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# Trading Unmoored: The Uncertain Legal Foundation for Emissions Trading Under § 111 of the Clean Air Act

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**ABSTRACT**

The EPA's "Clean Power Plan" will for the first time impose greenhouse gas emission limits on existing fossil fuel power plants.[1] The Plan envisions trading among regulated emitters, and such trading appears crucial to the Plan's cost-effectiveness. The Plan's projected emissions reductions are significant, making it a core element of President Obama's climate policy and crucial to fulfillment of the country's international commitments. But the Plan is controversial and is based on a rarely used provision of the Clean Air Act, § 111(d). Litigation has already begun and will undoubtedly intensify. In an earlier work, I argued that § 111(d) does not allow use of some flexible regulatory tools (including many forms of offsets) but that it appears to allow emissions trading among regulated sources. This Article looks more deeply at the legal authority to allow emissions trading under § 111(d). Most legal arguments to date over trading have focused on past EPA practice or the statutory definition of performance standards. But neither source of authority is sufficient to answer the question—in fact, there is little or no statutory guidance on whether trading is legally available when emitters must actually

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1. The EPA released the final Clean Power Plan just before this article went to press. While the discussion regarding and quotations from the plan here are based on the proposed rule, preliminary analysis of the final rule has not revealed any changes that will significantly impact this analysis. Emissions trading is still encouraged by EPA and assumed in the final rule's regulatory impact analysis, and the agency's legal arguments in favor of trading are similar.

comply. Judicial deference to agency interpretation means trading may be legal, but uncertainty remains. It is even possible that courts could resort to new legal doctrines or revive the nondelegation doctrine to resolve the question. Even if courts do eventually approve trading, legal uncertainty over this crucial aspect of climate policy is underappreciated.

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## I. INTRODUCTION

In 2014, the Environmental Protection Agency ("EPA") proposed the "Clean Power Plan" ("CPP" or the "Plan").[2] As proposed, the Plan is the largest and most important component of the agency's efforts to regulate greenhouse gases ("GHGs") under the Clean Air Act ("CAA" or the "Act"). These efforts commenced in earnest after the Supreme Court's 2007 ruling in *Massachusetts v. EPA* that greenhouse gases are "air pollutants" within the definition of the CAA.[3] In the absence of Congressional action on climate change (such as a federal carbon tax), these regulatory efforts are the cornerstone of federal climate policy and arguably the most important developments in environmental law in recent decades. They are not without controversy, however: the CPP in particular is already the target of political and legal challenge, and further challenges are certain in the future.[4]

Critics make a variety of political or policy arguments—for example, some claim that the EPA should not take action in an area where legislation in Congress has failed (referring to 2009 cap-and-trade legisla-

2. *See* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830, 34,832 (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60) [hereinafter "CPP"].

3. *See* Massachusetts v. EPA, 549 U.S. 497, 532 (2007).

4. *See, e.g.*, Murray Energy Corp. v. EPA, No. 14-1112 (D.C. Cir. filed June 18, 2014) (arguing in petition that EPA lacks authority to regulate power plants under Section 111(d) of the Clean Air Act), *pet. for writ of prohibition denied*, In re Murray Energy Corp., 788 F.3d 330 (D.C. Cir. 2015).

tion that passed the House but failed in the Senate).[5] Others repeat a longstanding argument that unilateral U.S. emissions reductions, alone, will have little impact on climate risks.[6] Proponents of strong U.S. climate action have attempted to rebut these arguments and advanced others in favor of the proposal.[7]

### *A. The Clean Power Plan and Emissions Trading*

Under the Plan, the EPA will (through the states) impose carbon performance standards on existing fossil-fueled (primarily coal and natural gas) power plants.[8] The proposal is based on authority granted to the EPA and the states by § 111(d) of the CAA, a rarely-used provision.[9] When and if the existing source performance standards ("ESPS") embodied by the Plan are finalized and implemented, they will be environmentally and economically important—the EPA projects power sector emissions reductions of 30 percent over 2005 levels by 2030, with total benefits of $55–93 billion.[10] The Plan will subject the carbon emissions of a large sector of the economy to federally-led regulation for the first time. Even if the final CPP differs substantially from the proposal, costs and benefits will almost certainly remain large.

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5. *See, e.g.*, Laurence H. Tribe, *The Clean Power Plan Is Unconstitutional*, WALL ST. J. (Dec. 22, 2014), http://www.wsj.com/articles/laurence-tribe-the-epas-clean-power-plan-is-unconstitutional-1419293203 (arguing that "[t]he brute fact is that the Obama administration failed to get climate legislation through Congress. Yet the EPA is acting as though it has the legislative authority anyway to re-engineer the nation's electric generating system and power grid. It does not"). *See also* William Yeatman, *EPA's Illegitimate Climate Rule*, COMPETITIVE ENTER. INST. ONPOINT 2 (July 28, 2014) http://cei.org/sites/default/files/Yeatman%20-%20EPAs%20Illegitimate%20Climate%20Rule_0.pdf (arguing that "EPA's Clean Power Plan [l]acks Congressional [a]uthorization" because Congress has rejected "legislation that would have implemented a national climate change mitigation plan").

6. *See, e.g.*, Marita Noon, *EPA Clean Power Plan: All Pain – No Gain for American Jobs & Energy*, HEARTLAND INST. BLOG,(Sept. 19, 2014), http://blog.heartland.org/2014/09/epa-clean-power-plan-all-pain-no-gain-for-american-jobs-and-energy/ (arguing that "[t]he proposed EPA plan will cause harsh economic consequences while having virtually no impact on the reported goal of stopping global climate change").

7. *See, e.g.*, *Comments on EPA's Proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Generation Units*, NATURAL RES. DEF. COUNCIL (Dec. 1, 2014), http://docs.nrdc.org/air/files/air_14120101b.pdf (noting that "NRDC strongly supports this approach, which fully comports with the Clean Air Act" and arguing that the CPP is a "groundbreaking step toward combating climate change").

8. *See generally* CPP, *supra* note 3.

9. *See id.* at 34,832.

10. *See Overview of the Clean Power Plan: Cutting Carbon Pollution from Power Plants*, EPA.GOV, http://www2.epa.gov/carbon-pollution-standards/fact-sheet-clean-power-plan-overview (last updated May 11, 2015).

Moreover, the CPP will likely be the most significant and ambitious carbon-cutting measures taken to date at the federal level—only the EPA's stringent new fleet fuel economy ("CAFE") standards for road vehicles are of similar magnitude.[11] If the U.S. is to meet its ambitious emissions-reduction commitments, reducing emissions from the electric power sector is essential, and the CPP is the federal government's primary program for doing so.[12]

That success depends in large part on whether states' regulatory efforts under the Plan can include emissions trading among regulated power plants. Here (and throughout this Article), *emissions trading* refers to the ability of regulated emitters to trade among themselves such that they collectively meet a target set by a regulator (such as a total emissions cap or average emissions rate), without any specific source being required to meet an emissions target. In principle, emissions trading should reduce the cost of achieving a given emissions outcome, or enable more ambitious environmental goals to be achieved at the same costs as a regulatory program without it.

Although implementation is at least initially up to states, the EPA's proposal argues that trading is legal and encourages and envisions states' use of trading in their plans.[13] But § 111(d) of the CAA does not explicitly say whether trading is allowed, and the issue has never been resolved by a court in the 45-year history of the provision. The core question is relatively simple: May regulators allow regulated power plants to trade with each other (and, perhaps, get credit for certain off-site emissions-cutting projects) such that their collective average emissions meet a set standard? Or, must each plant individually comply with that standard?

The issue matters. Economic evidence suggests that trading is crucial to the Plan's cost-effectiveness, with costs increasing greatly if it is

11. *See* EPA, REGULATORY ANNOUNCEMENT: EPA AND NHTSA FINALIZE HISTORIC NATIONAL PROGRAM TO REDUCE GREENHOUSE GASES AND IMPROVE FUEL ECONOMY FOR CARS AND TRUCKS 2 (Apr. 2010), http://www.epa.gov/otaq/climate/regulations/420f10014.pdf (noting that finalized 2012-2016 fuel economy (CAFE) standards for light-duty vehicles are projected to achieve emissions reductions of 21% by 2030 from the regulated vehicles and net benefits of around $190 billion). Note that also-finalized and even more stringent fuel economy standards for 2017-2025 will achieve additional emissions reductions and benefits.

12. *See Fact Sheet: U.S. Reports its 2025 Emissions Target to the UNFCCC*, WHITEHOUSE.GOV (Mar. 31, 2015), https://www.whitehouse.gov/the-press-office/2015/03/31/fact-sheet-us-reports-its-2025-emissions-target-unfccc (noting US commitment of 26-28% emissions reductions below 2005 levels by 2025, and listing the Clean Power Plan's projected power sector emissions reductions of 30% by 2030 first among US emissions-cutting policies).

13. *See* CPP, *supra* note 3, at 34,927. EPA's arguments are discussed in detail in Section 0.

not available.[14] Specifically, this economic analysis indicates that, if the EPA and state regulators must restrict compliance options under the ESPS to emissions reductions at individual plants, the per-unit cost of such reductions will be substantially greater. As a result, the Plan would lead to fewer emissions reductions, greater costs, or (most likely) both. This is especially true with regard to reallocation of generation from coal power plants to lower-emitting natural gas power plants. Such reallocation or re-dispatch appears to be, by far, the largest and lowest-cost emissions reduction opportunity available in the power sector, and likely in the entire U.S. economy, rivaled only by improvements in consumer energy efficiency[15] (setting aside for now continuing debates over the volume of fugitive methane emissions from natural gas production).[16]

### *B. The Trading Debate*

Given the controversy over the CPP and the economic stakes, litigation over the legality of trading is likely. This Article discusses possible outcomes of such a challenge. Previous legal analysis has largely supported the EPA's pro-trading view, though a few critics (mostly, but not entirely, backed by regulated industries) have taken the opposite view by arguing that trading is incompatible with the statute.[17] This debate has focused on two battlegrounds. One is past EPA practice, where there are a few examples of trading. The other is the text of the statute, particularly the meaning of its requirement that performance standards "reflect [the] best system of emission reduction."[18]

In this Article, I argue that neither side's legal arguments are very strong, and that therefore, the legal status of trading under the CPP is much more uncertain than previously understood. Past EPA practice is of limited value since it points in both directions and has never been tested in court. More importantly, the "best system" language, however one interprets it, is irrelevant since it governs only the EPA's discretion in setting the standards, and not emitters' options for complying.

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14. This evidence, including modeling of hypothetical CAA carbon regulation with and without trading, is discussed in detail in Section 0.

15. *See, e.g.*, ANTHONY PAUL ET AL., RESOURCES FOR THE FUTURE, TAXING ELECTRICITY SECTOR CARBON EMISSIONS AT SOCIAL COST 13-15 (2013), http://www.rff.org/RFF/Documents/RFF-DP-13-23-REV.pdf (finding via modeling of the US electric power sector that a small carbon tax leads primarily to large-scale "substitution of gas for coal" while higher tax values lead to increased switching to nuclear and renewable generation).

