)(1). The owner or operator of a designated facility may apply for less-stringent emission standards or a relaxed compliance schedule, and the Administrator may grant such application subject to the same criteria as apply to variances granted by states under 40 C.F.R. §60.24(f).

53. Under CAA §111(d)(2)(A), EPA prescribes a federal plan if the state "fails to submit a satisfactory plan." See 42 U.S.C. §7411(d)(2)(A).

54. 42 U.S.C. §7411(a)(1).

55. See, e.g., 40 C.F.R. §60.30e (specifying that "the provisions in these emission guidelines [for hospital/medical/infectious waste incinerators] supersede the provisions of" the Implementing Regulations).

56. See, e.g., *Motor Vehicles Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 57, 13 ELR 20672 (1983) ("An agency's view of what is in the public interest may change, either with or without a change in circumstances. But an agency changing its course must supply a reasoned analysis.") (quoting *Greater Boston Television Corp. v. FCC*, 444 F.2d 841, 852 (D.C. Cir. 1970), cert. denied, 403 U.S. 923 (1971)).

57. See Phosphate Fertilizer Plants; Final Guideline Document Availability, 42 Fed. Reg. 12022 (Mar. 1, 1977); Standards of Performance for New Stationary Sources; Emission Guideline for Sulfuric Acid Mist, 42 Fed. Reg. 55796 (Oct. 18, 1977); Kraft Pulp Mills, Notice of Availability of Final Guideline Document, 44 Fed. Reg. 29828 (May 22, 1979); Primary Aluminum Plants, Notice of Availability of Final Guideline Document, 45 Fed. Reg. 26294 (Apr. 17, 1980); Emission Guidelines; Municipal Waste Combustors, Final Emission Guidelines, 56 Fed. Reg. 5514 (Feb. 11, 1991), *withdrawn & superseded by* 60 Fed. Reg. 65387 (Dec. 19, 1995) (same source category); Standards of Performance for New Stationary Sources and Guidelines for Control of Existing Sources: Municipal Solid Waste Landfills, Final Rule, 61 Fed. Reg. 9905 (Mar. 12, 1996); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Hospital/Medical/Infectious Waste Incinerators, Final Rule, 62 Fed. Reg. 48348 (Sept. 15, 1997); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units, Final Standards and Guidelines, 65 Fed. Reg. 75338 (Dec. 1, 2000); Emission Guidelines for Existing Small Municipal Waste Combustion Units, Final Rule, 65 Fed. Reg. 76378 (Dec. 6, 2000); CAMR, 70 Fed. Reg. 28606; Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Other Solid Waste Incineration Units, Final Rule, 70 Fed. Reg. 74870 (Dec. 16, 2005); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units, Final Rule, 76 Fed. Reg. 15372 (Mar. 21, 2011).

pollutants).⁵⁸ Notably, six of the 13 regulations are a product of a separate mandate to EPA under §129 of the CAA, which directs the Agency to utilize the §111(d) procedure to set emission standards for certain existing solid waste incinerators.⁵⁹ For these incinerators, CAA §129 overrides the limited pollutant coverage of §111(d), and mandates the promulgation of standards addressing a specific list of criteria and toxic pollutants.⁶⁰ In addition, another §111(d) regulation, the CAMR, was vacated by the D.C. Circuit in 2008.⁶¹ Thus, although EPA has previously regulated sources under §111(d), its experience with this provision is more limited than with other stationary source provisions (such as §111(b) or §112).

Availability of Variances. It is noteworthy that, in several of the past §111(d) regulations, the relevant EPA “emission guideline” expressly foreclosed the availability of any “variances” within state plans. However, with one exception,⁶² all of the regulations in which EPA foreclosed variances were regulations affecting solid waste incinerators under §129, and therefore it could be argued that these regulations were responsive to the particular language of §129, which can be read to mandate strict equivalency for state plans and to preclude variances. Specifically, §129(b)(2) provides that state plans under such regulations “shall be at least as protective as the guidelines promulgated by the Administrator.”⁶³

Use of “Beyond-the-Unit” Measures. In one currently effective §111(d) regulation, the EPA emission guideline allows a regulated facility to comply through measures that are not applied at the facility (referred to as “beyond-the-unit” measures in this article). Under the rules for Large Municipal Waste Combustors, state plans may authorize facilities to comply by averaging the emission rates of several facilities within a state, and by trading nitrogen oxide (NO_x) emission credits.⁶⁴ In addition, the EPA guideline document in the now-vacated CAMR authorized a national cap-and-trade program for mercury emissions, and established a model rule for states to opt in.⁶⁵ Moreover, some emission guidelines for waste incineration facilities issued under §111 have required sources to implement “waste management” and “material separation” plans to reduce the amount of waste that is combusted—measures that could also be considered beyond-the-unit measures because they reduce emissions through a reduction in inputs without altering the technology, configuration, or method by which the source produces emissions.⁶⁶

No court has yet addressed the legal validity of permitting these beyond-the-unit compliance approaches. EPA’s past §111(d) regulations have not generated any relevant case law addressing the scope of EPA authority under §111(d) or the Implementing Regulations.⁶⁷ Accordingly, while EPA’s approaches in its past §111(d) regulations may be instructive—particularly, for purposes of understanding how EPA justified those approaches under the statute—it is important to recognize that those approaches have not been subject to judicial review.⁶⁸

II. Legal Analysis of Key Design Issues

As the previous section explains, EPA’s principal task under §111(d) and its Implementing Regulations is to determine the BSER adequately demonstrated, set an emission guideline that is achievable by the BSER, and promulgate regulations that require states to establish performance standards and plans to implement the degree of emission limitation that is required by the guideline. This section analyzes the key legal questions that will guide EPA’s decision about each of these steps.

Because EPA has not yet issued a proposed rule for addressing CO₂ emissions from existing EGUs, the importance of many of the legal questions we discuss is difficult to ascertain at this time. Depending on how EPA designs its §111(d) program, certain of these issues may never arise,

Incinerators, 62 Fed. Reg. at 48359:

A number of health care facilities have implemented waste management measures to reduce the overall volume of waste. However, it should be stressed that each health care facility is unique and site-specific strategies must be developed that achieve the most efficient results. Through the development of individual waste management programs, health care facilities can achieve significant reductions in their waste stream, reduce the volume of waste to be incinerated, and thereby reduce the amount of air pollution emissions associated with that waste. Therefore, the final . . . standards and guidelines require that health care facilities which operate incinerators develop and implement a waste management plan.

See also Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units, 65 Fed. Reg. at 75341 (requiring waste incinerators to prepare and submit a plan that outlines “the methods used to reduce or separate certain components of solid waste from the waste stream to reduce or eliminate toxic emissions from incinerated waste”).

67. Although CAMR was subject to a challenge in federal court, the court did not reach the question of whether the proposed cap-and-trade program was legal under §111(d). See *New Jersey v. EPA*, 517 F.3d 574, 583 (D.C. Cir. 2008).

68. Indeed, recent experience with EPA’s transport rules illustrates the hazard of assuming that a court will place any value on an agency’s “historical” approach to implementing certain statutory provisions. In its decision vacating and remanding the 2005 Clean Air Interstate Rule (CAIR), *North Carolina v. EPA*, 531 F.3d 896, *partial rel’g*, 550 F.3d 1176 (D.C. Cir. 2008), the D.C. Circuit held that EPA had not demonstrated that a multi-state trading approach would be consistent with the requirements of §110(a)(2) (D) that each state avoid “significant contribution” of pollution to another state—even though the D.C. Circuit had not disturbed EPA’s use of the same approach when the court upheld the Agency’s 1998 NO_x SIP Call Rule (see *Michigan v. EPA*, 213 F.3d 663, 30 ELR 20407 (D.C. Cir. 2000), *cert. denied*, 532 U.S. 904 (2001)). The *North Carolina* court made clear that the *Michigan* court did not evaluate the lawfulness of the NO_x SIP Call’s trading program in that decision because no one had challenged its adoption. *North Carolina*, 531 F.3d at 908. In July, the U.S. Supreme Court granted the Barack Obama Administration’s petition for certiorari, and will review the *North Carolina* decision.

58. As we discuss below, the 1990 drafting error has resulted in the possibility of alternative interpretations of §111(d)(1), some of which give EPA narrower authority.

59. CAA §129(b)(1); 42 U.S.C. §7429(b)(1) (“Performance standards under this section and [§111] for solid waste incineration units shall include guidelines promulgated pursuant to [§111(d)] and this section applicable to existing units.”).

60. CAA §129(a)(4); 42 U.S.C. §7429(a)(4).

61. *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008).

62. The one exception is the CAMR, which was vacated on other grounds.

63. 42 U.S.C. §7429(b)(2).

64. See 40 C.F.R. §§60.33b(d)(1)-(2).

65. See CAMR, 70 Fed. Reg. at 28616-24.

66. See, e.g., Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Hospital/Medical/Infectious Waste

while others might become critical. However, it is possible that EPA will adopt a regulation that borrows from previous EPA rulemaking practice under §111(d) (e.g., the CAMR rule) as well as from a number of proposals and analyses put forth by groups such as Natural Resources Defense Council (NRDC),⁶⁹ the Clean Air Task Force,⁷⁰ the National Climate Coalition,⁷¹ the Environmental Defense Fund,⁷² states,⁷³ and others. These proposals, EPA's previous §111(d) rules, and the issues the Agency has raised with stakeholders in advance of its forthcoming proposal,⁷⁴ provide insight into what will likely be the main policy design questions EPA will have to wrestle with in constructing the §111(d) rule. Consequently, the legal analysis that follows is largely addressed to the following major design questions—each of which is touched on by one or more of these potential frameworks for §111(d) regulation.

Form of the Emission Guideline. One category of design questions relates to what form the EPA emission guideline should take. For example, should the emission guideline or state standard of performance be expressed in terms of an output-based rate, such as pounds of CO₂ per MWh (lbs/MWh)? Or, could it be expressed in terms of mass emissions for a period of time, such as tons per year (tons/yr)? EPA will also have to decide whether to set a fixed emission guideline or a guideline based on percent reduction from a source-specific baseline; whether and how to set different standards for different subcategories of EGUs; and what EGUs should be covered by the rule in the first instance (including whether to cover new and modified sources in the framework it establishes under §111(d)).

State Compliance Flexibility. We expect the EPA guideline document to provide important policy guidance to states as to how EPA will review and evaluate state compliance plans. One question is whether state plans may permit EGUs to comply using a crediting or allowance trading mechanism that could enable sources to rely on beyond-the-unit measures for compliance. Other ques-

tions include whether the guideline document will provide for model credit trading rules, and what parameters EPA will establish for evaluating “variance” proposals contained in state plans. These policy choices raise legal questions about EPA's range of discretion to approve or disapprove state plans.

Stringency of the Emission Guideline. EPA will have to make key decisions about how to set the level of stringency of the emission guideline. For example, EPA will have to determine whether to set its emissions guideline based exclusively on a “system of emission reduction” that can be implemented onsite at the typical EGU (e.g., heat-rate improvements, fuel-switching, co-firing of low-carbon fuels, or carbon capture and sequestration (CCS)). Alternatively, if EPA allows states to credit beyond-the-unit measures for purposes of compliance with the emission limits in state plans, should EPA consider such measures (which could include crediting for added renewable or nuclear generation or investments in end-use energy efficiency) in setting the stringency of the guideline? The answer to this design question will help determine the degree of emission reduction EPA will attempt to achieve from existing EGUs.

This Article does not take a position as to how EPA should answer these design questions. Rather, we have used these design questions as guideposts to inform and cabin the legal analysis that follows. Although our main focus is on the extent to which these design choices are constrained by the statutory limitations of the CAA, we begin our analysis by discussing several threshold questions that undergird EPA's authority to regulate under §111(d). These questions include the standards of review a court will apply to EPA's legal and factual determinations under the CAA, whether EPA's 1975 Implementing Regulations may be subject to judicial challenge, and several additional threshold questions that relate to whether EPA has authority to regulate CO₂ from EGUs in particular. Next, we examine the extent to which EPA may legally permit states to implement state compliance schemes under which EGUs could comply by surrendering emission credits or allowances that reflect beyond-the-unit emission reductions. Finally, we examine whether, assuming that EPA allows state plans to include beyond-the-unit compliance mechanisms, EPA may (or must) base the stringency of the emission guideline on the availability of those mechanisms.

A. Threshold Issues Affecting EPA's Authority and Discretion in Regulating GHGs From EGUs

I. What Is the Likely Standard of Judicial Review for an EPA Regulation Under §111(d)?

Standard of Judicial Review for EPA Statutory Constructions. In evaluating a legal challenge to an agency interpretation of a statute it administers, the courts use the two-part

69. See NRDC, *Closing the Power Plant Carbon Pollution Loophole: Smart Ways the Clean Air Act Can Clean Up America's Biggest Climate Polluters* (2013), available at <http://www.nrdc.org/air/pollution-standards/files/pollution-standards-report.pdf>.

70. See Clean Air Task Force, *Power Switch: An Effective, Affordable Approach to Reducing Carbon Pollution From Existing Fossil-Fueled Power Plants* (2014), available at http://catf.us/resources/publications/files/Power_Switch.pdf.

71. See National Climate Coalition, *National Climate Coalition Program Design Recommendations* (2013), available at <http://bipartisanpolicy.org/sites/default/files/NCC.pdf>.

72. See Megan Ceronsky & Tomás Carbonell, *Section 111(d) of the Clean Air Act: The Legal Foundation for Strong, Flexible and Cost-Effective Carbon Pollution Standards for Existing Power Plants* (2013), available at http://www.edf.org/sites/default/files/111-clean_air_act-strong_flexible_cost-effective_carbon_pollution_standards_for_existing_power_plants.pdf.

73. See, e.g., Letter from Mary D. Nichols et al., to Gina McCarthy (Dec. 16, 2013), available at http://www.georgetownclimate.org/sites/default/files/EPA_Submission_from_States-FinalCompl.pdf; Letter from Daniel C. Esty et al., to Gina McCarthy (Dec. 2, 2013), available at http://www.rggi.org/docs/RGGI_States_111d_Letter_Comments.pdf.