16. *See, e.g.*, Michael Levi, *Climate Consequences of Natural Gas As a Bridge Fuel*, 118 CLIMATIC CHANGE 609 (2013).

17. *See infra* Section 0 for discussion of both sides' arguments to date.

18. Clean Air Act, 42 U.S.C. § 7401 et seq. (2012); *see also* Clean Air Act § 111(a), 42 U.S.C. § 7411(a) (2012).

In particular, § 111, I argue, says *almost nothing* about the legality of the most significant option made available under EPA's current proposal—trading among regulated sources.[19] The issue here is not merely that the statute is ambiguous regarding an important question, contrary to claims on both sides of a debate that plain language is on their side. That would be significant, though relatively common and unsurprising. Here, the statute is not just ambiguous—it is silent. And it is silent about not just an important question, but arguably the most important factors determining the shape of the regulation.

Since regulation under the CAA became the clear path forward for federal climate policy, scholars and interested parties have observed that § 111(d), a short and rarely-used provision, gives little guidance on what regulations based on the authority it grants will look like.[20] In fact, policymaking under the ESPS appears to be unmoored by statutory constraints to an even greater detail than these observers (myself included) had previously realized.

### *C. Does the EPA Get to Decide?*

How a reviewing court (initially the D.C. Circuit, and possibly the U.S. Supreme Court on appeal) would resolve this statutory gap is unclear. It is possible that the outcome would be simple: deference to the EPA's discretion in the face of congressional ambiguity, following *Chevron*. This would preserve trading. But congressional silence could be interpreted against the agency—the statutory gap might be too big. The large economic significance of the CPP and its basis in thin statutory text might also inspire a court to decide on more innovative and ambitious grounds. Dicta in other Clean Air Act cases[21] have suggested a limitation on *Chevron* deference in such cases, and even a successful nondelegation challenge cannot be ruled out entirely. In short, it is possible that litigation over trading will occasion a shift in the doctrine regarding deference to agency interpretations of law. Even if no doctrinal shift occurs

19. Somewhat more precisely, the statute says almost nothing about what range of compliance options regulators (states or EPA) are delegated authority to allow regulated existing sources to use.

20. *See, e.g.*, Environmental Law Institute, *Resolved: EPA and States Can Regulate Emissions Outside the Facility Fence Line Under Clean Air Act §111*, 44 ELR 10255, 10255 (2014) (including a debate transcript in which David Doniger of environmental group NRDC argues §111(d) is largely a blank slate for EPA regulation. Jeffrey Holmstead counters that, while the provision is not the "40 year old virgin" Doniger claims, it is still a relatively broad grant of authority, albeit one that, he argues, must be applied to each facility individually).

21. Whitman v. Am. Trucking Ass'n, 531 U.S. 457, 485 (2001); Util. Air Regulatory Grp. (UARG) v. EPA, 134 S. Ct. 2427, 2446 (2014).

and this is more or less a standard application of *Chevron*, the legality of trading under § 111(d) is uncertain.

### *D. Implications*

Even if the EPA eventually prevails, such great uncertainty is not good for effective policymaking. It makes regulated firms' decisions on capital investments in power plants much more difficult (and more likely to be wrong in retrospect, with long-term effects on ratepayers), reduces incentives to take early action to cut emissions, puts a greater burden on already-stretched state regulators, and weakens the influence of U.S. negotiators in international climate talks. The only sure solution is Congressional action, which appears unlikely in the current political environment.

### *E. Structure*

The following three Sections of this Article provide background information about the EPA's proposed CPP. Section II of this Article describes the statutory scheme for performance standards under § 111 of the CAA, while Sections III and IV discuss the proposed Clean Power Plan and the significance of trading for the Plan, respectively. If you are already familiar with the CPP, these sections can safely be skipped.

This Article's legal analysis is presented in the subsequent sections. Section V briefly describes legal arguments regarding trading among *new* emissions sources, followed by in-depth analysis of arguments for and against trading for *existing* sources in Section VI. Section VII discusses how courts might resolve statutory ambiguity regarding trading. Finally, conclusions and implications are presented in Section VIII.

## II. PERFORMANCE STANDARDS UNDER THE CLEAN AIR ACT

Among the many tools available under the CAA for limiting air pollution are performance standards for stationary emissions sources under § 111 of the statute. These standards are traditionally referred to as "new source performance standards" (or "NSPS") because, in their most common form (governed by § 111(b) of the statute), they apply only to new (or modified) stationary sources.[22] CAA § 111(d), however, also provides authority for applying performance standards to *existing*, unmodified sources in specific contexts.[23]

22. Clean Air Act § 111(b).

23. *Id.* at § 111(d). To avoid the oxymoronic term "existing source NSPS," this Article refers to Section 111(d) performance standards as ESPS.

*A. New Sources*

NSPS are among the most frequently used regulatory tools in the CAA, and have a long history. The process for setting these standards works as follows. As a threshold matter, CAA § 111(b) requires the EPA to specify categories of stationary emissions sources that "cause[] or contribute[] significant[ly] to[] air pollution which may reasonably be anticipated to endanger public health or welfare."[24] This standard is similar to that used elsewhere in the CAA to determine which *pollutants* should be regulated under the act,[25] but here, the statutory test is whether the group of *sources* emits air pollutants that endanger health or welfare. The agency has broad powers to define and revise these "source categories"[26] and has listed a large number of such categories in the Code of Federal Regulations, covering sources in all major industrial sectors of the economy.[27]

Once a source category has been defined, the EPA is directed by the statute to propose "standards of performance" for new sources in the category.[28] CAA § 111(b), however, says very little about the scope or character of these standards.[29] As is often the case, the statutory definitions section (§ 111(a)) does most of the work. For example, "new source" is defined to include not only newly constructed sources but also those that undergo modifications that increase their emissions.[30]

Most importantly for our purposes, § 111(a) defines "standard of performance" to mean:

> . . . a standard for emissions of air pollutants which reflects the degree of emissions limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any non air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.[31]

To set a performance standard as defined in § 111(a), therefore, the agency first identifies options available to emitters for reducing their emissions. It then determines which of the options identified strikes the

24. *Id.* at § 111(b)(1)(A).
25. *See, e.g., id.* at § 108; *id.* at § 202.
26. *See id.* at § 111(b)(1)(A).
27. *See* 40 C.F.R. § 60 (2014) (listing over 90 separate standards of performance covering sectors from "Large Municipal Waste Combustors That are Constructed on or Before September 20, 1994" to "Existing Sewage Sludge Incineration Units").
28. Clean Air Act § 111(b)(1)(B).
29. *Id.*
30. *See id.* at §§ 111(a)(2), (3).
31. *Id.* at § 111(a)(1).

right balance (in the agency's view) between emissions-reducing effectiveness, cost, and the other factors identified in the definition *and* is available in practice (i.e., has been "adequately demonstrated"). This gives the EPA an unenviable task of balancing these criteria. In practice, the EPA has identified "best systems" based on extensive technical analysis of options available to emitters for reducing their emissions; traditionally these have been technological upgrades.[32]

Once the agency has identified a "best system of emission reduction," it then sets a performance standard, usually expressed as an emissions rate (i.e., tons of a pollutant per hour) based on the emissions performance the EPA believes can be achieved through application of its identified system. As § 111(a) specifies, the performance standard "reflects the degree of emission reduction achievable through the application of the best system." In other words, the EPA's identification of the "best system" determines the *stringency* of the regulation.

New sources to which the performance standard is applied are not, however, required to use the identified "best system." CAA § 111(b)(5) specifies that:

> . . . nothing in this section shall be construed to require, or to authorize the Administrator to require, any new or modified source to install and operate and particular technological system of continuous emission reduction to comply with any new source standard of performance.[33]

In other words, regulated sources must meet the standard (again, usually an emissions rate), but are not limited to the compliance option on which the EPA based that standard, or even to the set of options the EPA considered. A regulated source, for example, could use new technology that the EPA concluded in its analysis had not been "adequately demonstrated," or could switch to a cleaner fuel instead of using the technology on which the EPA had based the standard.

This freedom to use compliance options other than those identified by the regulator is what makes § 111 regulations "performance standards" rather than command-and-control regulations. Performance standards offer flexibility to regulated entities and are favored by many economists and other policy analysts for their ability to reduce costs and

32. *See* DANIEL FARBER & ANN CARLSON, CASES & MATERIALS ON ENVIRONMENTAL LAW 495-96 (9th ed. 2014) (noting that NSPS "are the result of an intensive examination by agency and consultant engineers of particular classes of equipment, focusing on stack and fugitive emissions, available controls, costs, and alternative compliance regimes").

33. Clean Air Act § 111(b)(5).

encourage innovation.[34] Firms may be able to comply with a performance standard by doing something that the regulator did not consider, or idiosyncratic conditions may make an option that the regulator deemed costly or impractical on a general basis attractive for an individual firm. And firms that can innovate and control their emissions more cheaply have every incentive to do so. Under command-and-control regulation, which specifies a single means to comply, these options and incentives would be absent.

As discussed in detail below, the text of § 111 imposes few, if any, limits on the compliance options available to regulated emitters—the regulations are true performance standards.

Once the EPA has set NSPS for a source category, the statute requires the agency to review those standards at least every eight years.[35] The agency must update the standard to reflect new information regarding the "best system," (presumably resulting in tighter standards as technology and knowledge improve,) or the agency may "determine that such review is not appropriate in light of readily available information."[36]

The EPA has used the above-described process to issue a large number of NSPS over the past four decades, covering new sources in almost every class of stationary sources, from coal plants to oil and gas drilling operations.[37]

*B. Existing Sources*

Generally speaking, existing stationary emissions sources that are not being modified are not subject to performance standards. These unmodified sources must meet applicable NSPS when constructed, but are not subject to future, presumably stricter, performance standards. Instead, most emissions from existing sources are regulated under other CAA programs. For six "criteria" pollutants, such as sulfur dioxide ($SO_2$), nitrogen oxides ($NO_x$), ozone, and lead, states are charged with meeting national ambient air quality standards (NAAQS) set by the EPA and have broad authority to regulate any sources—including existing sources—within the state to do so.[38] These state regulations are contained within state implementation plans, or SIPs, which are subject to

34. *See, e.g.*, WALLACE E. OATES, THE ECONOMICS OF ENVIRONMENTAL REGULATION 30-31 (1996) (arguing that because of lower information requirements and greater efficiency, "a strong case can be made . . . for the use of performance standards instead of technology-based standards").

35. Clean Air Act § 111(b)(1)(B).

36. *Id.*

37. *See* 40 C.F.R. § 60 (2014).

38. *See* Clean Air Act § 110.