74. See, e.g., U.S. EPA, *Considerations in the Design of a Program to Reduce Carbon Pollution From Existing Power Plants* (Sept. 23, 2013), <http://www2.epa.gov/sites/production/files/2013-09/documents/20130923statequestion.s.pdf>.

test in *Chevron, U.S.A., Inc. v. NRDC*.⁷⁵ The first step for the court under *Chevron* is to evaluate whether the statute speaks to the direct question at issue. If so, the court “must give effect to the unambiguously expressed intent of Congress.”⁷⁶ On other hand, if the statute is silent or ambiguous with respect to the precise question at issue, the question for the court is “whether the agency’s answer is based on a permissible construction of the statute.”⁷⁷ This so-called “*Chevron* Step Two” standard of review is relatively deferential to the agency; the court will reverse the agency’s determination only if the determination is “arbitrary, capricious, or manifestly contrary to the statute.”⁷⁸ The “*Chevron* Step Two” standard of review reflects an implied assumption that, if the statute does not speak directly to the question at issue, Congress delegated the choice among reasonable constructions to the administering agency.⁷⁹

For many questions relating to EPA’s statutory authority to promulgate CO₂ regulations under §111(d), the standard of review is likely to be based on “*Chevron* Step Two.” As discussed in further detail below, the statutory language of §111(d) directs EPA to prescribe implementing regulations, but does not clearly dictate a particular outcome on many important issues. Accordingly, given the broad language of §111(d) and the lack of detail as to many of the specific questions that are likely to arise in a rulemaking to address CO₂ emission limits for existing power plants, if EPA’s interpretation of its authority is based on a “permissible construction of the statute,” it likely will get the benefit of a deferential standard of judicial review.

Standard of Judicial Review for Factual and Procedural Determinations. In addition to staying within the bounds of its statutory authority, EPA must also follow the notice-and-comment rulemaking procedures prescribed by §307 of the CAA,⁸⁰ and must support its regulation with appropriate factual or technical determinations. In reviewing rules issued under §111 of the CAA, the reviewing court may reverse agency factual determinations that the court finds are “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.”⁸¹ In the case of regulations under §111, courts are likely to be deferential to EPA’s expertise due to the highly technical nature of the issues involved.⁸² Nevertheless, to satisfy these procedural requirements, EPA

will, at a minimum, be expected to examine the relevant statutory factors (e.g., cost, non-air health and environmental impacts, etc.), explain the factual underpinnings that underlie its decisions, and ensure that its decisions are supported by the facts before it.

The more complex EPA’s §111(d) rule becomes, the more difficult it may be for EPA to defend each and every finding and assumption on which it bases its rule. Unlike the Title IV Acid Rain Cap-and-Trade program, for which many of the details were specified in the statute, all of the details of the forthcoming rule for EGUs will be established by EPA regulatory action. For example, EPA will face important questions relating to the assumptions it makes about the demonstrability and achievability of the proposed emission guideline, whether to allow regulated units to average or trade with each other to come into compliance, whether to allow for a phased implementation period for the numerical emission limit included in the guideline, whether to allow for subcategorization, if and how to select an emissions baseline, and what amount of flexibility to allow the states in implementing the rule.

EPA will have to support its answers to all of these design questions with reasoned decisionmaking—that is, it will need to provide a sufficient factual basis in the administrative record for its findings, and sufficient analysis and reasoned explanation to support its policy choices. Consequently, although the complex and technical nature of setting emission standards for CO₂ under §111(d) will require a reviewing court to accord substantial deference to EPA’s fact-finding, the same complexity could make it more difficult for EPA to defend the rule against challenges alleging that its approach is arbitrary or capricious.

Because EPA has yet to issue a proposed rule for existing units, it would be premature to speculate as to whether the Agency will be able to support its rule with sufficient factual findings and appropriate reasoning. Rather, the remainder of our analysis will focus principally on the likely challenges to EPA’s interpretations of its statutory authority under the CAA—challenges which, as discussed, will be reviewed under the *Chevron* standard of judicial review.

75. *Chevron, U.S.A., Inc. v. NRDC*, 467 U.S. 837, 842-43, 14 ELR 20507 (1984).

76. *Id.* at 843.

77. *Id.*

78. *Id.* at 844.

79. *Id.*

80. 42 U.S.C. §7607.

81. 42 U.S.C. §7607(d)(9). The Supreme Court has held that the scope of judicial review under the “arbitrary and capricious” standard “is narrow and a court is not to substitute its judgment for that of the agency.” *Motor Vehicles Mfrs. Ass’n*, 463 U.S. at 43. The principal test is whether “the agency . . . examine[d] the relevant data and articulate[d] a satisfactory explanation for its action including a ‘rational connection between the facts found and the choice made.’” *Id.* (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962)).

82. See, e.g., *Nat’l Asphalt Pavement Ass’n v. Train*, 539 F.2d 775, 786, 6 ELR 20688 (D.C. Cir. 1976):

The standard of review of actions of the Administrator in setting standards of performance is an appropriately deferential one. . . . Since this is one of those “highly technical areas, where our understanding of the import of the evidence is attenuated, our readiness to review evidentiary support for decisions must be correspondingly restrained.”

(quoting *Ethyl Corp. v. EPA*, 541 F.2d 1, 67, 6 ELR 20267 (D.C. Cir. 1976) (Bazelon, C.J., concurring)). This deference is not absolute, however: a court may set aside agency fact-finding if it determines that the agency relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.

Motor Vehicles Mfrs. Ass’n, 463 U.S. at 43. Also, where an agency changes course from its approach in previous rulemakings, the Court has held that it must “supply a reasoned analysis.” *Id.* at 57 (quoting *Greater Boston Television Corp. v. FCC*, 444 F.2d 841, 852 (D.C. Cir. 1970), *cert. denied*, 403 U.S. 923 (1971)).

2. Does EPA Have Authority to Regulate CO₂ Emissions From EGUs Under §111(d) of the CAA?

a. The 1990 CAA Amendments “Drafting Error” and Its Effect on EPA’s Authority to Regulate CO₂ From EGUs

A threshold question for any of the approaches discussed in this Article is whether EPA has any authority at all to regulate EGUs under §111(d). One potentially important objection to this authority results from a drafting error that occurred during the passage of the 1990 CAA Amendments. In its rush to file its conference report after an all-night conference meeting, the House-Senate Conference Committee included two separate and inconsistent changes to §111(d)(1)—one from the Senate version of the bill, and the other from the House version—in the final version of the legislation, which was subsequently passed by both chambers of Congress and signed by the president. One of the amendments (from the Senate version of the bill) would continue the CAA’s pre-1990 policy, under which EPA would have authority to regulate any *pollutant* emitted from existing sources that is neither a criteria pollutant listed under §108 of the CAA nor a HAP listed under §112.⁸³ Thus, EPA would be able to regulate sources of CO₂ and other GHGs because those pollutants are neither criteria pollutants nor HAPs. Under the other amendment (from the House version), there are readings of the amended statute that would bar regulation under §111(d) of any pollutants emitted by *source categories* that are regulated under §112 of the CAA. This interpretation of the House amendment would preclude regulation of EGUs under §111(d), because emissions of HAPs from EGUs are now subject to regulation under the MATS rule.⁸⁴

83. The “Senate Amendment” would have modified §111(d) to read:

The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 110 of this title under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 108(a) or 112(b) of this title but (ii) to which a standard of performance under this section would apply if such existing source were a new source

See 1990 CAA Amendments, §302(a), 104 Stat. 2574 (emphasis added to indicate amendment to previous language).

84. As modified with the amendment from the House bill (amendment shown in italics), the key language would read:

The Administrator shall prescribe regulations . . . under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under Section 108(a) or *emitted from a source category which is regulated under Section 112*

See 42 U.S.C. §7411(d). The *United States Code* version of §111(d) adopted the text of the “House amendment” and did not include the Senate amendment because, according to the codifier, the Senate amendment “could not be executed, because of the prior amendment by [the House amendment].” “Prior” evidently means located first in the final 1990 bill. (The House amendment, §108(g) of the 1990 bill, comes before the Sen-

The legislative history of the 1990 CAA Amendments does not provide any clear basis for resolving the conflict between the two amendments. Moreover, there is no binding judicial precedent resolving the competing amendments.⁸⁵ However, in the context of a rulemaking to accompany the CAMR rule, EPA offered an interpretation of these competing provisions that attempted to reconcile both amendments.⁸⁶ Under EPA’s CAMR interpretation, §111(d) requires only that

[w]here a source category is being regulated under section 112, a section 111(d) standard of performance cannot be established to address any HAP listed under section 112(b) that may be emitted from that particular source category. Thus, if EPA is regulating source category X under section

ate amendment, which is found in §302(a) of the bill.) However, because Title 42 of the *United States Code* has not been enacted into positive law by Congress, the Statutes at Large (which reflect both amendments)—not the *United States Code*—are the controlling text in case of any conflict. See *United States v. Welden*, 377 U.S. 95, 98 n.4 (1964) (where the relevant Title of the *United States Code* has not been enacted into positive law by Congress, the *United States Code* provides only prima facie evidence of the law; the Statutes at Large constitute the actual legal evidence of the laws).

85. Federal courts have yet to directly address whether EPA may regulate emissions of a pollutant from existing sources under §111(d), when those sources are already being regulated under §112 of the CAA. However, the Supreme Court adverted to this question in *Am. Elec. Power Co. v. Connecticut*, 131 S. Ct. 2527, 41 ELR 20210 (2011), a case that addressed whether the CAA preempted plaintiffs’ federal common-law nuisance claim against large emitters of GHGs. In a footnote, the Court noted,

[t]here is an exception [to EPA’s and the states’ obligations to regulate existing sources once a performance standard has been established for new sources under section 111(b) for that source category and pollutant]: EPA may not employ §7411(d) [section 111(d)] if existing stationary sources of the pollutant in question are regulated under the national ambient air quality standard program, §§7408-7410 [§§108-110], or the “hazardous air pollutants” program, §7412 [§112].

Am. Elec. Power Co., 131 S. Ct. at 2537 n.7. The Court did not address or purport to resolve the issues raised by the existence of two competing amendments to §111(d). More importantly, the Court’s conclusions in this footnote were not essential to the Court’s decision in the case. Therefore, this passage is arguably nonbinding *obiter dictum*.

86. See Revision of December 2000 Regulatory Finding on the Emissions of Hazardous Air Pollutants From Electric Utility Steam Generating Units and the Removal of Coal- and Oil-Fired Electric Utility Steam Generating Units From the Section 112(c) List, Final Rule, 70 Fed. Reg. 15994 (Mar. 29, 2005). EPA argued that the intent of the House amendment to §111(d) was to clarify that EPA could regulate HAPs from EGUs via §111(d) even if the Agency decided not to regulate HAPs from existing EGUs under §112 of the Act. Section 112(n)(1)(A), which was also included in the House version of the 1990 CAA Amendments, gives EPA discretion over whether to regulate EGUs under §112. See 42 U.S.C. §7412(n)(1)(A). EPA argued that the Senate amendment was intended to keep the preexisting structure of §111(d), which precluded EPA from using §111(d) to regulate pollutants that were already subject to regulation under §§110 or 112. According to EPA, its interpretation of §111(d) was

a reasonable interpretation of the amendments to section 111(d) because it gives some effect to both amendments. First, it gives effect to the Senate’s desire to focus on HAP listed under section 112(b), rather than applying the section 111(d) exclusion to non-HAP emitted from a source category regulated under section 112, which a literal reading of the House amendment would do. Second, it gives effect to the House’s desire to increase the scope of EPA’s authority under section 111(d) and to avoid duplicative regulation of HAP for a particular source category.

70 Fed. Reg. at 16032.

112, section 111(d) could not be used to regulate any HAP emissions from that particular source category.⁸⁷

Under this interpretation, the result of regulating EGUs as a source category under §112 is that EPA may no longer regulate *HAP* emissions from EGUs under §111(d). However, this interpretation does not prohibit EPA from regulating *other pollutants* from EGUs, as long as those pollutants are neither criteria pollutants nor HAPs.⁸⁸ CO₂ is neither a listed criteria pollutant nor a listed HAP. Therefore, under EPA's CAMR interpretation of §111(d), EPA would retain authority to regulate CO₂ from EGUs, notwithstanding the fact that the Agency has regulated EGUs (for HAPs) under §112. Because its CAMR interpretation would provide EPA authority to regulate CO₂ from EGUs and other major sources via §111(d), we would expect EPA to adopt this interpretation, or one that reaches a similar result in any future rulemaking to establish a CO₂ emission guideline for EGUs.

EPA's interpretation of the ambiguous 1990 CAA Amendments, assuming a court finds it a "permissible construction" of the statute, will likely be given deference by a reviewing court under *Chevron* principles. As discussed above, Step One of *Chevron* goes to whether Congress has clearly spoken to the question at issue. In this case, however, there is no clear direction from Congress as to which amendment was intended to prevail.⁸⁹ Consequently, the inclusion of both conflicting amendments has introduced substantial ambiguity over whether EPA may regulate CO₂ from EGUs under §111(d) if it has already regulated the source category under §112. Accordingly, a reviewing court, assuming it applies *Chevron*, would likely review EPA's interpretation of the statute under *Chevron* Step Two. Under *Chevron* Step Two, if EPA fashions a reasonable interpretation of §111(d) that allows EPA to regulate CO₂ from existing EGUs, a reviewing court is likely to defer to EPA's interpretation.

87. *Id.* at 16031-32.

88. *Id.* at 16032.

89. Even assuming that one could show that the House language was meant to be adopted, and that the Senate language should not be given effect, EPA could still plausibly argue that the language of the amended statute is unclear. For instance, the statute's use of the conjunction "or" and the inclusion of double negatives creates considerable ambiguity. As amended by the House amendment language, §111(d) would direct EPA to regulate, through state plans, "any air pollutant (i) for which air quality criteria have not been issued *or* which is not included on a list published under Section 7408(a) of this title or emitted from a source category which is regulated under Section 7412 of this title" The use of the conjunction "or" to join the two "which" clauses in (i) is most naturally read such that only one of the "which" conditions must be met in order for EPA to have regulatory authority under §111(d). This reading would provide EPA authority to regulate an existing source for any air pollutant that is not a criteria pollutant, regardless of the meaning of the "or emitted" clause that is the subject of the two competing 1990 CAA Amendments. In order to read the House language as barring EPA action on regulation of CO₂ emissions from EGUs, the statute as modified by the amendment must be read as follows: "any air pollutant (i) for which air quality criteria have not been issued *or* [read as "and" instead of "or"] which is not included on a list published under Section 7408(a) of this title *or* [read as "and" instead of "or"] [read as "is not"] emitted from a source category which is regulated under Section 7412 of this title. . . ." Thus, it appears very likely that a reviewing court will review the question of EPA's authority to regulate CO₂ under §111(d) under *Chevron* Step Two.

b. May EPA Regulate CO₂ From Existing EGUs Under §111(d) if CO₂ Emissions From New EGUs Are Not Regulated Under §111(b)?

Section 111(d)(1)(A) directs EPA to require states to establish standards of performance for "any existing source for any pollutant . . . to which a standard of performance would apply if such source were a new source."⁹⁰ EPA's 1975 interpretation of this provision—which appears to be the prevailing view in the legal community—is that EPA may not issue rules to regulate emissions of a pollutant from existing sources under §111(d) unless it has established NSPS for that pollutant and source category under §111(b).⁹¹ EPA has proposed NSPS for CO₂ for new EGUs under §111(b), and is expected to finalize these NSPS in 2014 or early 2015, at or before the time it issues a final rule for existing sources.⁹² EPA is also expected to issue §111(b) performance standards for *modified* EGUs in June of 2014, at the same time that it issues the existing source rule.⁹³ Once these standards are in effect, this precondition in §111(d)(1)(A) will be satisfied.