EPA approval.[39] For hazardous or toxic pollutants, both new and existing sources are subject to separate, more stringent federal performance standards under § 112 of the CAA.[40]

However, not every air pollutant falls into one of these two categories—criteria pollutants with corresponding NAAQS or hazardous pollutants regulated under § 112. For such pollutants, CAA § 111(d) provides a mechanism for regulating emissions from existing sources with performance standards—the ESPS.[41] Section 111(d) was apparently a very late addition to the 1970 Clean Air Act, created in response to House and Senate disagreement over how (and whether) to fill this regulatory gap.[42]

This provision has only very rarely been used, largely because there are few pollutants with significant health or welfare impacts that have not been regulated under the NAAQS or § 112. In fact, until its recent proposal, the EPA had only issued thirteen regulations imposing ESPS under § 111(d) since the provision was created in the 1970s, six of which are separately mandated by another CAA provision.[43]

Carbon dioxide and many other GHGs, however, *do* fall into this statutory gap. GHGs have not been listed by the EPA as a criteria pollutant subject to the NAAQS[44] or as a hazardous pollutant under § 112. Section 111(d) ESPS have therefore taken on major new significance, as

39. *Id.*

40. *See id.* at § 112.

41. *Id.* at § 111(d). Because of differences between the House and Senate versions of the 1990 amendments to the CAA that were not properly resolved in conference, some controversy over which sources may be regulated under Section 111(d) persists. *See also* Kate Konschnik, *EPA's 111(d) Authority – Follow Homer and Avoid the Sirens*, LEGAL PLANET (May 28, 2014), http://legal-planet.org/2014/05/28/guest-blogger-kate-konschnik-epas-111d-authority-follow-homer-and-avoid-the-sirens/ (noting that "[s]ome argue that the 1990 House-originating amendment bars EPA from using 111(d) to target unregulated pollution from power plants, since EPA previously regulated power plant HAPs under Section 112" and that "[t]hese arguments all but void Section 111(d), since nearly all major stationary sources are regulated under Section 112"). This issue is currently being litigated in the D.C. Circuit in *Murray Energy Corp. v. EPA* (*see supra* note 5).

42. Robert R. Nordhaus & Avi Zevin, *Historical Perspectives on § 111(d) of the Clean Air Act*, 44 ELR 11095, 11096-97 (2014).

43. Robert R. Nordhaus & Ilan W. Gutherz, *Regulation of $CO_2$ Emissions From Existing Power Plants Under § 111(d) of the Clean Air Act: Program Design & Statutory Authority*, 44 ELR 10366, 10372-73 (2014).

44. A strong argument can be made, however, that EPA is legally required to list GHGs as criteria pollutants, though the NAAQS regulatory program is probably not a good fit for climate regulation. *See generally* Nathan Richardson, *Greenhouse Gas Regulation Under the Clean Air Act: Does* Chevron *Set the EPA Free?*, 29 STAN. ENVTL. L. J. 283 (2010).

recognized by researchers after the failure of cap-and-trade legislation in 2009 and as confirmed by EPA's 2014 ESPS proposal.[45]

ESPS lack the wealth of precedent present in the NSPS context, so any description of how they work in practice requires greater reliance on the statutory text and involves some conjecture. Some things, however, are clear. Broadly speaking, the chief difference between ESPS and NSPS (beyond the different sources to which they apply) is that for ESPS, *states* are the primary regulators, not the federal EPA.

Under § 111(d), EPA is directed to:

> (1) . . . prescribe regulations which shall establish a procedure similar to that provided by [CAA § 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. . .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.
>
> (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 7410 (c) of this title in the case of failure to submit an implementation plan . . .

This short statutory text leaves significant ambiguity as to how regulations will work in practice, as discussed in detail below. Nevertheless, it is possible to draw some conclusions. First, ESPS may only apply to existing sources in source categories already subject to NSPS.[46] Second, the EPA's role is primarily one of procedural management and

45. *See generally* Nathan Richardson, Art Fraas, & Dallas Burtraw, *Greenhouse Gas Regulation Under the Clean Air Act: Structure, Effects, & Implications of a Knowable Pathway*, 41 ELR 10098 (2011).

46. It is not clear whether ESPS may apply to a source category subject to *any* NSPS, or whether the category must be subject to an NSPS for the specific pollutant regulated by the ESPS in question. For example, coal power plants are subject to a wide variety of NSPS covering $SO_2$, $NO_x$, and other "conventional" pollutants. It is unclear whether these NSPS are sufficient to provide the Section 111(d) legal basis for GHG ESPS, or whether GHG NSPS must first be imposed (and survive legal challenge).

oversight. States are the primary regulators. Each state must write a "plan" detailing the ESPS it will propose and submit that plan to the EPA for approval. Once approved, states, not the EPA, actually set, implement, and enforce the performance standards on sources within their borders. The EPA's role, however, is not purely procedural. It must at least tell states what their plans must aim to achieve for them to be approved by the EPA–without such guidance, states would be left to guess at the EPA's approval criteria. EPA regulations implementing § 111(d) therefore indicate that the agency will provide substantive "guidelines" for state plans.[47] In practice, these guidelines effectively set the minimum stringency of the ESPS.

This process is an exercise in cooperative federalism, explicitly modeled on § 110 of the CAA,[48] under which states must submit plans (state implementation plans or SIPs) aimed at achieving federally-set national ambient air quality standards (the NAAQS).[49] The NAAQS SIP process is well understood and is one of the cornerstones of CAA regulation.

Third and finally, the EPA also has a secondary, backstop role. CAA § 111(d)(2) grants the EPA authority to prescribe plans applying to a state that "fails to submit a satisfactory plan" on its own and to enforce state (or EPA) plan provisions "in cases where the [s]tate fails to enforce them."[50] These provisions are analogs of similar provisions in § 110 allowing the EPA to write and enforce "federal implementation plans" or FIPs when states fail to submit adequate SIPs.

47. *See* 40 C.F.R. § 60.22 (2014) (stating that "[c]oncurrently 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 containing information pertinent to control of the designated pollutant form designated facilities"); *see also* 40 C.F.R. § 60.23 (stating that "within 9 months after notice of the availability of a final guideline document is published under § 60.22(a), each State shall adopt and submit to the Administrator, in accordance with § 60.4 of subpart A of this part, a plan for the control of the designated pollutant to which the guideline document applies").

48. *See* Clean Air Act § 111(d)(1), 42 U.S.C. § 7411(d)(1) (2012) (stating that "[t]he Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 7410 of this title under which each State shall submit to the Administrator a plan . . . ").

49. *See generally id.* at § 110.

50. *Id.* at § 111(d)(2).

## III. REGULATING GHGS UNDER THE CLEAN AIR ACT

### *A. Historical Background*

Using the CAA to regulate GHG emissions was first seriously discussed in the late 1990s near the end of the Clinton administration.[51] Under President George W. Bush, however, the EPA argued that GHGs either could not or should not be regulated under the CAA and refused to consider regulation.[52] That position was challenged by states and environmental groups, and was ultimately rejected in 2007 by a 5-4 majority of the U.S. Supreme Court in *Massachusetts v. EPA*.[53] *Massachusetts* clarified that GHGs *are* "air pollutants" under the CAA definition, and therefore are subject to regulation.[54] The Bush EPA, however, took little action on GHGs before the 2008 election, issuing only a "Notice of Proposed Rulemaking."[55]

After the 2008 election, attention shifted from the EPA to Congress. Democrats' success in the election and the support of both presidential candidates led many to believe that comprehensive new climate legislation creating a cap-and-trade system could pass. These hopes were not fulfilled, however—although the Waxman-Markey cap-and-trade bill narrowly passed the House in 2009, similar legislation failed in the Senate.[56] Republican success in the 2010 midterm elections, declining support for climate legislation among some Democrats, and focus on other political priorities has since made climate legislation politically unrealistic.

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51. *See* PHILIP A. WALLACH, U.S. REGULATION OF GREENHOUSE GAS EMISSIONS 2 (Oct.2012), http://www.brookings.edu/~/media/research/files/papers/2012/10/ 26%20 climate%20change%20wallach/26%20climate%20change%20wallach.pdf (noting that "[d]uring [the late 1990s], the EPA refrained from taking regulatory action to control GHG emissions, although under Clinton's Administrator, Carol Browner, the agency indicated that it believed it had the legal power to do so under the Clean Air Act if it formally found that greenhouse gases endanger public health or welfare").

52. *See* Massachusetts v. EPA, 549 U.S. 497, 511 (2007) (noting that EPA rejected a petition seeking climate-driven CAA regulation, and that "[t]he Agency gave two reasons for its decision: (1) that contrary to the opinions of its former general counsels, the Clean Air Act does not authorize EPA to issue mandatory regulations to address global climate change; and (2) that even if the Agency had the authority to set greenhouse gas emission standards, it would be unwise to do so at this time").

53. *Id.* at 532.

54. *Id.* at 528 ("The statutory text forecloses EPA's reading.").

55. *See* EPA, Regulating Greenhouse Gas Emissions Under the Clean Air Act: Advanced Notice of Proposed Rulemaking, 73 Fed. Reg. 44,354 (July 30, 2008).

56. *See 111th Congress Climate Change Legislation*, CTR. FOR CLIMATE & ENERGY SOLUTIONS, http://www.c2es.org/federal/congress/111.

### *B. Initial Regulatory Steps—Endangerment and Transportation*

Relatively quickly after the failure of cap-and-trade in Congress, it became clear to many observers and the Obama administration itself that the CAA once again provided the only plausible pathway forward for federal climate policy, at least over the short-to-medium term. Scholars and analysts, drawing on the 2008 NPRM and new economic and legal analysis, began to identify and study plausible regulatory pathways.[57] At the same time, the EPA itself began to take steps toward regulatory action, beginning in late 2009 with an "endangerment finding" formally stating the agency's view that GHGs present a threat to health and welfare.[58]

Although GHG emissions are pervasive throughout the economy, two sectors—transportation and electric power—account for the significant majority of emissions. The EPA therefore has focused its regulatory attention on those two sectors.

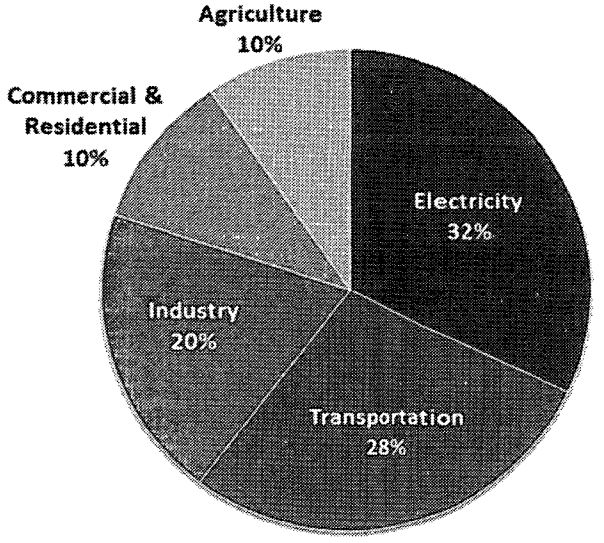


*Figure 1: US GHG Emissions by Sector (2012)*[59]

57. *See, e.g.*, Inimai M. Chettiar & Jason A. Schwartz, *The Road Ahead: EPA's Options & Obligations for Regulating Greenhouse Gases*, INST. FOR POLICY INTEGRITY (Apr. 2009), http://policyintegrity.org/files/publications/TheRoadAhead.pdf; Nathan Richardson, Art Fraas, & Dallas Burtraw, *Greenhouse Gas Regulation Under the Clean Air Act*, *supra* note 45.