However, the new source standards will no doubt be challenged, and could be vacated or remanded. Consequently, a significant question for the existing source program is whether it can continue if its predicate, the new source program, is reversed on judicial review. A remand that leaves the new EGU rule in place until EPA revises it would appear not to affect the continuing applicability of an existing source rule (because the existing source would still be one to which a standard of performance under §111 would apply if it were a new source). If the new unit rule were vacated rather than remanded, a more serious question would be raised. EPA has never before faced a situation in which the §111(b) rule that provides the predicate for a rule under §111(d) has been vacated after issuance of the §111(d) rule. Several outcomes are possible.

First, if the new source rule were vacated, opponents of the existing source rule could argue that there would no longer be a standard of performance under §111 that "would apply if such existing source were a new source" and thus, the statutory predicate for regulations would (at least temporarily) not be satisfied. Under this interpretation of §111, EPA's ability to regulate existing EGUs would depend on its success in defending its CO₂ performance standards for new EGUs under CAA §111(b).

90. 42 U.S.C. §7411(d)(1)(A).

91. See Standards of Performance for New Stationary Sources; State Plans for the Control of Certain Pollutants From Existing Facilities, Final Rule, 40 Fed. Reg. 53340 ("Section 111(d) requires control of existing sources of such pollutants whenever standards of performance (for those pollutants) are established under section 111(b) for new sources of the same type."). See also 40 C.F.R. §60.22(a).

92. EPA proposed CO₂ standards for new EGUs on January 8, 2014. See 2014 Proposed Rule.

93. The June 25 Presidential Memorandum on GHG pollution standards for EGUs calls for EPA to propose GHG performance standards for modified, reconstructed, and existing EGUs by June 1, 2014. See June 25 Presidential Memorandum, *supra* note 2.

However, there are several theories under which EPA may be able to go forward with the existing source rule, even if its recently proposed NSPS for new sources is vacated. First, under §111, sources that commence “modification” after issuance of a proposed §111(b) rule are technically classified as “new sources.”⁹⁴ Thus, even if EPA’s rule for new sources is vacated, EPA’s modified source rule—which is expected to be proposed in tandem with the §111(d) rule—would arguably satisfy the statutory predicate that any existing source regulated under §111(d) must be subject to a standard of performance if it were a “new source.” (This argument assumes that the modified source rule itself will survive judicial review).

Second, it can be argued that §111(d)’s NSPS “trigger” requirement is met as long as EPA has previously or simultaneously *proposed* a §111(b) standard for the relevant pollutant and sources—even if the applicable §111(b) standard is later vacated. Under this view of the “trigger” requirement, the language of §111(d) requires only that the predicate NSPS rule be in place at the time that EPA issues the §111(d) guideline, but does not specifically require the §111(b) triggering regulation to *remain in effect after* the §111(d) rule has been issued. That is, the existence of an applicable §111(b) regulation is arguably a necessary trigger, but not a necessary continuing condition of the effectiveness of the §111(d) rule. Consequently, an after-occurring vacatur or withdrawal of the triggering §111(b) rule would not retroactively cancel a §111(d) rule, as long as the rule was issued when the §111(b) rule was still valid. EPA’s Implementing Regulations could be read to support such an interpretation.⁹⁵

Under these alternative views of §111(d), it is not clear that a future reversal of EPA’s CO₂ performance standards for new EGUs would necessarily preclude EPA from keeping in place or even enforcing the existing source rule. In addition, the question of which of the above interpretations is correct will only become relevant if EPA’s CO₂ rule for new EGUs is vacated by a reviewing court. Even then, EPA may still be able to avoid rescinding a §111(d) rule that was issued before the new source rule was withdrawn or struck down. For example, the Agency could stay the effectiveness of the §111(d) rule while it worked on reissuing a valid §111(b) performance standard for EGUs.

Perhaps more importantly (and regardless of which of the above interpretations is correct), EPA would be precluded from adopting existing source rules for any subcategories of EGUs that it has not yet regulated under any of the Agency’s new source rules. As currently written, EPA’s §111(b) rules for EGUs do not apply to small units, or those that are designed to be used only during periods of high demand (i.e., “peaking” units).⁹⁶ EPA’s proposed CO₂ performance standards for new EGUs would also

effectively exclude peaking units from regulation.⁹⁷ Unless EPA changes course and includes these units in the final §111(b) rule, these units could continue to be exempt from regulation under §111(d).⁹⁸

c. May EPA or the States Include New and Modified Units in a §111(d) Program?

An important coverage and accounting issue may arise from the fact that new and modified units are not considered “existing sources” under §111.⁹⁹ Thus, if EPA or a state were to decide to set unit-specific or statewide emission caps, and to allow existing EGUs to comply by averaging or trading emissions among regulated units or with beyond-the-unit credit providers, it is possible that electricity production and emissions would be shifted to newer facilities that would not be included in the existing source caps.

EPA could take one of several approaches to address this problem. First, EPA could explicitly allow or require states to include new and modified units in the emission reduction program that the Agency designs. Although EPA may not regulate new and modified sources under §111(d), it might be able to include a provision relying on EPA’s authority under §111(b) that would allow or require new and modified sources to participate in the state CO₂ emission reduction program. EPA’s CAMR rule took this approach.¹⁰⁰ Alternatively, EPA could choose not to take new units into account when establishing the §111(d) rules. In this case, these new units would only become subject to the requirements of the §111(d) program if and when EPA issues a revised §111(b) rule for EGUs in the future (at which point these units would presumably become “existing sources”). Finally, EPA could allow or require states to employ other types of accounting methods to reduce the potential for emission “leakage” from existing sources to new, modified, or exempted sources that would not be subject to the §111(d) rule. Such methods could include, for example, excluding emission reductions occurring at EGUs that fall outside the

97. See 2014 Proposed Rule, 79 Fed. Reg. at 1502.

98. One important issue related to the peaking unit exclusion is that the exclusion of these units could lead to a significant accounting issue if EPA or states choose to allow regulated sources to comply by surrendering credits from beyond-the-unit activities such as end-use energy efficiency or new renewable and nuclear generation. Specifically, if these beyond-the-unit measures reduce emissions from excluded peaking units as well as regulated baseload fossil-fueled units, overall state emission rates may not be reduced to the same extent that emission credits issued for eligible beyond-the-unit measures would indicate. (This accounting problem is not unique to fossil-fueled peaking generators. End-use efficiency and increased use of renewables could also displace *other* renewables or zero-emitting sources that serve the same load. In these situations, the actual amount of emission reduction could be a much lower than would otherwise be expected if these measures replaced a fossil-fuel generator’s output on a one-to-one basis.) Therefore, EPA and the states will need to carefully consider if and how to align any emission credits they authorize for beyond-the-unit activities with the impacts of those activities on state- or systemwide emissions.

99. See 42 U.S.C. §7411(a)(6).

100. See CAMR, 70 Fed. Reg. at 28610 (“In addition [] to complying with these standards, new units, along with existing coal-fired Utility Units will be subject to the cap-and-trade provisions being finalized in the final rule.”).

94. 42 U.S.C. §7411(a)(2).

95. See 40 C.F.R. §60.22(a) (“Concurrently upon or after *proposal* of standards of performance for the control of a designated pollutant from affected facilities, the Administrator will publish a draft guideline document . . .”) (emphasis added).

96. See 40 C.F.R. §60.2.

§111(d) program from any crediting or trading system established under the rule, or applying some form of discounting methodology to account for leakage to units that are not subject to the rule.

3. Who Sets the Applicable Emission Limit: EPA or the States?

Another key threshold legal issue is whether it is permissible for EPA to set emission guidelines as a numerical benchmark for state plans and to require those plans to be no less stringent than the benchmark. EPA can point to two provisions in §111 that provide a basis for an EPA role in shaping the stringency of the state-established standards of performance for existing sources. First, under §111(a)(1), a “standard of performance” is defined as an emission limitation that reflects the best system of emission reduction that EPA determines is adequately demonstrated.¹⁰¹ Second, §111(d) directs EPA to prescribe a plan for implementing its §111(d) rules “in cases where the State fails to submit a satisfactory plan.”¹⁰² EPA’s current interpretation of its role under §111(d) is reflected in the Implementing Regulations, which provide that EPA will first establish a benchmark for state plans in the form of the “emission guideline,” which must include “the time within which compliance with emission standards of equivalent stringency can be achieved.”¹⁰³

Were EPA to follow its Implementing Regulations in promulgating an emission guideline under §111(d), it is possible that states and EGU owners would challenge the emission guideline, arguing that EPA has overstepped its statutory role under §111(d) by overly constraining the discretion of states to establish standards of performance and develop their plans. Such a legal dispute would first involve a determination of whether the Implementing Regulations are insulated from a petition for review, and if not, whether the regulations’ approach is consistent with the statute.

a. Are the Implementing Regulations Subject to Legal Challenge?

As a threshold matter, states or EGU owners challenging EPA’s establishment of an emission guideline would have to overcome a potential objection that such a challenge represents a collateral attack on the Implementing Regulations, and that such an attack is barred by CAA §307(b).¹⁰⁴ Section 307(b) prohibits petitions for review of an EPA CAA regulation filed more than 60 days after publication of the regulation in the *Federal Register*—except for challenges based “solely on grounds arising” after the 60th day.

A recent D.C. Circuit decision addresses the scope of this exception. In *Coalition for Responsible Regulation v. EPA*,¹⁰⁵ the court evaluated whether §307(b) barred petitions for review of a series of EPA GHG regulations based on long-standing determinations under the CAA.¹⁰⁶ The petitioners challenged a long-standing interpretation of the CAA’s prevention of significant deterioration (PSD) permitting provisions, which apply those permitting obligations to major sources of “any pollutant” subject to regulation. In a 1978 rule, and in subsequent rules, EPA had interpreted the scope of “any pollutant” to include not just *criteria* pollutants under §108 of the CAA, but also non-criteria pollutants. Under this interpretation, EPA determined that its 2010 promulgation of GHG emission standards for new light-duty motor vehicles also triggered PSD permitting obligations for stationary sources of GHG emissions, because the vehicle standards made GHGs pollutants subject to regulation. It was this interpretation that petitioners in *Coalition for Responsible Regulation* challenged.¹⁰⁷

EPA argued that the court lacked jurisdiction under CAA §307(b) to consider this challenge to the Agency’s broader interpretation because the 60-day period for challenging the 1978 rule and subsequent amendments had expired. The D.C. Circuit disagreed, reasoning that two of the petitioners only became subject to PSD permitting after EPA promulgated the emission standards for vehicles, which brought GHGs within the scope of such permitting. The court pointed out that these petitioners would not have had standing to challenge the 1978 rule (or subsequent amendments) because they did not emit non-criteria pollutants and therefore their “injury”—i.e., potentially becoming subject to the permitting requirements if a non-criteria pollutant became subject to regulation—would have been too speculative. Only with the promulgation of the Tailoring Rule had their claim become “ripe” and their standing established. Accordingly, their challenges were based solely on grounds arising after the 60-day deadline otherwise imposed under CAA §307(b).¹⁰⁸

A similar argument could be made with respect to the §111(d) Implementing Regulations. Challengers might argue that they would have lacked standing to petition for review of the Implementing Regulations when they were finalized in 1975 because CO₂ was not a “pollutant” under

101. 42 U.S.C. §7411(a)(1).

102. 42 U.S.C. §7411(d)(2)(A).

103. 40 C.F.R. §60.22(b)(5).

104. 42 U.S.C. §7607(b).

105. 684 F.3d 102, 42 ELR 20141 (D.C. Cir. 2012), *cert. granted in part*, Chamber of Commerce of U.S. v. EPA, 134 S. Ct. 468 (2013).

106. The Tailoring Rule provided that facilities with GHG emissions above specified thresholds would be required to obtain prevention of significant deterioration (PSD) and Title V permits for their GHG emissions under the New Source Review program. See U.S. EPA, *Clean Air Act Permitting for Greenhouse Gases*, <http://www.epa.gov/nsr/actions.html#may10> (last visited Mar. 27, 2014). See also Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, Final Rule, 75 Fed. Reg. 31514 (June 3, 2010) [hereinafter Tailoring Rule].

107. See *Coal. for Responsible Regulation*, 684 F.3d at 129.

108. *Coal. for Responsible Regulation*, 684 F.3d at 129-32. Though the court found that the petitioner could file the petition for review of EPA’s interpretation, the court ultimately denied the petition because it upheld EPA’s interpretation on the merits. *Id.* at 132-44. Although the Supreme Court recently agreed to review this aspect of the D.C. Circuit’s decision, it is unlikely that the Supreme Court’s ultimate decision on the issue will affect EPA’s ability to regulate CO₂ under §111(d).

CAA §111 and therefore its likelihood of becoming subject to future regulation under §111(d) was purely speculative at that time. According to this argument, EPA's reliance on the Implementing Regulations in establishing an emission guideline for CO₂ emissions from EGUs under §111(d) and requiring that state plans provide for standards of performance that are no less stringent would establish valid, subsequently arising grounds for a petition for review.

However, although the Implementing Regulations were promulgated in 1975, they have been subsequently amended. For example, EPA amended the Implementing Regulations in 2005 for the CAIR, and again in 2012 during the MATS rule (long after EPA had determined to regulate CO₂ as an air pollutant under other provisions of the CAA.) This fact pattern complicates the analysis of whether CAA §307(b) precludes any challenge to the amended Implementing Regulations as untimely. It could be argued that new 60-day periods started running either in 2005 or in 2012, and that states and EGUs could have, but failed to, challenge the Implementing Regulations during those periods.

b. May EPA Require State Plan Equivalence With Its Emission Guideline?

Assuming that challenges to the Implementing Regulations are not barred as untimely, the question on review would be whether the establishment of an emission guideline coupled with the strict equivalency requirement, as provided for in the Implementing Regulations, represents a permissible interpretation of EPA's authority under §111(d). The mandate in §111(d) relies on a §110-like procedure for review and approval of state plans. The statute directs EPA to "prescribe regulations which shall establish a procedure similar to that provided by section 110" and provides that

[t]he Administrator shall have the same authority . . . to prescribe a plan for a State in cases where the State fails to submit a satisfactory plan as he would have under section [110(c)] in the case of failure to submit an implementation plan, and . . . to enforce the provisions of such plan in cases where the State fails to enforce them as he would have under sections [113] and [114] with respect to an implementation plan.¹⁰⁹

There is a line of cases interpreting the different roles of EPA and the states under §110. These cases emphasize that §110 establishes a "federalism bar," which "prohibits EPA from using the SIP process to force States to adopt specific control measures."¹¹⁰ Under §110, states must have "real choice with regard to the control measure options available to them" to meet their SIP require-

ments.¹¹¹ These cases generally underscore the primacy of state discretion under the CAA to tailor an SIP to the state's particular circumstances.