58. EPA, Endangerment & Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009).

59. Source: EPA, HOUSE COMM. ON SCIENCE, SPACE, & TECH., HEARING CHARTER, EPA'S CARBON PLAN: FAILURE BY DESIGN 2 fig.1 (July 30, 2014),

The first major regulatory steps were aimed at motor vehicle emissions and were based on authority under § 202 of the CAA (not coincidentally, this was the provision at issue in *Massachusetts*). The agency, in concert with the Department of Transportation, issued significantly tightened corporate average fuel economy (CAFE) standards for future vehicles.[60] These regulations require annual fuel economy improvements up to 54.5 miles per gallon in model year 2025 and are projected to reduce US GHG emissions by 6 billion metric tons over their lifespan.[61]

### *C. Regulating Emissions From Electric Power*

The EPA next turned its attention to limiting GHG emissions from the electric power sector. In many ways, the sector is a natural target for EPA carbon regulation. As noted above, the sector is the single largest contributor to GHG emissions. Fossil-fueled power plants, especially coal-fired plants, are the largest emitting facilities in the country.[62] In contrast to motor vehicles and small industrial sources, regulating the power sector requires regulation at a relatively small number of facilities. The EPA also has extensive experience regulating these sources, since they are also major emitters of other pollutants. Perhaps most importantly, there is strong evidence that the cheapest large-scale emissions reductions available in the U.S. economy are in the electric power sector, in large part due to opportunities to switch from carbon-intensive coal generation to relatively cleaner gas generation.[63]

There are, however, particular challenges as well. The electric grid is a complex system managed by collaboration between independent firms, regulated utilities, and state and federal government actors. Electric system reliability is crucial—neither regulators nor consumers are willing to tolerate reduction in service. And while the EPA has a long relationship with firms in the industry, that relationship has been marked with acrimony and litigation as often as productive cooperation.

Perhaps most importantly, the electric power sector involves very large capital investments with very long time horizons because power

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https://science.house.gov/sites/republicans.science.house.gov/files/documents/ESPS%20Hearing%20Charter.pdf.

60. *See* EPA, Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule, 75 Fed. Reg. 25,324 (May 7, 2010); EPA, 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,624 (Oct. 15, 2012).

61. *See Regulations & Standards: Light Duty*, EPA.GOV, http://www.epa.gov/oms/climate/regs-light-duty.htm (last updated June 18, 2015).

62. *See 2013 Greenhouse Gas Emissions from Large Facilities*, EPA.GOV, http://ghgdata.epa.gov/ghgp/main.do (listing and mapping GHG emissions sources in the US; the 27 largest GHG emitters are all coal-fired power plants) (last visited July 26, 2015).

63. *See, e.g.*, PAUL ET AL., *supra* note 15.

plants are expensive and tend to stay in operation for many decades. This makes it more difficult to achieve significant emissions reductions through regulation. In the transportation sector, regulations on new vehicles alone—the CAFE standards—are sufficient since the vehicle fleet turns over relatively quickly as consumers buy new cars. But in the electric power sector, regulation applying only to new plants can reduce emissions only very slowly. Coal power plants built 70 years ago are still in operation today, and the average age of the coal fleet is 42 years.[64] Regulation of existing power plants is therefore required if meaningful progress is to be made at reducing power sector emissions over timeframes less than a generation.

1. New Sources

That does not mean, however, that regulations on new sources are meaningless, and indeed the EPA's initial regulatory efforts for the power sector have been aimed at new sources. These efforts have used two parallel and interrelated regulatory tools—new source review and the NSPS.

All major new or modified stationary sources are required to undergo a case-by-case review process under the CAA called, generally, new source review.[65] In this review, the EPA (or, often, state regulators under delegated authority) assess construction plans and determine whether the proposed source's emissions control technology is adequate. Generally, these reviews require "best available control technology," or BACT.[66] In 2011, the EPA issued guidance and rulemakings under which it committed to consider GHG emissions control technology in future BACT reviews, at least for very large GHG emitters.[67] This and other related rules were challenged in litigation, and although elements were struck down by the U.S. Supreme Court in *Utility Air Regulatory Group v. EPA*,[68] all new large power plants remain subject to NSR, including

64. Steven Mufson, *Vintage U.S. Coal-fired Power Plants Now An 'Aging Feet of Clunkers'*, WASH. POST (June 13, 2014), http://www.washingtonpost.com/business/economy/a-dilemma-with-aging-coal-plants-retire-them-or-restore-them/2014/06/13/8914780a-f00a-11e3-914c-1fbd0614e2d4_story.html.

65. Clean Air Act § 169, 42 U.S.C. § 7479 (2012).

66. *Id.* at § 169(3).

67. *See* EPA, PSD AND TITLE V PERMITTING GUIDANCE FOR GREENHOUSE GASES, EPA-457/B-11-001, at 2 (Mar. 2011), http://www.epa.gov/nsr/ghgdocs/ghgpermittingguidance.pdf; *see also* EPA, Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514 (June 3, 2010) (restricting GHG NSR to certain large emitting sources).

68. Util. Air Regulatory Grp. (UARG) v. EPA, 134 S. Ct. 2427 (2014).

GHG BACT review.[69] Few such reviews have taken place to date, however, so it is not immediately clear what the EPA will determine is "best available control technology" for power-plant GHG emissions.

Some of that ambiguity will be resolved when and if NSPS proposed for fossil-fuel electric power plants by the EPA in 2013[70] (and revised in 2014)[71] are finalized. These proposed NSPS would set a maximum emissions rate (expressed in pounds of $CO_2$ per megawatt-hour of power generation) for three specified source categories of emitters.[72] One of these categories broadly covers coal-fired steam power plants, while the other two cover natural gas plants (including natural gas combined-cycle or NGCC plants).[73] The categories are assigned slightly different performance standards of 950–1,110 lbs $CO_2$/mwh for large gas plants, and 1,000–1,200 lbs $CO_2$/mwh for all other plants, including coal.[74] The gas standard can be met by an industry-standard new NGCC plant, but the coal standard cannot be met by even the most efficient new coal-fired plant unless it employs carbon capture and storage (CCS) technology.[75]

This regulatory decision has proved controversial, with critics claiming that CCS is not "adequately demonstrated" because § 111(a) of the CAA requires technologies on which NSPS are based to be.[76] The EPA counters by claiming that CCS has indeed been demonstrated, and that in any case no (or almost no) coal plants are likely to be built anyway.[77] It remains to be seen whether the EPA will continue to require CCS for new coal plants in its final NSPS, set to be issued in 2015.[78]

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69. *See* Memorandum: Next Steps & Preliminary Views on the Application of Clean Air Act Permitting Programs to Greenhouse Gases Following the Supreme Court's Decision in *Utility Air Regulatory Group v. EPA* (July 24, 2014), http://www.epa.gov/nsr/documents/20140724memo.pdf (noting that "[i]n the EPA's current view, Step 1 sources remain subject to the PSD BACT requirement for GHG, as well as other pollutants, if they emit those pollutants at or above certain thresholds").

70. EPA, Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22,392 (Apr. 13, 2012).

71. EPA, Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 1,430 (Jan. 8, 2014) [hereinafter NSPS].

72. *Id.* at 1,453.

73. *Id.*

74. *Id.* at 1,447.

75. *Id.* at 1,430.

76. *See* Letter from Fred Upton et al., House Committee on Energy & Commerce, to Gina McCarthy, EPA Administrator (Nov. 15, 2013), http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/letters/20131115EPA.pdf (arguing that CCS is "not commercially viable" and that demonstration projects referenced by EPA may not be considered due to provisions of the Energy Policy Act of 2005).

77. *See* EPA, REGULATORY IMPACT ANALYSIS FOR THE PROPOSED STANDARDS OF PERFORMANCE FOR GREENHOUSE GAS EMISSIONS FOR NEW STATIONARY SOURCES: ELECTRIC UTILITY GENERATING UNITS, EPA-452/R-13-003, at 2-2 (Sept. 2013),

As proposed, the power sector NSPS do not allow any "beyond the fence line" compliance options—they do not allow trading or crediting of off-site projects like demand-side energy efficiency. Each new plant in one of the regulated source categories must individually meet the NSPS.[79]

When the NSPS are finalized, they will resolve some ambiguity about future power plant NSR determinations. Since all new sources in a category with an NSPS must meet that performance standard, the NSPS serve as an NSR floor. Regulators may determine that BACT requires *better* emissions performance than the NSPS, but not *worse* performance.

2. Existing Sources

The most significant move by the EPA to regulate GHG emissions, however, was its June 2014 proposed "Clean Power Plan" in which it proposed performance standards applying to coal and gas power plants (the same source categories as regulated under the NSPS proposal). The Plan, along with the agency's NSPS proposal for the same sources was finalized in August 2015, just before this Article went to press.[80] The Plan is projected to reduce emissions from the power sector by 30 percent relative to 2005 levels by 2030.[81] Since about 32 percent of total U.S. emissions are currently attributable to the power sector, the Plan would result in a nearly 10 percent reduction in U.S. emissions over the same time period, a substantial part of the President's stated emissions goals.[82]

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http://www2.epa.gov/sites/production/files/2013-09/documents/20130920proposalria.pdf (noting that "[f]or new sources, the EPA and other energy modeling groups such as EIA do not project that any new coal capacity without federally-supported CCS will be built in the analysis period").

78. *See* Dawn Reeves, *EPA Considers 'Fallback Options' for Dropping CCS from Power Plant NSPS*, INSIDEEPA.COM (2015), http://insideepa.com/login-redirect-no-cookie?n=179275&destination=node/179275.

79. NSPS, *supra* note 71, at 1,446 ("We are proposing that all affected new fossil fuel-fired EGUs are required to meet an output-based emission rate of a specific mass of $CO_2$ per MWh of useful output.").

80. *See* Alan Neuhauser, *EPA to Issue Carbon Rules by Summer*, U.S. NEWS & WORLD REP., (Jan. 7, 2015, 3:30 PM), http://www.usnews.com/news/articles/2015/01/07/epa-to-complete-clean-power-plan-carbon-rules-by-summer (noting that Janet McCabe, acting assistant administrator for EPA's Office of Air and Radiation, announced in a call with reports that ESPS will be finalized by "mid-summer 2015").

81. *See* CPP, *supra* note 3, at 34,832.

82. In 2009, President Obama's set emissions-reduction goals for the US "in the range of" 17% reductions from 2005 levels by 2020. *See* Darren Samuelsohn and Lisa Friedman, *Obama Announces 2020 Emissions Target, Dec. 9 Copenhagen Visit,* NY TIMES (Nov. 25, 2009), http://www.nytimes.com/cwire/2009/11/25/25climatewire-obama-announces-2020-emissions-target-dec-9-22088.html. In 2014, the President announced further goals of 26-28% reductions from 2005 levels by 2025 in a bilateral

Under the Plan, the EPA will require states to limit carbon emissions from most fossil-fuel power plants using its authority under § 111(d). In simplest terms, the agency has proposed performance targets independently for each state based on four "Building Blocks" (described below).[83] States must then submit plans to the EPA for approval detailing how sources in the state will meet that target. The Plan (like all § 111(d) regulations, as described above), therefore, puts the EPA in the role of making an initial stringency determination and states in the role of implementation and regulatory design. The EPA's role is somewhat broader in practice. The proposed rule, for example, makes a variety of suggestions and assumptions regarding states' implementation, including discussion of emissions trading.[84] The EPA also, as described above, has backstop regulatory authority if states fail to submit adequate plans. The agency has also promised to include a model plan along with the final rulemaking.[85]

The state goals set by the EPA are stated in terms of emission rates (lbs of $CO_2$ per megawatt-hour of generation), and each state is given two goals—an interim goal that must be met on average between 2020 and 2029 and a final goal that must be met in 2030.[86] The EPA determined goals for each state based on four Building Blocks, each encompassing different types of emissions-cutting actions that the agency has concluded are possible. The four building blocks are: (1) efficiency improvements at existing power plants; (2) increased use of lower-emitting gas plants (primarily at the expense of coal); (3) increased use of renewable generation; and (4) increased end-user energy efficiency.[87]

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agreement with China. See *FACT SHEET: U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation*, WHITEHOUSE.GOV (November 11, 2014), https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c.

83. CPP, *supra* note 3.

84. *Id.* at 34,833 (stating that "[w]hile this proposal lays out state-specific $CO_2$ goals that each state is required to meet, it does not prescribe how a state should meet its goal. CAA section 111(d) creates a partnership between the EPA and the states under which the EPA sets these goals and the states take the lead on meeting them by creating plans that are consistent with the EPA guidelines. Each state will have the flexibility to design a program to meet its goal in a manner that reflects its particular circumstances and energy and environmental policy objectives"). *See also infra* Section 0 for detailed discussion of trading under the CPP.

85. *See* EPA, *Clean Power Plan Supplemental Proposal*, (Jan. 7, 2015), http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-supplemental-proposal (noting that "EPA announced it will finalize the proposed Clean Power Plan by midsummer 2015. In addition, the agency will begin the regulatory process for proposing a federal plan"). It is not immediately clear if this EPA plan is intended as a model for states to emulate, a preview of what a federal plan would look like in the event states fail to act, or both.

86. CPP, *supra* note 3, at 34,837.

87. *Id.* at 34, 836.

It is important to remember that the Plan is still a set of performance standards, not command-and-control regulation. The EPA used these four Building Blocks to calculate the emissions reductions (or, more accurately, emissions *rate* reductions) that it believes are achievable in each state and to set goals accordingly. But states are not required to use all (or, indeed, any) of these approaches in reducing emissions from regulated sources in the state. The EPA has also proposed allowing states to convert their emissions rate goal (stated in lbs/$CO_2$ per MWh) into a pure emissions or mass goal (stated in lbs of $CO_2$) granting states even more flexibility in achieving the goals.[88]

Under the proposed Plan, states are charged with submitting state plans for EPA approval by mid-2017 (or mid-2018 if they are collaborating with other states on a multi-state plan, presumably involving regional emissions trading).[89]

In early 2015, EPA announced its intention to release a federal plan document in the summer of 2015, at the same time as the Plan is set to be finalized.[90] It is not clear whether this federal plan is intended to be a model for state plans, a preview of what federal implementation in the event of state failure to act would look like, or both.

## IV. TRADING—AND WHY IT MATTERS

The Clean Power Plan deviates from the relatively few past EPA § 111(d) regulatory programs in two important respects. The first is its scope—the electric power sector is arguably the most environmentally and economically significant sector subject to significant EPA regulation. The Plan will subject existing power plants to carbon regulation for the first time and likely will result in significant shifts in the sector, with large associated costs. Past § 111(d) regulations have focused on much smaller sectors, such as municipal waste combustors.[91] As noted above, this section of the statute has not been used nearly as extensively and frequently as other CAA authority, including regulations under the §§ 108–110 national ambient air quality standards program, § 202 vehicle regulations (including fuel economy standards), or even § 111(b) *new* source performance standards.

Second, the Plan envisions emissions trading among regulated sources. Though the decision of whether to allow trading is ultimately left to states, the Building Blocks that make up the EPA's stringency determination, its encouragement to states to develop multi-state plans, and

88. *Id.* at 34, 850–51.

89. *Id.* at 34, 851.

90. *See* EPA, *supra* note 85.

91. *See, e.g.*, EPA, Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustors, 71 Fed. Reg. 27,324, 27,324 (May 10, 2006).

other discussion in the proposed Plan make it clear that the agency expects some, if not all, states to allow emitters to trade with each other. This is a break from past practice under § 111. No NSPS allows for emissions trading (and, as the next section discusses, such trading is likely illegal or at least impractical). Similarly, there is almost no precedent for trading in the few past ESPS programs. As also discussed in the next section, the only two examples are an aborted program rejected by courts on unrelated grounds and a small trading system for municipal waste combustors that has never been challenged in court and which derives its authority from multiple provisions of the CAA.

These two breaks with regulatory tradition—ESPS for a major sector of the economy and allowing trading in an ESPS program—are intertwined. The size and character of the electric power sector makes emissions trading an extremely valuable tool for reducing the costs of emissions reduction. Without trading, costs will likely be so great that that the EPA's targets are rendered practically and politically realistic. The success of the Clean Power Plan in anything like its current form and ambition depends on emissions trading.

### *A. Trading Under the Clean Power Plan*

In its proposed NSPS for power-sector GHGs, the EPA does not propose to allow any form of trading among regulated facilities. But the proposed ESPS—the Clean Power Plan—*do* envision trading. To be clear, the EPA's proposed Plan does not *require* emissions trading or even say much about how it would work in practice. Officially, the decision over whether and how to allow trading is left to the states. But the EPA does explicitly state in the Plan that it believes states may allow trading, and components of the plan make it clear that the EPA expects them to do so.

In the Plan, the EPA states that,

> [t]o meet its goal, each state will be able to design programs that use the measures it selects, and these may include the combination of building blocks most relevant to its specific circumstances and policy preferences. States may also identify technologies or strategies that are not explicitly mentioned in any of the four building blocks and may use those technologies or strategies as part of their overall plans (e.g., *market-based trading programs* or construction of new natural combined cycle units or nuclear plants). Further, the EPA's approach allows *multi-state compliance strategies*.[92]

92. CPP, *supra* note 3, at 34, 837 (emphasis added).

In other words, the EPA views market-based trading as an option available to states for compliance with the Plan, including interstate trading.

Furthermore, the EPA's building blocks themselves each imply states attempting to achieve them will use emissions trading to do so. To be clear, states are not required to achieve what the EPA projects in each or any Building Block, but the building blocks do indicate at least the kind of compliance strategies the EPA believes states will, or at least may, take.

Building Block 1 is stated in the form of a 6 percent *average* heat rate improvement across all coal-fired power plants.[93] It is extremely unlikely that each coal plant could meet this requirement even if it is achievable across the fleet as a whole.[94] In principle, a state could impose plant-specific goals that would result in the 6 percent average improvement, but doing so would be extremely technically and administratively difficult. To do so, states would have to determine the efficiency improvements available at a target cost for each plant or class of plants, a difficult task for plant owners, much less regulators. A tradable performance standard, in which coal plants exceeding the target may trade credits to other plants that fail to meet it, would be much simpler.[95]

Similarly, the shift from coal to gas generation envisioned under Building Block 2 would likely be much easier to achieve via trading of

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93. *Id.* at 34, 860.

94. Many analysts have concluded that even a 6% average goal is unrealistically ambitious. *See, e.g.*, PACE GLOBAL, EPA'S CLEAN POWER PLAN: ADDRESSING KEY QUESTIONS 2 (2014), http://www.paceglobal.com/bdpictures/091714CarbonWebinar/Pace_Global_EPAs_Clean_Power_Plan_WP.pdf (characterizing the 6% goal as "aggressive" and suggesting that 1-3% reductions would be "more realistic"); NERA ECONOMIC CONSULTING, POTENTIAL ENERGY IMPACTS OF THE EPA PROPOSED CLEAN POWER PLAN 12 (2014), http://www.nera.com/content/dam/nera/publications/2014/NERA_ACCCE_CPP Final_10.17.2014.pdf ( "In its calculations of state targets, EPA assumed that all coal units could achieve a 6% improvement in their efficiency (i.e., reduction in heat rate), and in its cost modeling EPA also assumed this 6% improvement could be achieved at a capital cost of $100/kilowatt (kW). We understand that various industry experts have concluded that these assumptions are unrealistic in light of practical engineering considerations, actual industry experience, and the incentives owners of electricity generators already have to improve plant efficiency. Our clients suggested an alternative set of assumptions, in particular, (a) for a cost of $100/kW, a maximum efficiency improvement of 1.5% would be achievable for the most inefficient existing units and a 0.75% improvement would be available for units with average efficiency, and (b) no efficiency improvements would be available to the most efficient units."). *But see* BURTRAW ET AL., RESOURCES FOR THE FUTURE, COMMENTS TO THE US ENVIRONMENTAL PROTECTION AGENCY ON ITS PROPOSED CLEAN POWER PLAN 5 (2014), http://www.rff.org/RFF/Documents/RFF-Rpt-CPPComments.pdf (stating that ". . .the evidence suggests EPA's finding that a 6 percent reduction in heat rate from 2012 levels is technically plausible and economically reasonable—given that the agency adopts a flexible approach to achieve compliance"; according to the author, "flexible" in this context means emissions reductions from greater utilization of more efficient units).

95. *See generally* Dallas Burtraw, Art Fraas, & Nathan Richardson, *Tradable Standards for Clean Air Act Carbon Policy*, 42 ELR 10338 (2012).

emissions credits between coal and gas plants than it would through state command-and-control decisions over power dispatch and plant operation, at least outside of very small states with only a few plants.