Indeed, one could argue that the role of EPA in the context of §111 is even *more* circumscribed than under §110, because §111(d) delegates to the *state* the authority to "establish" the standard of performance in the first instance, and only allows EPA to determine whether the state plan, including the standard of performance, is "satisfactory."

On the other hand, EPA could argue that Congress, by directing the Agency to evaluate whether state plans are "satisfactory," implicitly authorized EPA to set some reasonably uniform a priori criteria for that evaluation. The Agency could make the point that the establishment of a uniform and transparent numerical benchmark for what is a "satisfactory" state plan is a reasonable approach to implementing §111(d)(2)(A). Indeed, EPA relied on this rationale, as well as the legislative history of §111(d), in rejecting industry contentions that the Agency should be limited to reviewing state plans solely for *procedural* consistency with the EPA guideline.¹¹² An additional argument in favor of EPA's authority to disapprove emission limits in state plans that are less stringent than the EPA guideline is that even though §111(d) grants the states the authority to "establish" standards of performance, the statute also literally puts EPA in the middle of the definition of "standard of performance"—defining it as an emission limitation that reflects the "best system of emission reduction . . . the Administrator determines has been adequately demonstrated."¹¹³ If a state plan were to fail to establish an emission limitation that reflected the BSER that EPA determined was adequately demonstrated, then the state emission limitation would arguably fall outside the ambit of the defined term "standard of performance" under §111(a)(1), and the state's plan would therefore not meet the requirement that it be a plan that "establishes standards of performance for any existing source."¹¹⁴

Furthermore, in its recent *EME Homer City* decision vacating EPA's Cross-State Air Pollution Rule (CSAPR), the D.C. Circuit held that EPA could not disapprove SIPs for failing to meet the §110(a)(2) "good neighbor" obligation to prevent "significant contribution" to nonattainment of the NAAQS in downwind states *until EPA had first quantified the extent of that obligation*.¹¹⁵ If this logic

111. *Michigan*, 213 F.3d at 687.

112. See, e.g., Standards of Performance for New Stationary Sources; State Plans for the Control of Certain Pollutants From Existing Facilities, Final Rule, 40 Fed. Reg. at 53343:

it would make no sense to interpret section 111(d) as requiring the Administrator to base approval or disapproval of State plans solely on procedural criteria. Under that interpretation, States could set extremely lenient standards—even standards permitting greatly increased emissions—so long as EPA's procedural requirements were met. Given that the pollutants in question are (or may be) harmful to public health and welfare, and that section 111(d) is the only provision of the Act requiring their control, it is difficult to believe that Congress meant to leave such a gaping loophole in a statutory scheme otherwise designed to force meaningful action.

113. 42 U.S.C. §7411(a)(1) (emphasis added).

114. 42 U.S.C. §7411(d)(1).

115. *EME Homer City*, 696 F.3d at 30-37.

109. 42 U.S.C. §7411(d).

110. *EME Homer City Generation, L.P. v. EPA*, 696 F.3d 7, 29, 42 ELR 20177 (D.C. Cir. 2012), *petition for cert. granted in part sub nom. EPA v. EME Homer City Generation, L.P.*, 133 S. Ct. 2857 (2013) (citing *Michigan*, 213 F.3d at 687 and *Virginia v. EPA*, 108 F.3d 1397, 1410, 27 ELR 20718 (D.C. Cir. 1997)).

were applied in the §111(d) context, EPA would arguably be *required* to set some form of numerical benchmark for state plans before it can approve or disapprove them.¹¹⁶

In sum, EPA could reasonably construe §111(d) as authorizing it to find a state plan unsatisfactory if it fails to meet a quantitative benchmark for stringency that is established by EPA in a guideline document, provided that EPA: (1) does not seek to overly prescribe the particular measures adopted by states; and (2) allows states to consider such factors as the “remaining useful life” of regulated sources in setting standards of performance. The procedures in the Implementing Regulations are consistent with this construction.

Accordingly, if EPA were to follow its Implementing Regulations in establishing an emission guideline and evaluating whether state plans are as stringent as the guideline, EGU owners would have arguments that a challenge to the Implementing Regulations and the guideline should not be time-barred under CAA §307(b). If such a challenge could go forward, however, EPA would have strong arguments that the Implementing Regulations—including the emission guideline mechanism—are consistent with the federal-state division of authorities contemplated by §§111(a)(1) and 111(d).

B. Setting the Emission Guideline: Key Legal and Design Issues

I. Background: Key Steps in Determining the Emission Guideline

Under §111(a)(1), a standard of performance must reflect “the degree of emission limitation achievable through the application of the best system of emission reduction” that EPA determines has been “adequately demonstrated,” taking into account cost and other factors.¹¹⁷ Thus, the key task for EPA in setting an emission guideline is to determine what constitutes the “best system of emission reduction” that EPA determines has been “adequately demonstrated,” after “taking into account the cost of achieving such reduction and any nonair quality health and environmental impact[s] and energy requirements.”¹¹⁸

BSER is not defined in the statute, and EPA has not defined the term in regulation. However, in the context of a §111(b) rulemaking (which is governed by the same definition of “standard of performance”), the D.C. Circuit has interpreted the term to mean a system “which has been shown to be reasonably reliable, reasonably efficient, and

which can reasonably be expected to serve the interests of pollution control without becoming exorbitantly costly in an economic or environmental way.”¹¹⁹ Even under the D.C. Circuit’s definition, the concept of BSER appears to offer EPA a wide degree of latitude for determining the best method of reducing emissions from regulated stationary sources, provided it can reasonably make the requisite factual findings about the system’s impact on health, the environment, energy, reliability, efficiency, and costs.

Once EPA has identified a system as BSER, it is required to set an emission guideline that “reflects the degree of emission limitation achievable through the application of” the BSER.¹²⁰ The next sections address the most important program design and legal questions that are likely to arise as EPA determines what system or systems to designate as BSER, how to set the emission limitation in the guideline, and what compliance measures EGUs may use.

2. Key Program Design Options

For the power sector, reductions in CO₂ emissions at a fossil EGU can be obtained by reducing the EGU’s emission rate per MWh, by reducing its electric output (capacity factor), or by a combination of the two. Measures that reduce per-MWh emissions rates at an EGU primarily include (1) increasing the EGU’s thermal efficiency (lowering its heat rate) through modifications of its equipment or by changing its method of operations; (2) switching in whole or part to a lower carbon fuel, including co-firing or converting units from coal to biomass or natural gas; and (3) using CCS or similar processes that prevent CO₂ emissions from reaching the atmosphere. Any of these measures, if successful, will reduce the EGU’s per-MWh emission rate (in lbs/MWh). In addition, as long as the EGU does not increase its output significantly, these measures will also lead to a reduction in the quantity of the EGU’s mass emissions of CO₂ on an annual basis (in tons/yr).

An EGU can also reduce its mass emissions of CO₂ (tons/yr) by reducing its output (and its fossil fuel consumption), even if it does not reduce its emission rate (lbs/MWh). However, an emission limitation that attempts to limit mass emissions by limiting an EGU’s output can be in tension with reliability requirements and other practical needs of the electric power system. Reliability protocols require that a utility system’s generation equal its load,¹²¹ so that a reduction in MWhs generated at any particular unit must be matched either by a reduction in load¹²² or by an increase in generation (and, possibly,

116. Section 111(d) provides that EPA may prescribe a plan for a state if the state plan is not satisfactory. The Implementing Regulations have specific provisions for approval and disapproval. 40 C.F.R. §§60.23, 60.27.

117. CAA §111(a)(1); see also 40 C.F.R. §60.22(b)(5).

118. See 42 U.S.C. §7411(a)(1) (defining “standard of performance”). As we note below, these statutory factors may also be taken into account when the Agency determines the level of emission reduction that is “achievable.” See U.S. EPA, *Background on Establishing New Source Performance Standards (NSPS) Under the Clean Air Act 2*, available at <http://www2.epa.gov/sites/production/files/2013-09/documents/111background.pdf>.

119. *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427, 433, 3 ELR 20732 (D.C. Cir. 1973), cert. denied, *Appalachian Power Co. v. EPA*, 416 U.S. 969 (1974).

120. 40 C.F.R. §60.21(e).

121. Technically, for each “balancing area” (usually a large utility or a Regional Transmission Organization) generation plus net imports of energy (via transmission) must equal load.

122. Load, of course, is not necessarily fixed—demand response and energy efficiency programs can adjust load patterns to accommodate changes in generation patterns and reduce overall load. A lbs/MWh standard may more easily accommodate system operational needs because it is neutral to the

CO₂ emissions) elsewhere. For this reason, reducing CO₂ emissions at fossil-fueled EGUs by reducing their output while at the same time meeting reliability criteria is likely to require *compensating* beyond-the-unit measures that either (1) reduce load (through end-use energy efficiency or other demand reductions), or (2) offset the EGU's reduced output with increased generation from units that have a lower per-MWh emission rate (e.g., renewable, nuclear, or natural gas generation). Reducing EGU emissions through such beyond-the-unit measures—even if it does not threaten reliability—could also increase the cost of electricity by requiring reliance on higher cost-generation resources.

Accordingly, any system of emission reduction in the power sector that relies on lowering mass emissions by lowering output of high-emission-rate sources must necessarily entail consideration of complementary measures to increase the output of lower carbon generation elsewhere and/or to reduce electric demand. However, measures such as end-use energy-efficiency programs, deployment of additional zero-emitting generation, or simply changing the order in which units are dispatched, can change units' emissions in terms of tons/yr, but are unlikely to change significantly their lbs/MWh emissions rate.¹²³ As a result, if EPA (or a state) sets a standard expressed in terms of lbs/MWh, and it wishes the program to reflect the actual emissions reductions that occur by reason of beyond-the-unit measures, it must provide some form of crediting mechanism that adjusts the unit's measured emission rate to reflect the fact that mass emissions (tons/yr) have decreased but the actual emission rate (lbs/MWh) has not.

A tons/yr standard, on the other hand, can more straightforwardly capture the effects of measures that reduce mass emissions, but not emission rates. However, some form of trading mechanism would likely be needed because emissions will not necessarily go down at a plant owned by the person who paid for the beyond-the-unit measures. Because of differences between the two metrics, design options for standards based on a lbs/MWh metric will differ substantially from those for a tons/yr metric.

3. What Form May the Emission Limitation Take?

Under the Implementing Regulations, the guideline document the Agency issues must include an "emission guideline" and "the time within which compliance with [state] emission standards of equivalent stringency can

level of output of units in the system and the system as a whole. (Units can increase or decrease output without significantly affecting the lbs/MWh emission rate.) It would not provide credit for reductions in mass emissions (tons/yr) that arise solely from reduction in MWhs (and CO₂ emissions) generated by fossil generators—at least without further policy adjustments to allow for such credit.

123. For example, if an aggressive end-use energy-efficiency program reduces a coal-fired power plant's capacity utilization, its aggregate yearly CO₂ emissions (tons/yr) will decrease, but its emission rate during the hours it operates (lbs/MWh) is not likely to change significantly.

be achieved."¹²⁴ Because the regulations define "emission standard" as "an allowable rate of emissions into the atmosphere, establishing an allowance system, or prescribing equipment specifications for control of air pollution emissions,"¹²⁵ the implication is that EPA will formulate the emission guideline as either a numerical emission rate, a time- or unit-based emission-allowance limit, or an equipment specification, so that the Agency can judge whether state emission standards are equivalently stringent.

An important question for the design of a CO₂ performance standard for existing EGUs concerns the performance metric: will the standard be expressed in terms of an emission per-unit output rate, such as pounds of CO₂ per MWh, as in the proposed NSPS for new EGUs,¹²⁶ or in terms of mass emissions for a period of time, such as tons of CO₂ emitted per year? In most cases, §111(d) performance standards have been expressed in terms of emissions per unit of input or output,¹²⁷ although the vacated CAMR cap-and-trade program was formulated as a mass (pounds or ounces) per-year metric.¹²⁸

As we discuss in the previous section, the choice of a lbs/MWh versus tons/yr metric can have important policy-design implications for other design elements of the program. An increase in an EGU's thermal efficiency, or a switch to low-carbon fuels, for example, will decrease the EGU's emissions in terms of both lbs/MWh and tons/yr. Decreasing the unit's output through beyond-the-unit actions such as end-use energy-efficiency programs, displacement with new lower carbon generation, or shifts in the dispatch order of existing EGUs¹²⁹ can reduce a unit's emissions in terms of tons/yr, but is unlikely to significantly change its lbs/MWh emissions.

EPA, we believe, has authority to use either type of requirement. Although in most cases, §111(d) performance standards have been expressed in terms of emissions per unit of input or output, the CAMR is an example of a guideline that allowed a mass per-year metric. Section 111 and EPA's Implementing Regulations appear to be broad enough to accommodate either approach. For example, both the statutory definition of "standard of performance" and the regulatory definition of "emission guideline" direct EPA to develop a "standard for emissions" of air pollutants "which reflects the *degree*

124. 40 C.F.R. §60.22(b)(5).

125. *Id.* §60.21(f).

126. See generally 2014 Proposed Rule.

127. See, e.g., 40 C.F.R. part 60, subpart Cb, Tables 1-3; 40 C.F.R. part 60, subpart DDDD, Table 2 (setting maximum emission rates for covered pollutants based on volume of inputs); 40 C.F.R. §60.31d (setting an emission guideline rate based on quantity of sulfuric acid produced).

128. See CAMR, 70 Fed. Reg. at 28632.

129. For example, changing the order in which different EGUs in the power system are dispatched from an "economic dispatch" basis (in which the least expensive source is generally dispatched first) to an "environmental dispatch" basis (in which the lowest emitting sources are dispatched first) could lead to a situation in which the lowest-emitting sources would run a larger percentage of the time than the higher emitting sources. This shift in dispatch order would thereby reduce the overall amount of GHGs that are emitted by the system on an annual basis, although individual EGU emission rates (lbs/MWh) would remain unchanged.

of *emission limitation*” achievable through the application of the “best system of emission reduction.”¹³⁰ Although “emission limitation” is not defined in §111, §302(k) of the CAA defines “emission limitation” as a requirement that “limits the quantity, rate, or concentration of emissions.”¹³¹ Therefore, given the potentially broad scope of the term “emission limitation” and the indication in §302(k) that the term could, at a minimum, include a limit on either the “quantity” or the “rate” of emissions, it appears that EPA could reasonably interpret §111 as allowing the Agency or a state to set a standard of performance that limits only the annual *quantity* of CO₂ emitted, but does not limit the emission rate (on a per-MWh basis). Conversely, EPA could also reasonably interpret §111 to allow it to formulate its emission guideline on a per-MWh rate basis (as it has in past rulemakings under §111).

4. May Beyond-the-Unit Measures Be Used for Compliance Purposes and in Setting an Emission Guideline?

EPA, in setting the emission guideline and approving state plans, may only require emission reductions that can be achieved by the use of BSER. Therefore, in setting the emission guideline and determining the permissible means of compliance with it, EPA and the states will need to determine the range of control measures that can or should be considered to be BSER.

Perhaps the key legal issue for EPA in determining the stringency of the emission guideline is whether the term “best system of emission reduction” refers exclusively to emission reduction measures implemented solely at regulated sources and does not allow for consideration of systems that involve actions that occur beyond the regulated source.¹³² Much of the current discussion in the legal community centers on the distinction between systems of emission reduction that can be implemented and demonstrated “at-the-unit,” as opposed to systems that are implemented “beyond-the-unit.” Among the at-the-unit measures usually cited are heat-rate improvements or other equipment and efficiency upgrades; fuel-switching from coal to lower carbon fuels such as natural gas or biomass; co-firing of low-carbon fuels; or CCS. Beyond-the-unit measures are usually thought to include the addition of new zero-carbon generating capacity (which could allow existing units to reduce output and thereby reduce CO₂ emissions) and increases in end-user energy efficiency (which could reduce overall demand for electricity and thereby reduce the necessity of releasing CO₂ through the production of elec-

tricity at fossil-fueled units). Redispatch—the shifting of generation from a high-emitting generator to a lower emitting generator through changes in the dispatch order—is another kind of beyond-the-unit measure.

To date, the majority of legal analysis of EPA’s BSER authority has accepted the at-the unit/beyond-the-unit distinction, and focused on whether beyond-the-unit measures can be the basis for emission guidelines and state programs.¹³³ In analyzing whether or not the term “best system of emission reduction” refers exclusively to emission reduction measures implemented at regulated sources, we start with the statutory language. Section 111(a)(1) defines “standard of performance” as

a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.¹³⁴

Neither the statute nor EPA’s Implementing Regulations defines “best system of emission reduction.” Furthermore, nothing in §111 either expressly authorizes—or expressly precludes—basing the stringency of the emission guideline on the availability of beyond-the-unit measures. Given this ambiguity, the question is whether EPA’s adoption of such a beyond-the-unit approach would be a permissible construction of the statute.

The reference to “system of emission reduction” in the definition of “standard of performance” clearly includes an emission control system applied at a regulated EGU. Arguably, this is the type of system contemplated when the Implementing Regulations were first promulgated in 1975. EPA’s Implementing Regulations seem to suggest this interpretation, insofar as they provide that a guideline document must include information on the costs of “applying each system to designated facilities” and the time

130. 42 U.S.C. §7411(a)(2) (emphasis added).

131. 42 U.S.C. §7602(k).

132. The legal analysis underlying EPA’s selection of BSER does not depend on whether the Agency requires EGUs to meet a per-MWh rate-based standard (e.g., lbs/MWh) or, in contrast, allows or requires EGUs to meet a cumulative annual quantity-based standard (e.g., tons/yr). Both at-the-unit and beyond-the-unit measures can, in theory, be credited for compliance under either type of standard.

133. There is an argument that the at-the-unit/beyond-the-unit distinction is not a meaningful one. Specifically, it could be argued that the distinction between at-the-unit and beyond-the-unit measures is largely artificial, because all of the emission reductions under consideration—whether from at-the-unit measures (e.g., fuel-switching or efficiency upgrades) or from beyond-the-unit measures—are, in fact, emission reductions at or from electric generating units on the interconnected electric grid. For example, neither the addition of renewable generation nor the reduction of end-user demand directly reduces atmospheric emission of CO₂; rather these measures permit fossil EGUs to reduce their own output and emissions. It can be argued that all of the systems of emission reduction here contemplated—whether they involve end-use energy efficiency, displacing high-emission generation with lower emission generation, fuel-switching, heat-rate improvements, etc.—are effectively at-the-unit measures that ultimately reduce emissions solely from regulated EGUs. If energy-efficiency programs, added renewable energy, and redispatch from higher emitting facilities to lower emitting facilities are viewed as at-the-unit systems of emission reduction, the at-the-unit/beyond-the-unit distinction arguably becomes irrelevant—at least from a legal perspective. Rather, the real issue may come down to whether §111(d) authorizes EPA to require EGUs to curtail their output of electricity as a means of complying with the rule. This alternative analytical approach to the at-the-unit/beyond-the-unit debate is intriguing, but in order not to try the reader’s patience, we do not address it further in this Article.

134. 42 U.S.C. §7411(a)(1).

expected for “design, installation, and startup of identified control systems.”¹³⁵ These phrases suggest a technological system applied at the facility level.¹³⁶

Nevertheless, there are strong arguments for a broader view. These arguments can be subdivided into several discrete questions. First, are beyond-the-unit measures a permissible means of compliance with §111(d) performance standards? Second, may states allow EGUs to comply via a trading or averaging regime that relies on measures that could reduce emissions at some EGUs while allowing other EGUs to exceed the numerical emission guideline (so long as a unit whose emissions exceed the guideline level obtains offsetting reductions from other units)? Third, may (or must) the stringency of the guideline be based on the availability of beyond-the-unit measures or crediting programs that can allow regulated units to reduce emissions without necessarily installing new equipment or employing other at-the-unit emission reduction measures?

a. Are Beyond-the-Unit Measures an Allowable Means of Compliance?

Because EPA cannot logically base the stringency of its emission guideline on the availability of beyond-the-unit measures unless it allows states and EGUs to *comply* by using such measures, the first question in our analysis is whether or not beyond-the-unit measures have any place at all in the §111(d) program. Whether or not EPA considers beyond-the-unit measures to be BSER, states can be expected to want the flexibility to include such measures in their state plans, and EGUs can be expected to seek to use cost-effective beyond-the-unit measures as a means of compliance with a state standard of performance. It appears to us that states and EGUs have strong arguments that §111(d) authorizes states to include such measures as compliance options.

First, states and EGUs could argue that neither §111(d) nor EPA’s Implementing Regulations impose any explicit limits on the measures they include in their plans, other than that those measures must be enforceable against the

regulated sources and must be of equivalent stringency to the EPA emission guideline. Under CAA §§111(a)(1) and (d), EPA determines BSER, but states establish performance standards for existing sources. A state-established performance standard is not required to force sources to implement BSER; rather, it must only “reflect[] the degree of emission limitation achievable through the application of [BSER].”¹³⁷ Similarly, under the Implementing Regulations, an EPA emission guideline must “reflect” emission reductions achievable through the application of BSER. However, there is no requirement that the states must require use of that system of reduction in their state plans, so long as they attain equivalent emission reductions from state sources. In other words, the Implementing Regulations provide that state emission standards must be equivalent in stringency to the emission guideline; however, at least as currently written, they are not otherwise prescriptive of the measures utilized to meet those standards.

In this way, the Implementing Regulations are responsive to the statutory mandate to EPA to develop a “procedure similar to that provided by [CAA §110]” for development and approval of state plans. As discussed above, a line of cases on §110 establishes that states have broad discretion to tailor their SIPs to local circumstances, and therefore to determine the emission-control measures that they will include in their SIPs. This case law further provides that EPA may not question the state’s plan if the measures are sufficient to attain the relevant NAAQS.¹³⁸ Thus, even if EPA may not or does not consider certain beyond-the-unit measures as BSER for purposes of establishing the benchmark in the emission guideline, it could be argued by analogy that the states are not subject to the same constraints in developing plans that specify how EGUs may comply with a standard of performance.¹³⁹ In other words, state plans do not need to implement the BSER, they must only have a level of stringency that reflects reductions achievable through the application of the best system. Therefore, whether or not EPA considers beyond-the-unit measures in setting the emission guideline, states and EGUs appear to have sound arguments that they may include such measures as compliance options in their plans.¹⁴⁰

135. 40 C.F.R. §§60.22(b)(3)-(4).

136. Past EPA guidance on the NSPS has described a standard of performance as a standard reflecting a “level of control . . . commonly referred to as best demonstrated technology (BDT)” because it is “based on the effectiveness of one or more specific technological systems of emissions control.” U.S. EPA, *Background on Establishing New Source Performance Standards (NSPS) Under the Clean Air Act 1-2* (Sept. 2013), available at <http://www2.epa.gov/sites/production/files/2013-09/documents/111background.pdf>. EPA has now reverted to using the term “best system of emission reduction” in lieu of “best demonstrated technology”—a shift that appears to indicate a move away from the more restrictive “technological” interpretation of the term. See Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces, and New Residential Masonry Heaters, Proposed Rule, 79 Fed. Reg. 6330, 6352-53 (Feb. 3, 2014):

As discussed earlier, the level of control prescribed by section 111 historically has been commonly referred to as “Best Demonstrated Technology” or BDT. To better reflect that section 111 was amended in 1990 to clarify that “best systems” may or may not be “technology,” the EPA is now using the term “best systems of emission reduction” or BSER.

See also 2014 Proposed Rule, 79 Fed. Reg. at 1434, 1443 n.62.

137. 42 U.S.C. §7411(a)(1).

138. See, e.g., *EME Homer City*, 696 F.3d at 29 (citing *Train v. Natural Res. Def. Council, Inc.*, 421 U.S. 60, 79, 5 ELR 20264 (1975)).

139. Section 110(a)(2)(A) explicitly allows SIPs to include “economic incentives such as fees, marketable permits, and auctions of emission rights.” 42 U.S.C. §7410(a)(2)(A). However, opponents of state discretion could assert that invoking the market-based authorities of states under §110(a)(2)(A) reads the cross-reference to the “procedure” of §110 too broadly, and that states may not selectively import particular substantive authorities from §110 as a basis for measures in a §111(d) plan. After all, §110 also mandates that SIPs include a host of measures that clearly would be out of place in a §111(d) plan for existing sources, and which EPA did not require in the Implementing Regulations (e.g., PSD permitting requirements and the requirement that the plan prohibit emissions that contribute significantly to nonattainment of NAAQS in other states).

140. There are, however, arguments to the contrary. We address these arguments in Part II.B.6., below.

b. May State Plans Allow EGUs to Use Trading and Averaging for Compliance?

The second, related question regarding incorporation of beyond-the-unit measures into a §111(d) rule is whether state plans may authorize the use of emission averaging or allowance or credit trading for compliance in cases where meeting the applicable standard would be technically or economically infeasible if the EGU were to rely exclusively on at-the-unit measures.

CAA §§111(a)(1) and 111(d) are silent on the use of averaging and trading. However, EPA—both in the CAMR and in its rulemaking under §111(d) for Large Municipal Waste Combustors—has allowed trading or averaging regimes to facilitate compliance with the emission guideline.¹⁴¹ EPA could advance several arguments to support a determination that state-level market-based crediting regimes are available as a compliance option under §111(d). Specifically, EPA could argue that support for the use of such mechanisms in SIPs is found in the §111(d) cross-reference to §110. As discussed above, §111(d) provides that the procedure for submission and approval of state plans should be similar to that under §110 for SIPs. Section 110(a)(2)(A), in turn, *explicitly* allows states to include measures utilizing “marketable permits” in their plans.¹⁴² EPA could argue that this cross-reference to §110 means that Congress intended EPA, in setting its emission guideline, to consider the types of measures states could adopt in a §110 SIP, including, among others, marketable permits.

According to this argument, the availability of such measures is incorporated by reference into §111(d). If Congress permitted state §110 plans to include policies allowing regulated facilities to purchase marketable permits for compliance, then (the argument goes) Congress also intended to permit EPA to set a §111(d) emission guideline that assumes the availability of such measures in state plans.

This point is buttressed, EPA could argue, by the provision in EPA’s currently effective Implementation Regulations for use of an “allowance system” as a permissible form of state performance standard.¹⁴³ Moreover, as we discuss in the next section, Congress, in 1990, moved from a technology-based definition of performance standard to a more general formulation. Given the statutory text, legislative history, and regulatory practice, EPA could argue that §111(d) could be reasonably construed to allow for market-based allowance or credit systems. (EPA would, of course, have to support this position with a finding that such a system is available, demonstrated, and cost-effective.)

c. May EPA Base the Stringency of the Emission Guideline on Beyond-the-Unit Measures?

Assuming that beyond-the-unit measures are permissible means of complying with performance standards issued under §111(d), and that allowance trading or averaging mechanisms are available for compliance with §111(d), the third—and perhaps most important—question is whether EPA can (or must) consider beyond-the-unit measures in setting an emission guideline.

Under current law, Congress has not defined or constrained “best system of emission reduction,” and has effectively left it to EPA to construe. However, the history of changes in the definition of “standard of performance” is instructive. Over time, Congress amended §111 to move away from a focus on a technology-specific standard, and to emphasize flexibility in compliance. Prior to the 1990 CAA Amendments, §111(a)(1) contained “percentage reduction” (i.e., scrubber) and “best technological system of continuous emission reduction” requirements for *new* units.¹⁴⁴ Standards of performance for *existing* sources, however, were not constrained by the reference to “technological systems of emission reductions,” although they were required to be based on the “best system of *continuous* emissions reduction.”¹⁴⁵ In 1990, Congress repealed all of these requirements and replaced them with the more general “best system of emission reduction” standard that now applies to both new and existing sources.¹⁴⁶ This legislative history supports an argument that the term “best systems of emission reduction” is not limited to at-the-unit technology, and that it could include nontechnological¹⁴⁷ beyond-the-unit emission-reduction measures.¹⁴⁸

Proponents of including beyond-the-unit measures in setting the stringency of the emission guideline could also argue that an individual EGU is but one component of a large set of interconnected generation, transmission, and distribution facilities tied into customer equipment

144. See 42 U.S.C. §7411(a) (1988).

145. *Id.* 42 U.S.C. §7411(a)(1)(C) (1988).

146. See 1990 CAA Amendments, §403, 104 Stat. at 2631.

147. See Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces, and New Residential Masonry Heaters, Proposed Rule, 79 Fed. Reg. at 6352-53:

... the level of control prescribed by section 111 historically has been commonly referred to as “Best Demonstrated Technology” or BDT. To better reflect that section 111 was amended in 1990 to clarify that “best systems” may or may not be “technology,” the EPA is now using the term “best systems of emission reduction” or BSER.