The increased renewable generation and demand-side energy efficiency envisioned by Building Blocks 3 and 4 would very likely also involve some type of trading system so that the emissions reductions achieved by renewable and efficiency projects could be attributed to fossil power plants actually regulated under the Plan. Without such a system, individual regulated plants would be required to independently invest in such projects despite the fact that opportunities for such projects likely differ widely. As noted above, however, this paper focuses on trading among regulated emitters (in the case of the Plan, fossil power plants) rather than how off-site projects like those in Building Blocks 3 and 4 are credited. See Section VI.C for more discussion of how renewables and energy efficiency might be treated legally.

In practice, separate trading systems aimed at achieving each Building Block (or other goals selected by states in their plans) could be replaced with a general emissions trading system across all regulated sources. Such a system would presumably be more cost-effective since it would include a broader range of emissions-reduction opportunities. Under such a system, the mix of actions taken by emitters to achieve the target state emissions rate could include emissions improvements at coal plants, shifts in generation from coal to gas, or other options. Individual emitters would take such actions in proportion to their relative costs—costs that regulators need not know in advance.

The EPA's regulatory impact analysis of the Clean Power Plan envisions such a general trading system. It assumes that state plans would, in essence, adopt a simple tradable performance standard and "allow []averaging of emissions rates within each individual state"— perhaps with some innovative elements such as inter-year trading:

> All compliance scenarios modeled include an assumption that affected sources within states are able to meet state goals collectively, by averaging all of their emissions relative to all of their generation. This approach enables some sources to emit at rates higher than the relevant goal, as long as there is corresponding generation coming from sources that emit at a lower rate such that the goal (in lbs/MWh) is met across all affected sources collectively. The average emissions rate at covered sources must be less than or equal to the applicable state goal, on average, over the entire compliance period, but not in any particular year.[96]

96. EPA, REGULATORY IMPACT ANALYSIS FOR THE PROPOSED CARBON POLLUTION GUIDELINES FOR EXISTING POWER PLANTS AND EMISSION STANDARDS FOR MODIFIED AND

It also includes analysis of an alternative scenario involving interstate trading.[97] In other words, the EPA assumed that, when determining the proposed Plan's cost and balancing those costs against climate and other benefits, states would allow trading (though the EPA is clear that implementation decisions are ultimately up to states). The RIA does not include an alternative scenario in which each regulated source must independently meet performance standards.

This evidence from the Clean Power Plan proposal and RIA indicates that the EPA believes emissions trading among regulated sources is legal, likely to be pursued by states, and crucial to the balance of costs and benefits assumed by the agency in crafting the proposal.

### *B. Why Trading Matters*

This assumption that trading is important to cost-effectiveness is not surprising and is supported by external research examining the Plan proposal.

The simple reason is that flexibility reduces costs. Economists have long recognized that if (as is usually the case) emissions reduction costs among a class of emitters are heterogeneous, it is more cost-effective for those emitters with lower abatement costs to reduce emissions more than those with higher abatement costs. In principle, regulators could capture these efficiency improvements by assigning emitters different targets based on their abatement costs—strict targets for those with low abatement costs and lenient targets (or even no regulation at all) for those with high costs. But such an approach requires the regulator to have good information about abatement costs or to expend significant resources determining those costs. Market-based regulation, such as emissions trading, allows the efficiency benefits of heterogeneous abatement to be achieved without assuming any regulator knowledge of abatement costs for individual emitters. Under such a system, emitters with low abatement costs can over-comply with targets and then trade that over compliance (in the form of allowances or credits) to other sources with higher abatement costs that under-comply.

Trading systems have a history of success and cost-effectiveness, with many such programs having been implemented under Clean Air Act authority—most notably the Title IV $SO_2$ (acid rain) trading program and the NOx Budget Program.

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RECONSTRUCTED POWER PLANTS, EPA-452/R-14-002, at 3–10 (June 2014), http://www2.epa.gov/sites/production/files/2014-06/documents/20140602ria-clean-power-plan.pdf.

97. *Id.* at 3–9.

1. Empirical Analyses of Trading in the Coal Sector

Although most research on the implications of trading for Clean Air Act regulation of power-sector GHG emissions precedes the EPA's 2014 CPP proposal, it nevertheless offers strong evidence that trading allows for significant cost reductions relative to a similarly stringent policy that does not allow trading, or significantly greater emissions reductions relative to a policy with similar costs.

In a 2011 paper, researchers at Resources for the Future (RFF) compared inflexible and flexible (i.e., allowing trading) performance standards applying only to coal plant GHG emissions.[98] The two policies were calibrated to achieve the same total emissions reductions by 2020. In their analysis, overall costs of a flexible standard were only about *one-third* of those of the inflexible standard.[99] Moreover, the inflexible standard would lead to more than twice as large an increase in consumer electricity prices relative to the flexible standard.[100] Other RFF research comparing flexible and inflexible performance standards for the coal power sector shows even greater cost-effectiveness advantages for flexibility—more than *eight* times greater annualized costs under an inflexible policy relative to a similarly stringent flexible policy.[101]

2. The Coal-Gas Margin

It is worth reiterating that these analyses focus only on coal plants—any further reduction in emissions reduction costs from trading between coal and gas plants is not included. And there is good evidence that shifting generation from coal to gas—rather than improving efficiency or other measures at coal plants alone—is the largest, cheapest opportunity for emissions reductions in the power sector. Preliminary analysis of projected emissions reductions under the proposed Clean Power Plan indicates that Building Block 2—increased utilization of gas generation at the expense of coal—will result in the largest emissions reductions of any of the four building blocks.[102] Also, analysis of projected emissions under a carbon tax indicates that, at least for modest tax rates, switching from coal to gas generation is the largest single source of

98. DALLAS BURTRAW ET AL., RESOURCES FOR THE FUTURE, RETAIL ELECTRICITY PRICE SAVINGS FROM COMPLIANCE FLEXIBILITY IN GHG STANDARDS FOR STATIONARY SOURCES 1–2 (2011), http://www.rff.org/rff/Documents/RFF-DP-11-30.pdf.

99. *Id.* at 3.

100. *Id.*

101. JOSH LINN ET AL., RESOURCES FOR THE FUTURE, REGULATING GREENHOUSE GASES FROM COAL POWER PLANTS UNDER THE CLEAN AIR ACT 54 (2013), http://www.rff.org/rff/Documents/RFF-DP-13-05.pdf.

102. *See* Anthony Paul & Sophie Pan, *EPA's Clean Power Plan: Breaking Down the Building Blocks*, RESOURCES FOR THE FUTURE (July 22, 2014), http://common-resources.org/2014/epas-clean-power-plan-breaking-down-the-building-blocks/.

emissions reductions from the electric power sector (or in some cases, the second-largest after demand reductions). Because under a tax, all emitters should, in theory, reduce emissions up to (and only up to) the point at which further reductions would be more costly than paying the tax, this indicates that there is a very large pool of relatively low-cost emissions reductions available from coal-gas switching.[103] (This is no longer the case at very high carbon tax levels since gas generation begins to lose out to renewables and other zero-emitting technologies.)

This evidence for a relatively low-cost margin between coal and gas is supported by "secular" trends in the U.S. generation mix—that is, changes independent of climate or other environmental policy. In recent years, natural gas generation has substantially increased at the expense of coal, in large part due to declines in the price of natural gas.[104] There is some evidence that these secular trends may have had greater impact on the generation mix and electricity prices than non-climate environmental policy.[105] The Clean Power Plan will put further pressure on this margin.

Because of the fragility of this coal-gas margin and the apparently large emissions reductions available at relatively low cost from coal-gas switching, a trading program allowing coal and gas generators to trade with each other is likely to yield even greater cost-effectiveness than the coal-only trading approaches studied in earlier modeling analyses. Given the large (three- to eight-fold) cost reductions estimated for coal-only trading, the cost-effectiveness advantages for a trading system encompassing all fossil generation regulated under the CPP are likely to be very large. Conversely, if the EPA's approach in setting program stringency is to achieve the maximum emissions reductions possible at some fixed social cost, a broad trading system would allow far greater emissions reductions at the same cost relative to an inflexible approach. From this perspective, foregoing trading would substantially diminish the environmental benefits of the CPP.

3. Distribution, Costs, and Benefits

There is also evidence that trading can smooth distributional and geographic impacts of power sector ESPS. Research by Etan Gumerman of Duke University's Nicholas Institute indicates that allowing trading under ESPS would result in fewer retirements of coal plants than under

103. *See* PAUL ET AL., *supra* note 15, at 22.

104. *See* Karen Palmer, *Cheap Gas — Not EPA Regs — Driving Coal's Decline*, THE BREAKTHROUGH (2012), http://thebreakthrough.org/index.php/programs/energy-and-climate/more-gas-less-coal-cheaper-power (describing economic research attributing much of the coal-gas shift in the US power generation mix to falling natural gas prices).

105. *See* DALLAS BURTRAW ET AL., RESOURCES FOR THE FUTURE, SECULAR TRENDS, ENVIRONMENTAL REGULATIONS, & ELECTRICITY MARKETS 19–20 (2012), http://rff.org/rff/Documents/RFF-DP-12-15.pdf.

an inflexible approach of similar stringency and would "alleviate[] concentrated impacts in heavy-retirement regions."[106] This is because plants that would otherwise be unable to meet stringent plant-specific performance standards could purchase credits from other emitters that over comply.

Collectively, this evidence indicates that whether trading is available under ESPS—that is, whether it is legally permissible and, if so, whether states allow it—is likely to be the single most important determinant of the Clean Power Plan's cost and environmental effectiveness. If trading is available, it appears possible to achieve the EPA's environmental goals at relatively modest cost relative to benefits. While there is some debate over the EPA's benefit and cost estimates, the agency's Regulatory Impact Analysis estimates the CPP's annual benefits to be between $55 and $93 billion in 2030, compared with annual costs of $7.3 to $8.8 billion.[107] But remember that these estimates assume trading is available. If it is not, costs will be much higher—perhaps more than eight times higher, based on past analyses, though specific empirical analysis of the CPP is not yet available.

Such high costs would dramatically increase (already strong) political opposition to the program and would likely force the agency to reconsider the plan as currently proposed, reducing its environmental ambition or even scrapping it entirely.

Given the importance of trading to power-sector GHG regulation, the following sections consider whether such trading is legal under § 111 of the Clean Air Act, beginning with new and proceeding to existing sources.

## V. NEW SOURCES AND TRADING

Does § 111 give regulators authority to allow sources subject to performance standards to use flexible compliance options? More specifically, can these sources trade with each other such that the average emissions performance of a group of sources meets the standard?

Traditionally, under § 111 performance standards, the answer has been no. Until its recent ESPS proposal, almost all of the EPA's past § 111 performance standards for various source categories and pollutants have required each individual regulated source to comply with the stated standard—that is, no trading or other compliance flexibility has been

106. *See* JEREMY M. TARR ET AL., DUKE NICHOLAS INSTITUTE, REGULATING CARBON DIOXIDE UNDER SECTION 111(D) OF THE CLEAN AIR ACT: OPTIONS, LIMITS, & IMPACTS 9 (2013), https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_r_13-01.pdf.