148. Section 111 requires a standard of performance to be based on “the degree of emission limitation achievable through the *application* of the best system of emission reduction which . . . the Administrator determines has been adequately demonstrated.” 42 U.S.C. §7411(a)(1). However, as we discuss below, the definition of the term “standard of performance” implies significant deference to EPA’s technical judgment as to what systems of emission reduction are “best,” “adequately demonstrated,” or “achievable” in light of cost and other factors. Therefore, the agency could decline to base an emission guideline on certain beyond-the-unit measures if it determines that those measures, for example, are insufficiently “demonstrated” or are not the “best” system of emission reduction when taking into account cost and energy considerations.

141. See 40 C.F.R. §§60.33b(d)(1), (2).

142. 42 U.S.C. §7410(a)(2)(A).

143. 40 C.F.R. §§60.21(f), 60.24(b)(1).

and operated as a single, integrated system. Arguably, the “best” way to reduce emissions for such an integrated system is to utilize an approach that relies not only on measures implemented at individual EGUs, but also on a wide range of other measures implemented throughout the interconnected system (including customers’ behind-the-meter equipment connected to the grid that result in demonstrable reductions in EGU emissions).¹⁴⁹

If EPA wished to take beyond-the-unit measures into account in setting the emission guideline, the Agency could also point to other provisions in the CAA which, in contrast to §111(a)(1), explicitly direct EPA or the states to set emission limits based on application of an emission-control technology or other technique at the relevant source. These include the Maximum Achievable Control Technology standard defined under §112(d)(2); the Best Available Control Technology standard defined under §169(3); the Best Available Retrofit Technology standard defined under §169A(g)(2); and the Reasonably Available Control Technology standard under §172(c)(1). The existence of these provisions arguably demonstrates that when Congress intended that EPA and the states set standards exclusively on the basis of the application of at-the-source emission control technology, Congress knew how to make that intention clear. According to this reasoning, Congress’ use of the term “system” and its removal of the term “technological” from §111 signaled its intention that EPA have the authority to consider a broader range of measures in setting standards under §111.

5. Additional Legal Issues With Relying on Beyond-the-Unit Measures

a. Would EPA’s Consideration of Beyond-the-Unit Measures as BSER in Setting the Emission Guideline Be Inconsistent With the Source-Specific Compliance Requirements of §111(d)?

One potential objection to EPA’s reliance on emission reductions achievable through beyond-the-unit measures in setting the federal emission guideline is that §111(d)(1) directs EPA to establish a SIP-like procedure under which state plans establish “standards of performance for any existing source” covered by that subsection.¹⁵⁰ Thus, even if the term “best system of emission reduction” includes beyond-the-unit measures, it could be argued that EPA cannot require a state to adopt a performance standard other than one applicable to existing EGUs.

149. EPA made similar arguments in support of the permissibility of the CAMR cap-and-trade program. See CAMR, 70 Fed. Reg. at 28616.

150. 42 U.S.C. §7411(d)(1) (emphasis added). See also *id.* §7411(d)(1), which requires EPA to allow states “in applying a standard of performance to any particular source” to consider the remaining useful life of “the existing source to which such standard applies.” Note that by its terms, this provision only requires EPA to allow the state to consider certain at-the-unit factors when applying a standard to a particular source; it does not require state standards to apply only on a unit-specific basis.

Further, it could be argued that a standard of performance that relies on action taken by third parties who may not be controlled by the owner or operator of the existing source (EGU) exceeds EPA’s authority under the statute. More broadly, one could argue that this language reflects the intention of Congress that implementation and compliance must be at the source¹⁵¹ level, and that an emission guideline based on beyond-the-unit measures is impermissible insofar as it contemplates a source receiving credit for activities implemented elsewhere.¹⁵²

In this regard, one key question is whether a performance standard can legally be expressed as a requirement to surrender some amount of credits or allowances in cases where the regulated EGU cannot achieve the emission limit solely through at-the-unit measures. It could be argued that even if the CAA does mandate that standards of performance be source-specific, beyond-the-unit measures still would be consistent with the statute so long as the standards are *enforced against the regulated sources* (i.e., through a requirement for each source to either reduce its own emissions or to hold credits or allowances for beyond-the-unit emission-reduction measures). This is an argument EPA made in the course of litigation over the cap-and-trade program in CAMR.¹⁵³

b. Would an Emission Guideline Based on Beyond-the-Unit Measures Impermissibly Intrude on State Discretion to Design State Plans?

Another possible objection to the use of beyond-the-unit measures in setting the stringency of the emission guideline is that an emission guideline based on beyond-the-unit measures intrudes on states’ discretion to design their §111(d) plans. Specifically, because §111(d) mandates that EPA follow a procedure for review and approval of state plans similar to that provided in CAA §110, it could be argued that an emission guideline based on beyond-the-unit measures effectively would contravene D.C. Circuit decisions under §110 that hold that EPA may not use

151. The statute defines a stationary source as “any building, structure, facility, or installation which emits or may emit any air pollutant.” 42 U.S.C. §7411(a)(3). Therefore, it appears that even if EPA were limited to setting the emission guideline based on emission reductions achievable only at the individual source, it could still allow entities that operate facilities with multiple individual units to average the emissions from each individual unit at the “facility” or generating plant (often referred to as “bubbling”). This may be important because some generating plants include units that rely on different sources of fossil fuels (e.g., natural gas and coal), and the ability to average among these units could mean that such facilities could achieve greater emission reductions than an approach that treats each generating unit or boiler as a separate “source.” See our discussion of *ASARCO Inc. v. EPA* later in this Article.

152. This objection may be particularly relevant for merchant generators. In contrast to vertically integrated utilities, which typically control a fleet of power plants and have direct access to end-use customers, merchant generators have little control over what their ultimate customers do, or over the extent to which renewables and nuclear are developed to serve the portion of the grid that the merchant generator serves.

153. Final Brief of Respondent EPA at *126, *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008) (No. 05-1097), 2007 WL 2155494.

“the SIP process to force States to adopt specific control measures,”¹⁵⁴ or otherwise to deny states “real choice with regard to the control measure options available to them.”¹⁵⁵ Even though these decisions were issued in the context of CAA §110, states could argue that these decisions preclude EPA from setting a guideline under §111(d) that is so stringent that it can only be met by implementation of beyond-the-unit measures.

To be clear, the §110 line of cases cited here has only vacated EPA rules that deny states *any* choice in their SIPs. Furthermore, one of these decisions upheld an EPA rule—the NO_x SIP Call—even though the court found that it only left states with “more costly” alternatives to the “model” state rule issued by the Agency.¹⁵⁶ Nevertheless, the court in this case suggested, in dicta, that it would disfavor a rule that left the states with alternatives that the states “would consider ‘unreasonable or impracticable.’”¹⁵⁷ Because an emission guideline based on beyond-the-unit measures could be sufficiently stringent that it might be impossible for a state plan to utilize exclusively at-the-unit measures, the §110 line of cases might provide a basis for an argument that EPA has exceeded the bounds of the cooperative federalism authorized by §111(d).

Even under such circumstances, however, EPA could still defend its approach if it remained practical for states and regulated sources to choose from among different beyond-the-unit measures. In that case, EPA could argue that states would continue to have “real choice” with regard to their control measures. Provided that it is otherwise permissible for EPA to assume the availability of both at-the-unit *and* beyond-the-unit measures in setting an emission guideline, it is not clear that states are entitled by the §110 “federalism bar” to always have at-the-unit measures be a practical option for compliance if beyond-the-unit options are reasonably available.

On the other hand, EPA would likely not be authorized to set its emission guideline at a level that is so stringent that it would essentially *require* states to allow their EGUs to *trade with other states* in order to comply. For example, if EPA set the emission guideline based on an assumption that all economically efficient emission reductions available in every state were to be implemented, a high-emitting state could find itself unable to meet the guideline solely through in-state actions. In such a scenario, the state may have a better argument that EPA’s emission guideline essentially provides the state with no real choice but to participate in a national emissions trading program (through which in-state EGUs could obtain the necessary reductions in CO₂).

c. May EPA Set the Emission Guideline Based on Crediting of Renewable Generation Additions or End-Use Efficiency?

Assuming that an emission guideline based on beyond-the-unit measures is not per se invalid, it might nevertheless be the case that EPA may only consider some types of beyond-the-unit measures and not others. For example, it might be argued that EPA may consider averaging and trading implemented among regulated EGUs (i.e., within the defined source category) in setting the emission guideline, but *may not* assume the use of credits from additions of renewable generation or increased end-use energy efficiency. Perhaps the principal legal objection to basing an emission guideline on the availability of additions of renewable energy or increased end-use energy efficiency is that these measures are not necessarily under the control of owners or operators of many EGUs.

In many parts of the country, EGUs are owned by vertically integrated utilities, which may also own renewable energy resources and have direct access to end-users through retail service authority. Many of these utilities already are subject to state policy measures that promote the development of renewable energy (such as renewable portfolio standards) or end-use energy efficiency. However, it is also the case that a substantial part of the fossil-fueled generation fleet is not part of any vertically integrated utility system. Owners of EGUs in this category (often called merchant generators) are typically not subject to state renewable portfolio standards.¹⁵⁸ Nor do these merchant generators, which typically provide electricity only at the wholesale level, have direct access to end-users of electricity. Because this significant component of the power sector lacks a service territory in which it can essentially control the mix of generation or directly influence end-users’ consumption patterns, it could be argued that EPA should not be permitted to base an emission guideline on the availability of third-party measures such as deployment of new renewable generation or increased end-use energy efficiency. According to this argument, it is unreasonable to interpret “best system of emission reduction” as including measures that can only be achieved through the actions of the state and/or third-party providers of renewable energy generation or energy-efficiency load reductions. Arguably, because regulated EGUs—at least those that are owned by merchant generators—would be largely unable to control whether sufficient energy efficiency or renewable energy will be available to help them reduce their emissions, an emission guideline based on implementation of such measures would not be “achievable” or “adequately demonstrated” for those EGUs.

As with many of the other questions we discuss, the statute itself does not expressly address whether end-use

154. *EME Homer City*, 696 F.3d at 29.

155. *Michigan*, 213 F.3d at 687.

156. *Id.* at 688.

157. *Id.*

158. Renewable portfolio standards typically require utilities selling at retail to sell a fixed percentage of renewable power or purchase renewable energy credits.

energy-efficiency measures or renewable energy are systems of emission reduction that can be considered in establishing an emission guideline. EPA has twice previously allowed for trading and averaging among regulated EGUs in identifying the BSER under §111(d), in the CAMR rule, and in its rulemaking for Large Municipal Waste Combustors.¹⁵⁹ However, the extension of that reasoning to incorporate crediting of measures taken outside the universe of EGUs, by, for instance, crediting new renewable energy (RE) or energy efficiency (EE) investments, has no precedent in §111(d) practice. So, the key question is whether EPA can defensibly find that a system that allows EGUs to comply by using credits from RE or EE investments is within the ambit of the statute and is sufficiently demonstrated and cost-effective to support a finding that it is BSER.¹⁶⁰

From a legal perspective, moreover, there are a number of past instances in which EPA—and Congress itself—have identified end-use EE and RE measures as permissible means of compliance with CAA regulations aimed at reducing emissions from the power sector.¹⁶¹ For the Title IV Acid Rain Trading Program, for example, Congress set aside 300,000 allowances in a “Conservation and Renewable Energy Reserve” for utilities implementing efficiency or renewable energy programs.¹⁶² Also, in July 2012, EPA published guidance on how states can integrate end-use EE and RE measures in SIPs for attaining NAAQS.¹⁶³ Furthermore, in the 1998 NO_x SIP Call Rule, the Agency encouraged states to include in their cap-and-trade programs an allowance set aside for reductions achieved through end-use energy-efficiency measures.¹⁶⁴ The Agency and others have also developed tools, methodologies, and protocols for quantifying and attributing emission reductions from energy efficiency under this and other programs.¹⁶⁵ In addition, EPA could make the point that §111(d) already contemplates the development of state plans, and that it is therefore reasonable for EPA, in determining the “best system of emission reduction,” to assume, for the reasons discussed above, that state plans can establish new renew-

able energy and end-use energy-efficiency measures that create sufficient credits to allow merchant generators and others to comply.

There may be a further, more technical challenge in finding that systems for crediting end-use energy-efficiency measures, in particular, are an “adequately demonstrated” system for reducing CO₂ emissions from EGUs. Although states and localities have enacted a variety of policies promoting end-use energy efficiency—some of which include crediting or trading mechanisms—no state has yet enacted an end-use energy-efficiency program that issues credits measured in terms of CO₂ emission reductions. Those opposing the use of energy efficiency in setting the emission guideline could make the case that these design features involve substantial and complicated departures from current efficiency policies,¹⁶⁶ and that as a result, a system of emission reduction based on crediting of energy-efficiency reduction is not “adequately demonstrated.”

If EPA chooses to include systems for crediting EE and RE in its BSER determination, it would likely need to find that: (1) end-use energy-efficiency programs and renewable energy policies are in wide use; (2) adapting such programs and policies for CO₂ mitigation is reasonably straightforward; (3) reducing demand through energy efficiency is one of the most cost-effective methods of reducing EGU emissions; and (4) use of monitoring and verification protocols to verify energy-efficiency energy savings is common practice. On balance, as long as EPA can make these findings (and assuming that beyond-the-unit measures are not per se excluded from consideration), it appears that EPA could legally incorporate end-use energy-efficiency and renewable energy additions into a determination of the stringency of a §111(d) emission guideline.

d. References to “Continuous” Reductions; *ASARCO v. EPA*

References to “Continuous” Reductions. Section 111(a)(1) defines a standard of performance in terms of an “emission limitation achievable through the application of [BSER].”¹⁶⁷ Section 302(k) of the CAA defines “emission limitation” as a “requirement . . . which limits the quantity, rate, or concentration . . . on a continuous basis.”¹⁶⁸ In addition, a separate definition of “standard of performance,” found in §302(l) of the CAA, defines the terms as a “requirement

159. See 40 C.F.R. §§60.33b(d)(1), (2).

160. Note that if EPA were to set a state-by-state, per-year emission limit applicable only to emissions from regulated EGUs (as it did for mercury in CAMR), it would not need to justify the legality of a separate mechanism for crediting renewable energy or energy efficiency. Rather, in such a situation, the existence of the cap, and its effect on electricity prices, would theoretically incentivize additional renewable energy generation and energy efficiency without the need for an explicit crediting mechanism.

161. See Jeremy M. Tarr et al., *Energy Efficiency and Greenhouse Gas Limits for Existing Power Plants: Learning From EPA Precedent 5-7* (2013), available at http://nicholasinstitute.duke.edu/sites/default/files/publications/ni_r_13-04_0.pdf.

162. See 42 U.S.C. §7651c(f)(2)(A).

163. See U.S. EPA, *Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs Into State and Tribal Implementation Plans*, EPA-465/D-12-001a (2012), available at <http://epa.gov/airquality/eere/pdfs/EEREmannual.pdf>.

164. See Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone, Final Rule, 63 Fed. Reg. 57356, 57438 (Oct. 27, 1998) (encouraging states to consider set-aside mechanisms in their SIPs submitted in response to the rule).

165. See, e.g., U.S. EPA, *AVoided Emissions and geneRation Tool (AVERT)*, <http://epa.gov/statelocalclimate/resources/avert/index.html> (last visited Mar. 27, 2014).

166. For example, there are substantial questions surrounding how to credit energy-efficiency reductions in an interconnected electric grid where demand can be met through a variety of generation resources. There are also questions surrounding whether a policy of crediting end-use energy efficiency or new zero-emission generation can be effective absent multistate collaboration, because the effects of reduced demand from regulated EGUs may be experienced over the interconnected multistate grid. It is possible, for example, that reductions in electricity use in one state would not reduce emissions from EGUs in the same state. It is not clear to us that these issues are insurmountable, however. For example, EPA could require states to limit credit for energy-efficiency measures to reductions that occur only in-state, or allow states to discount credits to more accurately capture the expected in-state impacts on emissions.

167. 42 U.S.C. §7411(a)(1).

168. 42 U.S.C. §7602(k).

of *continuous* emission reduction.”¹⁶⁹ In litigation over the CAMR, opponents of the rule’s cap-and-trade program argued that a standard of performance based on a cap-and-trade system is inconsistent with the requirement of “continuous” emission reductions because sources were not required to decrease emissions on a continuous basis—in fact, they were free to increase their emissions at any time by buying allowances (the reviewing court did not reach this issue). Opponents of allowing EGUs to comply via a trading program might make similar objections to EPA’s forthcoming rule, if the rule allows for use of such compliance options.

EPA would have robust counterarguments. EPA could argue, as it did in CAMR, that the §302(l) definition of “standard of performance” is inapplicable to §111 because, under the rules of statutory construction, the operative definition is the one that Congress included specifically (and later in time) for §111. EPA could also argue that §111(a)(1)’s reference to “degree of emissions limitation” does not use “emission limitation” in its defined sense, but rather is a more general use of the term.¹⁷⁰ Moreover, EPA could also respond that the terms “emission limitation” and “continuous” do not compel such specific and limiting interpretations. In particular, the Agency could stress that a system of beyond-the-unit measures reasonably satisfies the requirement of a continuous emission limitation through the obligation to hold credits or allowances to cover emissions. Under this view, source categorywide emission reductions are continuous, even though individual EGUs emissions may fluctuate. The Agency has made this argument before in support of the CAMR cap-and-trade program.¹⁷¹

Applicability of ASARCO v. EPA to Availability of Beyond-the-Unit Measures. Opponents of consideration of beyond-the-unit measures in the EPA emission guideline might also invoke the *ASARCO Inc. v. EPA* decision.¹⁷² *ASARCO* concerned EPA’s application of NSPS to modified sources, and focused on the definition of “stationary source.” The NSPS provisions then in effect defined “modification” as a physical or operational change to a “source” that results in an increase in emissions. In the *ASARCO* case, EPA sought to define “source” as a combination of co-located facilities, thereby allowing a source to avoid applicability of NSPS by offsetting an increase

in emissions resulting from a change in one facility by decreasing emissions at another facility within the same source—also known as a “bubble” approach. The court concluded that EPA’s bubble-based interpretation of “source” was inconsistent with §111, reasoning that it “would undercut Section 111” because “postpon[ing] the time when the best technology must be employed and at best maintains the present level of emissions.”¹⁷³ A “bubble” approach is a straightforward example of a beyond-the-unit measure, and therefore it could be argued that the *ASARCO* decision forecloses the consideration of such measures under §111.

There are two well-founded replies to this argument. First, EPA could argue that the *ASARCO* decision is distinguishable because *ASARCO* concerned the interpretation of “stationary source,” but here, the issue is the interpretation of “standard of performance” and “best system of emission reduction.” Not only are these different terms, they also arise in different regulatory contexts. In *ASARCO*, the issue was whether EPA could interpret “stationary source” in a manner that would make it easier for sources to *avoid the applicability of the NSPS* and its mandate for best pollution controls. The court found such a result was inconsistent with Congress’ environmental protection objectives for §111.¹⁷⁴ Here, by contrast, the issue is what standard of performance should be enforced against sources for which §111 applicability *already has been determined*. Accordingly, consideration of beyond-the-unit measures arguably does not make it possible for sources to avoid coverage (even though they could, in theory, avoid reducing their own emissions by, for example, purchasing emission credits instead).

Second, the *ASARCO* decision pre-dated the *Chevron* decision. The *Chevron* case itself upheld EPA’s authority to apply the “bubble” concept for purposes of determining whether a “stationary source” triggers emission control obligations, albeit under a different set of CAA provisions (i.e., those dealing with PSD). More broadly, it announced a principle of greater deference to Agency constructions of statutes they implement. Therefore, EPA could assert that the D.C. Circuit’s more circumscribed *ASARCO* reading of the Agency’s authority to interpret §111 does not bind the Agency today.¹⁷⁵

Finally, there is at least some administrative precedent for the proposition that EPA may interpret “system of emission reduction” to include use of allowances or credits in addition to at-the-unit measures. Specifically, both CAMR (which is no longer in effect) and the Large Municipal Waste Combustor rules allow regulated sources to comply by relying on reductions at other regulated sources

169. 42 U.S.C. §7602(l) (emphasis added).

170. CAA §302(k) defines “emission limitation” as a “requirement . . . which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis.” 42 U.S.C. §7602(k). If §111(a)(1) used “emission limitation” in its defined sense, the standard of performance definition with the relevant portion of §302(k) inserted in *italics*, would read as follows: “a standard for emissions of air pollutants which reflects the degree of a *requirement which . . . limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis* achievable through the application of the best system of emission reduction.” It would seem that the literal use of the §302(k) definition would make little sense in the §111(a)(1) context.

171. See Final Brief of Respondent EPA, *supra* note 145, at *130. EPA also argued that even traditional rate-based emission limits do require “continuous” emission reduction because these standards would not prevent sources that are *below* the relevant emission limit from *increasing* their emissions. See *id.* at *131.

172. 578 F.2d 319, 8 ELR 20277 (D.C. Cir. 1978).

173. *Id.* at 328.

174. *Id.* at 327-28 (holding that the “bubble concept in the challenged regulations would undercut §111 by allowing operators to avoid installing the best pollution control technology on an altered facility as long as the emissions from the entire plant do not increase”).

175. See Nathan Richardson, *Playing Without Aces: Offsets and the Limits of Flexibility Under Clean Air Act Climate Policy* 14 (2011), available at <http://www.rff.org/RFF/Documents/RFF-DP-11-49.pdf>.

(e.g., though allowance or averaging mechanisms).¹⁷⁶ The key limitation, therefore, may be EPA's ability to find that a crediting system that credits both "over-reductions" at other EGUs and reduced demand for regulated EGU power caused by investments in energy efficiency or renewable energy is "adequately demonstrated" and thus can be found to be BSER.

6. Is It Permissible for EPA Not to Consider Use of Beyond-the-Unit Measures?

It is possible that EPA would decide—for legal, political, or technical reasons—to consider only at-the-unit measures (i.e., heat-rate improvements, co-firing, and fuel-switching) in setting the emission guideline, while declining to set the guideline based on emission reductions that could be achieved through beyond-the-unit measures. Such a scenario would raise two important questions. First, on what grounds could EPA defend a decision not to consider beyond-the-unit measures in setting the stringency of the guideline? And second, if EPA sets a guideline based only on at-the-unit measures, would EPA be prohibited from approving state plans that allow EGUs to comply via measures other than those the Agency itself considered in setting the guideline (e.g., beyond-the-unit measures)?

a. May EPA Forego Consideration of Beyond-the-Unit Measures in Setting the Emission Limit in the Guideline?

Because an approach to setting the emission guideline that considers only at-the-unit measures could result in a less environmentally ambitious benchmark for state plans, EPA's use of such an approach could draw a legal challenge from environmental organizations and states. In particular, these petitioners might argue that, in the context of EGU emissions of CO₂, at-the-unit emission measures are not the "best" system of emission reduction. Rather, these petitions could argue that the "best system of emission reduction" is one that utilizes measures such as averaging or trading, additions of renewable energy, and end-use energy efficiency. According to this argument, a guideline that allows states to establish performance standards whose stringency is not predicated on the use of these "best" beyond-the-unit systems would violate the statutory requirement that standards under §111 be based on "the application of the best system of emission reduction. . . ."¹⁷⁷

EPA might counter on *technical* grounds, for example, by arguing that such measures are not "adequately demonstrated," that they are not economic, or that inclusion of such measures in setting an emission guideline is not administratively practicable. EPA also could determine

that the measures are not sufficiently available in all jurisdictions subject to its emission guideline. For example, the Agency might find that renewable energy resources are not adequate in some states, such that additions of renewable energy generation could not be considered an "adequately demonstration" component of the "best system of emission reduction."

EPA could also counter on statutory grounds. Specifically, EPA could argue that §111(d)'s cross-reference to §110 confers on states broad discretion in achieving the emission limitation specified in the federal guideline, and that this discretion permits states to allow EGUs to comply by using measures other than those that EPA designates as BSER.¹⁷⁸ EPA could argue that one implication of the cross-reference to §110 and the state-level compliance flexibility that it implies is that EPA need not designate all potentially viable compliance options to be BSER. In other words, the mere possibility that a state could allow an EGU to use a particular measure or technology for compliance does not render that measure the BSER on which EPA must base the stringency of the emission guideline. Rather, EPA could arguably determine that only certain at-the-unit measures are BSER; set the stringency of the guideline based on the emission limitation achievable through the application of these at-the-unit, BSER measures; and then allow states and EGUs to comply using additional, more flexible means of compliance (including beyond-the-unit measures).¹⁷⁹

Thus, although we believe there are a number of legal arguments that support the proposition that beyond-the-unit systems of emission reduction can serve as BSER, EPA would also have good arguments for declining to set the guideline based on beyond-the-unit measures—even if states themselves can use such measures for compliance.

b. Would EPA Be Prohibited From Authorizing State Plans That Allow EGUs to Comply Via Measures Other Than Those Considered in Setting the Guideline?

Even if EPA does not consider beyond-the-unit measures in setting the emission guideline, some states can be expected to want the flexibility to include such measures in their state plans. As we point out above, the general language of §111(d) and the implied division of responsibility between the states and EPA appears to give states broad authority to spell out the means by which EGUs must comply with the standards of performance they prescribe. Thus, even if EPA did not base its emission guideline on beyond-the-unit measures for some of the reasons we discuss in the previous section, states and EGUs would, as a general matter,

176. See 40 C.F.R. §§60.33b(d)(1)-(2); CAMR, 70 Fed. Reg. at 28616-24.

177. 42 U.S.C. §7411(a)(1) (emphasis added).

178. See our discussion of this argument in Part II.B.4.

179. Note, however, that EPA would still have to provide a rational basis for its decision not to designate such beyond-the-unit systems of emission reduction as BSER.

have strong arguments that these measures may be used as a means of compliance with state performance standards.

Opponents of this degree of state flexibility, however, might assert that EPA is prohibited from allowing states to implement compliance schemes that would allow EGUs to comply via measures that EPA itself did not take into account. They might argue that the specific requirements of §111(d) circumscribe the otherwise broad discretion available to the states under §110. For example, §111(d) (1) expressly directs state plans to “establish[] standards of performance” and to enforce them against the relevant sources. Accordingly, if the definition of “standard of performance” in some way constrains the measures that EPA may consider in setting the guideline (for example, if this definition precludes consideration of beyond-the-unit measures), then it could be argued that the same constraints must apply to *state* plans because the term “standard of performance” is defined in only one place in §111, and cannot have different meanings in different paragraphs of the same section of the statute. Another argument is that §111(d)’s reference to §110 invokes only the *procedural* aspects of §110, but not the significant substantive flexibility available to states under that section of the CAA.¹⁸⁰

There are several possible responses to these arguments. First, states could argue that under *Environmental Defense v. Duke Energy Corp.*,¹⁸¹ the same defined term can be interpreted differently for purposes of different provisions of a statute. Second, and more convincingly, perhaps, proponents of state flexibility could reply that the issue is not whether states may set *standards of performance* that are inconsistent with the EPA emission guideline, but whether states may allow flexibility in *how* the standard is satisfied. Under §111, EPA determines the BSER that is adequately demonstrated, but states are arguably in the driver’s seat when it comes to establishing and enforcing a standard of performance that “reflects the degree of emission limitation achievable through application of the best system”¹⁸² and devising the rules for implementing and enforcing that standard. Moreover, states could also attempt to invoke the §110 “federalism bar” decisions discussed above to argue that restricting the allowable means of compliance violates the federal-state division of responsibilities that is inherent to §111(d).¹⁸³

In sum, it appears that states could marshal strong statutory arguments for flexibility, particularly if EPA agreed with the states. Nevertheless, if EPA’s guideline were, for example, to rule out certain forms of compliance on strong technical or legal grounds, while providing states and EGUs with other meaningful compliance options, EPA’s decision to restrict these methods of compliance may well be upheld

on judicial review as a reasonable exercise of the Agency’s discretion to determine whether state plans are “satisfactory.”¹⁸⁴

7. Additional Issues Related to the Stringency of the Federal Guideline

a. Would the Emission Guideline Be Invalid if It Resulted in a Significant Number of Retirements?

Even though an emission guideline that considers only at-the-unit measures will likely result in a smaller amount of reductions than an approach that considers beyond-the-unit measures, the latter approach could nevertheless present problems for a number of EGUs. Some EGUs may not be in a position to implement heat-rate improvements, or may not have ready access to gas or biomass for co-firing. Accordingly, even a less-ambitious at-the-unit approach could result in some retirements.

Under the statute and EPA’s Implementing Regulations, both performance standards and emission guidelines must be based on the “best system of emission reduction . . . adequately demonstrated,” and must be “achievable” in light of cost, energy, and other considerations.¹⁸⁵ Accordingly, owners and operators of EGUs that are unable to meet the emission limit specified in the guideline document may argue that the likelihood of many retirements renders the guideline “unachievable” given costs and other factors. EGU owners and operators could also argue that the system designated as BSER is not adequately demonstrated for their units.

The strength of these arguments will depend largely on the administrative record that EPA develops, on the assumptions the Agency makes, and on the level of retirements anticipated. However, it is important to recognize that §111 does not expressly require that the “adequately demonstrated” test must be satisfied for *each unit* within the category to which the standard of performance applies. The discretion implied by the modifiers “adequately” and “best” and the phrase “taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements,” appears to give EPA substantial leeway in making its own determination of both the systems on which to base the guideline and on whether the emission limit in the guideline is “achievable.” While selecting a BSER that could not be applied to a majority of the units in an EGU category would probably strain the notion of “adequately demonstrated,” picking a BSER that could not be applied at a small minority of units within a category may well be defensible. Similarly, although costs are undoubtedly an important consideration in determining whether a guideline’s emission limit is “achievable,” the judicial precedent interpreting this aspect of §111 (at least in the context of §111(b)) appears to allow for emission limits that would require sources to implement pollution controls,

180. See, e.g., Richardson, *supra* note 184, at 15-16.

181. 549 U.S. 561, 574-76 (2007) (holding that EPA’s decision to interpret the term “modification” differently in the PSD and NSPS contexts was permissible, even where one section referred directly to the term “as defined in” the other section).