107. EPA, REGULATORY IMPACT ANALYSIS FOR THE PROPOSED CARBON POLLUTION GUIDELINES FOR EXISTING POWER PLANTS & EMISSION STANDARDS FOR MODIFIED & RECONSTRUCTED POWER PLANTS, *supra* note 96, at ES-19.

permitted.[108] This is not merely historical precedent—as noted above the agency's proposed power-sector NSPS does not allow trading.

Almost all of these past regulations have been NSPS, not ESPS, however. There are a variety of legal and practical reasons for this past practice that may or may not apply to the present ESPS context.

*A. A Statutory Barrier?*

First, the text of § 111 itself may forbid trading for new sources. Section 111(e) reads:

> After the effective date of standards of performance promulgated under this section, it shall be unlawful for any owner or operator of any new source to operate such source in violation of any standard of performance applicable to such source.[109]

One interpretation of this provision, and perhaps the most obvious one, is that it requires each individual source to comply with applicable NSPS and forbids averaging among sources. To illustrate why, imagine two new sources under construction in a category subject to an NSPS. If averaging were allowed, one source (presumably with low-cost emissions reduction opportunities available) would be constructed so as to emit at a lower rate than required by the standard, while the other (presumably with high emissions reduction costs) would be constructed so that its emissions rate would exceed the standard. The *average* emissions across both sources, however, would meet or exceed the standard.[110] However, the source with an emissions rate greater than that specified by the standard would arguably be operating in violation of § 111(f).

This is not, however, the only plausible interpretation of § 111(f). It is based on an assumption that "standard of performance" refers only to the set emissions rate. If "standard of performance" is instead taken to mean the entire regulatory scheme (including provisions allowing averaging), then greater-emitting source(s) in a group with average emissions that meet the standard would not be in violation of it, as forbidden by § 111(f).

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108. *See, e.g.*, 40 C.F.R. § 60.5015(a)(3) (2014) (directing states to include "[c]ompliance schedules for each affected SSI unit" in plans submitted to EPA for approval). EPA has allowed trading in one ESPS program, and one other proposed program, as discussed in Section 0 below, but none of the few other ESPS or many other NSPS have allowed trading.

109. Clean Air Act § 111(e), 42 U.S.C. § 7411(e) (2012).

110. In practice, such averaging might occur across units owned by the same firm, or it might involve a tradable emissions credit. For detailed discussion of such a "tradable performance standard," *see* Burtraw et al, *supra* note 95.

### *B. The ASARCO Decision*

A separate legal reason why trading has not been available under NSPS is that early attempts by the EPA to allow it—or at least something similar—were rejected in 1978 by the D.C. Circuit in *ASARCO v. EPA*.[111] This decision, however, may no longer be good law, and, even if it is, it likely applies only to new and not existing sources. In fact, if you view pre-*Chevron* decisions involving agency interpretation of statues as immediately suspect, you can skip to the end of this section. If not, a review of the decision and its implications is worthwhile.

In the late 1970s, the EPA—under pressure from industry[112]—issued general regulations governing the applicability of NSPS that included a "bubbling" approach.[113] Recall that NSPS apply to both new and modified sources, with the latter defined in § 111(a) as those sources which undergo a "physical change" or "change in the method of operation" that "increases the amount of any air pollutant emitted . . . or results in the emission of any air pollutant not previously emitted."[114] Under a bubbling approach, sources that undergo a modification that increases emissions, but which reduce their emissions elsewhere at the same location (i.e., under the "bubble") such that there is no net emissions increase, are not subject to NSPS. In other words, bubbling would allow an existing plant to avoid modified-source NSPS by averaging its emissions across multiple facilities within the plant.[115] The EPA could have extended this approach to include new sources constructed at the same physical location as existing sources, excluding them from NSPS as well if other sources at the plant reduced their emissions. Although industry pressured the agency to so extend the bubbling approach, it did not do so.[116]

Environmental groups challenged the EPA's regulations containing the bubbling approach, and the D.C. Circuit decided in their favor in *ASARCO*.[117] Judge Skelly-Wright, writing for the unanimous panel, ruled that bubbling was incompatible with the definition of "stationary source" in § 111(a)(3) as "any building, structure, facility, or installation."[118] Moreover, the court ruled that exempting modified sources that merely maintain current emissions levels from NSPS via bubbling was inconsistent with the CAA's overall purpose of reducing emissions over

111. *See* ASARCO, Inc. v. EPA, 578 F.2d 319, 329 (D.C. Cir. 1978).
112. *Id. at* 323–24.
113. *Id.* at 321–22.
114. Clean Air Act § 111(a)(4).
115. *ASARCO*, 578 F.2d at 321–22.
116. *Id.* at 323–24.
117. *Id.* at 329–30.
118. *Id.*

time rather than merely maintaining them. [119] Essentially, *ASARCO*'s holding is that the statutorily-mandated unit of compliance for § 111 performance standards is the "source," and that that term should be construed narrowly.

As a result of *ASARCO*, the EPA abandoned its bubbling approach for modified-source NSPS and did not expand it to new sources as industry had urged. The agency has not revisited the issue since. If *ASARCO* remains good law and applies to § 111(d) ESPS as well as the § 111(b) NSPS at issue in the case, it almost certainly forbids averaging and trading across entire source categories, as envisioned under the proposed power sector ESPS.

However, there are strong arguments that *ASARCO* is inapplicable to the ESPS or is no longer good law. First, *ASARCO* concerns NSPS (specifically, modified-source NSPS), not ESPS. It could be argued that § 111(d) ESPS are a separate statutory scheme to which *ASARCO*'s reasoning should not necessarily apply. This, however, is not a particularly strong argument. Section 111(d) of ESPS depends on the same statutory definitions as NSPS, including the § 111(a)(4) definition of "stationary source," interpreted narrowly by the *ASARCO* court. It is perhaps reasonable to conclude that *ASARCO*'s appeal to a general statutory goal of ever-declining emissions is weaker in the existing-source context, but recall that the EPA regulation at issue in *ASARCO* itself concerned existing sources—the issue was when and whether such sources would be subject to modified-source NSPS. If the CAA can be interpreted to have a general goal of decreasing emissions from existing sources when they undergo modification, it is difficult to argue that goal disappears when the same sources are subject to § 111(d) ESPS.

A second and somewhat better argument is that *ASARCO*'s narrow interpretation of "source" only applies to the threshold question of whether an emitter is subject to performance standards. Whether sources subject to performance standards may trade among themselves to achieve the standards is a different question not addressed in *ASARCO*. Emissions will decrease among sources subject to standards, at least in the aggregate and on average, so the *ASARCO* court's concerns that performance standards result in emissions reductions, and not just maintenance of current levels, are not implicated as they are in the threshold applicability context.

Nevertheless, the court's narrow definition of "stationary source" may remain an obstacle, but perhaps not an insurmountable one. Just as with the § 111(f) requirement discussed above, a source that exceeds an emissions standard but averages its emissions with another over complying source is arguably in compliance with the performance standard, so

119. *Id.* at 327.

long as that standard is understood to refer to the entire regulatory scheme and not just the stated emissions rate. If so, no reinterpretation of the definition of "stationary source" is required.

Alternatively, it may not be necessary to argue that *ASARCO* is inapplicable to ESPS since the decision may no longer be good law. *ASARCO*'s scope was narrowed by a subsequent D.C. Circuit decision, *Alabama Power Co. v. Costle*, in which the court held that a similar bubbling approach was legal in the NSR context.[120] Moreover, *ASARCO* may have been implicitly overruled by either the specific or general holding of the well-known *Chevron v. NRDC* decision.[121] In *Chevron*, the U.S. Supreme Court upheld another similar bubbling approach in the NSR context, overturning the D.C. Circuit.[122] While it does not do so explicitly, *Chevron* can be interpreted to have overruled the D.C. Circuit's decisions rejecting bubbling under various CAA provisions, including § 111 in *ASARCO* in that it authorizes flexible interpretations of the stationary source definition in § 111(a)(4).[123]

More generally, *Chevron* has heralded an era of increased deference to agency interpretations of law under its familiar framework. Under *Chevron*, if the § 111(a)(4) definition of "stationary source" at issue in *ASARCO* is ambiguous (as *Chevron* itself suggests that it is) and the EPA's interpretation is reasonable, a court deciding *ASARCO* today would be required to defer to that interpretation. Even if *ASARCO* does bar trading under § 111 performance standards, therefore, it appears likely that a contrary interpretation by the EPA today would receive much greater deference from a reviewing court.

For these reasons, while *ASARCO* can largely explain the unavailability of trading in past § 111 performance standards, it likely does not restrict the availability of such flexibility in GHG ESPS. One cannot be certain, however—*ASARCO* does create legal risk for trading approaches under § 111(d) ESPS, and it is a minor surprise that the case is not discussed in the Clean Power Plan proposal.

### *C. Practical Barriers*

Returning to the new source context, even if neither § 111(f) nor the *ASARCO* case create legal barriers to trading among new sources, significant and probably insurmountable practical barriers still exist.

First, trading is only useful if sources are heterogeneous. If all new sources have similar emissions performance and/or abatement costs, then there is nothing to be gained from trading. While local conditions and

120. Alabama Power Co. v. Costle, 636 F.2d 323, 410 (D.C. Cir. 1979).
121. Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837 (1984).
122. *Id.* at 866.
123. *See id.*

technologies may lead to some differences among new plants, these differences are likely to be smaller than those among existing plants. It is simply not clear what trading partners new sources would have, and therefore, what market for tradable credits would exist.

Second, new sources are required to undergo New Source Review (NSR), a separate CAA process not directly related to the NSPS.[124] Under NSR, new (or modified) sources undergo case-by-case review and must demonstrate that they employ "best available control technology," or BACT, for pollutants regulated under the CAA.[125] Even if NSPS were flexible by allowing new facilities to meet standards on average (by trading) rather than individually, NSR would still require each new facility to demonstrate BACT. The result would be relatively similar emissions performance and abatement costs among new sources. Put simply, NSR requirements mean that building a relatively dirty new facility and planning to buy tradable emissions credits from cleaner new emitters is not possible. Such a facility would fail to demonstrate BACT and could not be constructed. And since NSR is a case-by-case review, no parallel trading system could be set up under that program.

Looking at the power sector as a whole, it might be possible for relatively clean new sources to be *sellers* of credits in a broader trading system that includes existing sources, but the requirement of NSR compliance (as well as the legal barriers discussed above) means that they could not be net *buyers* of credits from existing sources or other new sources. Even if new sources are only credit sellers, it is unclear whether new and existing sources could be part of the same trading market. They are regulated under separate programs under separate parts of the Act (the NSPS and ESPS), and the *ASARCO* decision could prevent any new source trading.