182. 42 U.S.C. §7411(a)(1).

183. As we note in our discussion in Part II.A.3. above, these decisions may be persuasive in the §111(d) context even though they addressed state flexibility in the §110 context.

184. See 42 U.S.C. §7411(d)(2).

185. See 40 C.F.R. §§60.22(b)(3), (5); 42 U.S.C. §7411(a)(1).

even where the cost of such controls would be significant.¹⁸⁶ The reasonableness of EPA's proposed emission limit, as well as the assumptions underlying it, will depend entirely on the factual circumstances, such as whether there are alternative measures that can be used effectively at units within the category that cannot use the BSER, and the actual cost of improvements or design changes that are necessary to meet the guideline.

In addition, EPA and the states have at least two mechanisms for mitigating the impact of a standard of performance that not all EGUs can meet. Under §111(b), EPA "may distinguish among classes, types and sizes within categories of new sources for the purpose of establishing [standards applicable to new sources]."¹⁸⁷ While there is no express authorization for such subcategorization in §111(d), there is no preclusion either. EPA's Implementing Regulations call more affirmatively for subcategorization in developing standards of performance under §111(d): "The Administrator *will* specify different emission guidelines or compliance times or both for different sizes, types, and classes of designated facilities when costs of control, physical limitations, geographical location, or similar factors make subcategorization appropriate."¹⁸⁸

While the "make subcategorization appropriate" qualifier leaves substantial discretion with EPA, this passage in the regulations certainly suggests that EPA expects to designate, through subcategorization, groupings of EGUs that are sufficiently differentiated that judgments about whether a BSER is adequately demonstrated can be made fairly across the subcategory. This authority leads to additional, important technical questions, such as how much subcategorization is necessary to successfully mitigate the impacts on those EGUs in a given subcategory that have the fewest good emission-reduction options.

Secondly, states have authority to provide case-by-case relief where necessary. Section 111(d)(1) requires EPA to allow state plans to take into account the remaining useful life of regulated sources and similar factors. In addition, the Implementing Regulations provide that, unless EPA otherwise provides, states may grant case-by-case variances from the emission guideline:

(f) Unless otherwise specified in the applicable subpart on a case-by-case basis for particular designated facilities or classes of facilities, States may provide for the application of less stringent emissions standards or longer compliance schedules than those otherwise required by paragraph (c)

of this section, provided that the State demonstrates with respect to each such facility (or class of facilities):

- (1) Unreasonable cost of control resulting from plant age, location, or basic process design;
- (2) Physical impossibility of installing necessary control equipment; or
- (3) Other factors specific to the facility (or class of facilities) that make application of a less stringent standard or final compliance time significantly more reasonable.¹⁸⁹

While the EPA regulations do not require states to provide these case-by-case variances, the availability of such relief provides a basis for EPA to defend against claims that BSER and standard-of-performance determinations will necessarily injure EGUs that cannot implement the BSER. A considered use of subcategorization and case-by-case variances would therefore substantially mitigate EPA's exposure to claims that a BSER or emission-guideline determination would require the NSPS-driven closure of too many existing EGUs.

b. May EPA Condition State-Provided Variances on Achieving Offsetting CO₂ Reductions?

The availability of economically practicable and technologically feasible at-the-unit measures for reducing CO₂ varies considerably among existing EGUs: some may have no options for fuel-switching or heat-rate improvements, while others may only be able to achieve reductions by installing prohibitively expensive upgrades. Therefore, an approach that precludes the use of credits for beyond-the-unit measures to meet the standard of performance could lead to many requests for unit-specific variances. The possibility that such a scenario would play out in many states raises the question of whether it would be permissible for EPA to condition its approval of variances in state plans on the EGU owner's achievement of additional, offsetting CO₂ emission reductions from another source. Such an approach (if valid under the statute) would be attractive to EPA and some stakeholders because it would make it possible for the regulation to drive more reductions than might otherwise occur if variances were not offset.

Section 111(d)(1) requires EPA to allow state plans to take into account the remaining useful life of a source.¹⁹⁰ However, nothing in §111(d)(1) precludes EPA from reasonably conditioning a variance for an aged EGU on the achievement of offsetting reductions. Moreover, §60.24(f) of the Implementing Regulations does not expressly allow or preclude conditioning of variances. The regulations do provide, however, that the state's ability to provide case-by-case relief under §60.24(f) is available "[u]nless otherwise specified" by EPA in its category-specific rule.¹⁹¹ Thus, the

186. See, e.g., *Essex Chem. Corp.*, 486 F.2d at 433 (holding that an "adequately demonstrated" system must be "reasonably reliable, reasonably efficient, and . . . can reasonably be expected to serve the interests of pollution control without becoming exorbitantly costly in an economic or environmental way"); *Lignite Energy Council v. EPA*, 198 F.3d 930, 933, 30 ELR 20279 (D.C. Cir. 1999) ("EPA's choice [of BSER] will be sustained unless the environmental or economic costs of using the technology are exorbitant."); *Portland Cement Ass'n v. Train*, 513 F.2d 506, 508, 5 ELR 20341 (D.C. Cir. 1975) (the appropriate cost inquiry is whether the costs of the NSPS are "greater than the industry could bear and survive").

187. 42 U.S.C. §7411(b)(2).

188. 40 C.F.R. §60.22(b)(5) (emphasis added).

189. 40 C.F.R. §60.24(f).

190. See 42 U.S.C. §7411(d)(1).

191. 40 C.F.R. §60.24(f).

rules indicate that EPA has reserved to itself the ability, in the category-specific rules, to withhold or otherwise limit state authority to provide variance relief. The statutory basis for this discretion is presumably EPA's authority to determine whether a state plan is "satisfactory."

As with many other questions involved in setting the guideline, the reasonableness of EPA's decision will depend on how the Agency decides to exercise its discretion to allow for variances. If, for example, EPA were to allow a state to impose a more-lenient standard of performance on a soon-to-retire power plant only if the state obtained 10 times as many CO₂ emission reductions from some other source, a petitioner might be able to successfully argue that the agency contravened the intent of Congress or was being capricious by effectively punishing the state for availing itself of flexibility to consider remaining useful life that Congress contemplated would reside with the state. On the other hand, a more judicious use of offset requirements probably would not violate congressional intent.

8. Challenges Related to Additional Design Choices

We have highlighted the above the most important design issues involved in promulgating a §111(d) regulation for EGU CO₂ emissions because they raise important and complex questions of statutory authority. These issues are just a subset of the numerous design choices that EPA, and states, will have to make as they develop the emission guideline and SIPs under the rule.

For example, one important question is whether subcategorization in the emission guideline—for example, in the form of different standards for coal-fired and natural gas-fired EGUs—would preclude state compliance plans that are predicated on averaging or trading among EGUs in the different subcategories. Put another way, would it be permissible for coal-fired EGUs to comply by shifting generation to natural gas-fired EGUs even if the latter are subject to a different performance standard? Or, must all state compliance measures be specific to the subcategory? A related question is whether, in the emission guideline, EPA could set subcategorized emission limits based on the assumption of the availability of averaging or trading among EGUs in different subcategories. Other design questions include the length of the implementation period for the numerical emission limit included in the emission guideline and the selection of an emission baseline if EPA decides to require EGUs to reduce their CO₂ output by some percentage below baseline.

Though these and other design choices would have substantial implications for the shape and impact of §111(d) regulations, they do not appear to raise questions that go to EPA's statutory authority. However, EPA would have to support all of its design choices with reasoned decisionmaking. That is, it will need to provide a sufficient factual basis in the administrative record for its findings, and sufficient analy-

sis and reasoned explanation to support its policy choices. Given the numerous complicated and new design questions posed by the prospect of regulating CO₂ from EGUs via §111(d), the strength of EPA's administrative record, and the reasoning the Agency uses to choose among the myriad design options, will likely play a critical role in determining whether the forthcoming regulation will stand or fall.

III. Conclusions

In the preceding parts of this Article, we generally conclude that once CO₂ new source performance standards are in effect for new EGUs, EPA will be able to regulate existing EGUs under §111(d), notwithstanding the 1990 CAA Amendments drafting error; that EPA will be permitted to prescribe a quantitative emission limit in the guideline it will issue under the Implementing Regulations; and that if EPA chooses to look beyond at-the-unit measures in setting an emission guideline, EPA's choice is likely to survive judicial review (though the rule's chances of survival may decrease to the extent the Agency relies on emission reductions from renewables and energy efficiency). In general, because of the relatively spare and broadly worded language of §111(d), there are many design decisions for which EPA would get the benefit of a deferential standard of judicial review. Specifically, we note:

- The operative passages of §111(d) are relatively brief and do not contain much prescription or detail as to what EPA can or must do with respect to regulation of existing sources. As a general matter, such broadly written statutes leave considerable discretion to the implementing agency.
- The principles of *Chevron* deference give an agency discretion to fill in statutory gaps or construe statutory ambiguity as long as the agency interpretation is reasonable.
- EPA may adopt regulatory provisions that depart from its preexisting Implementing Regulations, so long as the new provisions are otherwise consistent with the statute and the agency reasonably explains its deviation from the existing regulations.
- There is essentially no judicial precedent interpreting the provisions of §111(d). Thus, there is no specific judicial guidance as to what is permissible, and no constraining judicial precedents that EPA must work around.
- EPA's prior use of §111(d) has been very limited. So, while there is no well-worn path to guide a "safe" approach, there is also little past practice that must be distinguished or explained if EPA decides to adopt a new approach.

The key constraints on EPA's creativity in designing a rule to reduce CO₂ emissions from the power sector are that EPA must craft a policy that is within the parameters

set out by the CAA (where the CAA's language is unambiguous), that is consistent with a reasonable interpretation of the CAA (where the CAA's language is ambiguous), and that is underpinned by factual findings (e.g., on the best system of emission reductions) that are supported by the record, and are not arbitrary or capricious.

This general perspective is subject to an important caveat, however. The more ambitious or complex EPA's §111(d) regulation becomes, the greater the number of expansive statutory constructions and factual findings the Agency would have to make—particularly, if EPA's emission guideline is based on a BSER that encompasses the availability of beyond-the-unit measures and trading or crediting. Thus, if EPA decides to base the emission guideline on the assumption that credits from deployment of new renewable generation and end-use energy efficiency would be available as compliance measures, it would have to make a series of new and largely untested interpretations of its statutory authority, as well as findings about the effectiveness and availability of such measures.

For example, if EPA's rule were to prescribe a mass-based (tons/yr) emission guideline predicated on the widespread availability of energy efficiency combined with emission trading as a compliance measure, EPA would have to prevail on five independent issues in litigation: (1) that EPA has the authority under §111(d) to regulate EGUs (notwithstanding the 1990 CAA Amendments' drafting error); (2) that EPA has authority to prescribe binding, quantitative emission guidelines; (3) that EPA has authority to set an emission guideline predicated on availability of beyond-the-unit measures (including energy efficiency); (4) that EPA has the authority to use a tons/yr metric in setting the emission guideline; and (5) that EPA has authority to allow EGUs to use emission trading to comply with state performance standards. EPA would also have to justify the specific level of the emission limit contained in the guideline, its decisions about whether and under what circumstances to allow variances, its decision to subcategorize (or not to subcategorize) based on fuel source or age, its selection of a baseline, and perhaps a dozen other design decisions.

Even if the probabilities might favor the Agency in a legal challenge to each discrete interpretation, finding, and design decision, the sheer number of findings and interpretations could expose the Agency to a significant *cumulative* risk of reversal. The risk of reversal grows with the number of separate legal determinations, even if each one has a high probability of success. Indeed, at some point, the absence of more detailed, prescriptive language from Congress could work against the Agency. Without a legislatively prescribed structure for the regulatory program, a reviewing court could grow discomfited by the Agency hanging its legal authority to implement a comprehensive

sectoral credit-trading program on the relatively spare “system” language of §111(d).

EPA's recent experience with the pollution “transport” rules promulgated under §110(a)(2)(D) of the CAA¹⁹² could be instructive in this regard. Section 110(a)(2)(D) has relatively little to say about how EPA should determine whether an SIP is failing to prohibit “significant contribution” to downwind nonattainment of a NAAQS—and §110 has even less to say about how to remedy such contribution. Accordingly, in the 2005 CAIR and the 2011 CSAPR, EPA had to make a host of linked decisions and interpretations, each of which established a distinct point of litigation vulnerability.¹⁹³ In its merits decision on the CAIR, the D.C. Circuit reversed EPA on so many of these determinations that it concluded that it should vacate rather than remand the rule because “very little will survive [] remand in anything approaching recognizable form.”¹⁹⁴ EPA attempted to address the court's objections when it promulgated the CSAPR, yet the D.C. Circuit invalidated that rule on new and different grounds.¹⁹⁵ To be sure, these rules and the associated court decisions can be distinguished from the §111(d) situation, and the U.S. Supreme Court may reach a different conclusion in its review of the CSAPR case. Nevertheless, they demonstrate some of the litigation risks facing EPA from promulgating complex multifaceted rules under spare and broadly worded statutory authority.

In sum, although the breadth of the language in §111—when combined with the principles of *Chevron* deference and Agency discretion in technical matters—gives EPA a significant amount of leeway to craft a comprehensive and potentially stringent program to limit CO₂ emissions from existing EGUs, EPA also faces some inherent risk due to the sparseness of its authorizing legislation and the dearth of legal precedent interpreting this area of the law. Moreover, because an ambitious rule involving trading, crediting, or beyond-the-unit measures will require EPA to interpret many different aspects of the law and to support a substantial number of findings, the Agency may face an elevated *cumulative* risk that important aspects of its plan will be reversed on appeal.

192. 42 U.S.C. §7410(a)(2)(D).

193. For example, in promulgating both the CAIR and CSAPR, EPA took the following separate but related rule design steps: determination of which states are “significant contributors” and by what amount; determination of separate state budgets for SO₂ and NO_x; disapproval of existing SIPs and establishment of federal implementation plans; establishment of a model emissions trading framework; and determination of compliance deadlines.

194. *North Carolina*, 531 F.3d at 929 (citing *NRDC v. EPA*, 489 F.3d 1250, 1261 (D.C. Cir. 2007)).

195. See *EME Homer City*, 696 F.3d 7.