However, the EPA could likely resolve this problem by treating new sources as existing sources immediately or soon after construction, thereby bringing them into any ESPS trading program. Traditionally, new sources remain "new" rather than "existing" for CAA § 111 purposes until ESPS are issued (or, if already present, next revised).[126] This practice is not surprising—since NSPS are stricter than ESPS, there would be little point, assuming trading is not allowed, in subjecting a new source to both standards until and unless the ESPS are revised, when they might become more stringent than the earlier NSPS. But this is not

124. Clean Air Act §§ 160–193, 42 U.S.C. §§ 7470–7515 (2012).

125. *Id.* at § 165(a)(4).

126. *See, e.g.*, 40 C.F.R. § 60.1505 (2014) (defining "existing" sources covered under one ESPS program as those constructed before August 30, 1999, a few months before the relevant rule was finalized; any source constructed after that date would be subject to NSPS, but not ESPS—at least until and unless new ESPS were finalized, with an updated cutoff date for existing sources).

required by the statute—the CAA does not explicitly indicate when new sources become existing sources. The EPA could presumably, therefore, change its traditional practice in this regard. If it did so, new sources could be directly incorporated into a trading program (though it would still not be possible to build a new source that failed to meet the NSPS or NSR BACT standards).

## VI. EXISTING SOURCES—TRADING AND THE "BEST SYSTEM OF EMISSION REDUCTION"

Just because trading appears illegal or at least impractical for *new* sources under § 111(b) NSPS does not necessarily mean, however, that trading is unavailable among *existing* sources under § 111(d) ESPS. This is because many of the arguments against new source trading do not apply. Section 111(e), forbidding operation of sources violating NSPS, explicitly refers only to new sources.[127] Existing sources do not undergo new source review unless they commence a major modification, and other practical barriers to trading among new sources are not present either. Moreover, as discussed above, the *ASARCO* decision barring trading may not apply to ESPS even if it remains good law in the NSPS context. Whether trading is available under § 111(d) ESPS—and the Clean Power Plan—is therefore a separate legal question that has never been decided (or even, to my knowledge, litigated on the merits) by any court. It would at least be an issue of first impression in the D.C. Circuit, where any challenge would be heard.[128]

This question is therefore a rare bird—an almost completely new (and important, given the significance of trading for costs under the CPP) legal issue based on a decades-old statute. It has, perhaps unsurprisingly, sparked heated debate. Many scholars and analysts have argued that, despite lack of precedent, § 111(d) gives the EPA and/or the states sufficient authority to allow at least some forms of compliance flexibility, including trading among sources and perhaps crediting of off-site projects. A smaller number of scholars and analysts outside academia have made opposing arguments. Since a court has never ruled on this issue, it is impossible to know for sure what view is correct (the views in this paper included). Without relevant court precedent (outside of the *ASARCO* decision discussed above), arguments must rely on interpretations of the statutory text, other indicators of congressional intent, past agency practice, and other evidence that is fragmentary and/or subject to varied interpretation.

127. Clean Air Act § 111(e).
128. *Id.* at § 307(b).

*A. Can States Do Whatever They Want?*

Perhaps the simplest argument in favor of trading being available under § 111(d) is worth discussing first. Section 111(d) ESPS differ from the remainder of § 111 in that they explicitly delegate to states the role of primary regulator. As discussed above, states must submit plans to EPA describing their planned regulation, but are directly responsible for implementation and enforcement. Does this therefore mean that whether trading is available under ESPS is a question of state law, not federal? Can't states do whatever they like, limited only by state or federal constitutional boundaries and the politics of their own legislature? In other words, if a state wants to implement a trading program under § 111(d), this argument goes, doesn't the CAA delegate that decision to the state?[129]

This argument is tempting for CAA scholars and certainly for states since it punts legal debates over trading to states and lets them decide for themselves, without federal court interference, whether they want to allow trading or not. Even if it is correct, it does not end the legal or policy inquiry—whether existing *state* law allows trading may be a difficult legal question (or 50 separate questions), and whether a state could pass new legislation allowing trading may be a difficult political question. But as a matter of federal law, it means that trading would be legal or at least not illegal.

However, this simple argument appears to be incorrect, or at least incomplete. Section 111(d) does not delegate unbounded authority to states to regulate. Unlike the delegation of authority to states to regulate under the § 110 NAAQS, states are restricted to a single policy tool (the relationship between these two otherwise similar delegations to states under the Act is discussed in detail in Section VI.G below). That policy tool is "performance standards," defined in § 111 (and elsewhere in the CAA). Section 111(d) requires states to submit to the EPA "a Plan which . . . establishes standards of performance . . . [and] provides for the implementation and enforcement of such standards of performance."[130] A plan using some other policy tool that does not fit within the CAA definition of "standards of performance" therefore does not meet § 111(d)'s requirements or, alternatively, the statute does not grant the EPA authority to approve such a plan.

This is not to say that § 111(d) restricts state authority to impose the environmental regulations of their choice. Nothing in § 111(d), for example, impedes California's state authority to implement its cap-and-

129. *See, e.g.*, GREGORY E. WANNIER ET AL., RESOURCES FOR THE FUTURE, PREVAILING ACADEMIC VIEW ON COMPLIANCE FLEXIBILITY UNDER § 111 OF THE CLEAN AIR ACT 4-6 (2011), http://www.rff.org/RFF/Documents/RFF-DP-11-29.pdf.

130. Clean Air Act § 111(d)(1).

trade system. It does mean, however, that the federal statute determines what state policy tools may be included in state § 111(d) plans (or, again, what such plans the EPA may approve). Specifically, the meaning of "standard of performance" is controlling.

This interpretation of § 111(d) is supported by its history. In its original 1970 form, § 111(d) directed states to establish "emission standards" in their plans.[131] This term is not defined in § 111 or elsewhere in the statute, and could plausibly be interpreted to have much broader meaning—or at least to indicate congressional intent to make a different set of policy tools available to states for ESPS than it gave EPA for NSPS. However, in the 1977 CAA amendments, "emission standards" was replaced by "standard of performance," thereby conforming § 111(d) to § 111(b).[132] It is hard to interpret this change as anything other than an indication that the same tool(s) should be available to states for ESPS as available to EPA for NSPS, whatever the reason (if any) for the previous distinction in terminology. If this reading is correct and states must use performance standards, one is therefore left with a question of federal law: Can a standard of performance, as defined in the CAA, include trading among existing sources? This question, as noted, has been the subject of significant contention.

### *B. Types of Flexibility—Where Does Trading Fit In?*

Before exploring the arguments regarding ESPS trading made to date, it is important to be specific about what's being debated. In a 2012 paper,[133] I analyzed the legality of various flexible compliance options potentially available under § 111(d) ESPS and divided them into five types or categories based on the distance (both physical and conceptual) between the regulated emitter subject to the standards and the set of trading partners. For example, what I termed Type 1 flexibility refers to trading with other sources in the same regulated source category—say, two coal plants. Type 5 flexibility, in contrast, refers to emissions offsets obtained by funding projects that sequester atmospheric carbon, such as reforestation.

131. Nordhaus & Zevin, *supra* note 42, at 11097.

132. *Id.*

133. Nathan Richardson, *Playing Without Aces: Offsets & the Limits of Flexibility Under Clean Air Act Climate Policy*, 42 ENVTL. L. 735 (2012).

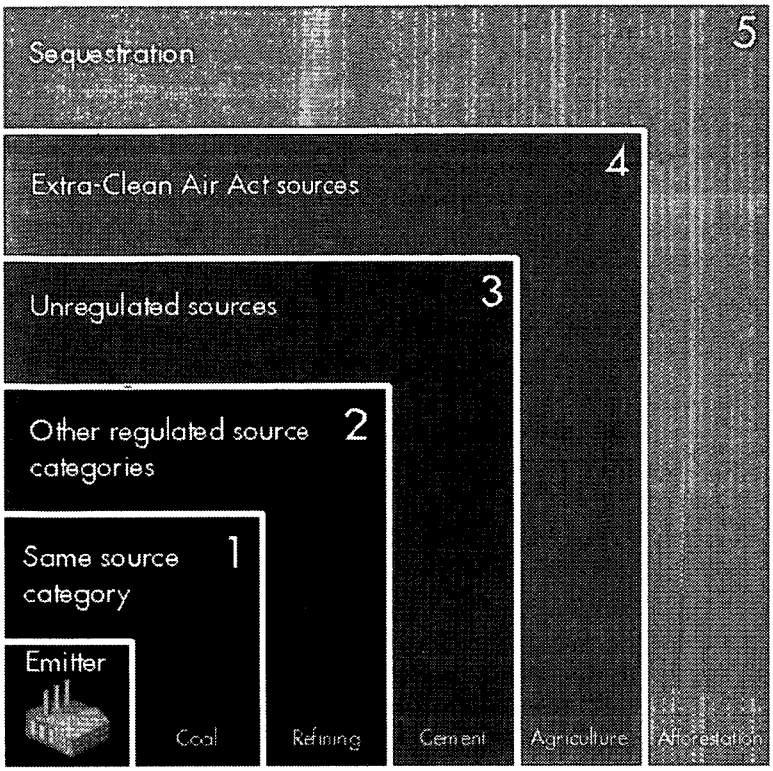


*Figure 2: Types of Compliance Flexibility*[134]

In the paper, I argued that § 111 is almost certainly incompatible with Types 3–5 in this classification, generally due to the fact that these options do not result in emissions reductions at sources regulated under the Act (or, in the case of Type 5 flexibility, do not result in emissions reductions at all).[135] Types 3–5, incompatible with § 111, include most options commonly referred to as "offsets," like reforestation/avoided deforestation or reductions in emissions from foreign sources.

In contrast, I argued that Type 1 (trading among sources within the same regulated source category) and Type 2 (trading among sources in different regulated source categories) flexibility were at least plausibly legal under § 111. This paper is essentially a deeper look at this question: the compatibility of what I called Types 1 and 2 flexibility in the 2012 paper with § 111(d) ESPS.

The trading options discussed and envisioned in the CPP fall into these two types, with the significant addition in its third and fourth building blocks of credits for off-site projects (demand-side energy efficiency

134. *Id.* at 744.
135. *Id.* at 744–45.

and new renewable generation) that reduce the need for fossil generation and therefore regulated sources' GHG emissions.

### C. *A Note on Building Blocks 3 and 4: Energy Efficiency and Renewables*

I did not specifically analyze in my 2012 paper how and whether such off-site projects fit within the legal constraints of § 111(d) ESPS, and unfortunately, there is insufficient space to do so here in any detail. Briefly, the simplest way to fit such projects into the compliance flexibility framework is to call them "Type Zero" flexibility. They are, perhaps barely, a form of compliance flexibility in that they allow emitters regulated under performance standards to use tools beyond the traditionally available technological and work-practice changes to comply.

But unlike all of the other types of flexibility, they result in emissions reductions *at the facility itself*, at least in theory and/or in part. For example, reducing consumer electricity demand in an area served by a particular power plant reduces the amount of time and/or intensity at which that plant must run, with corresponding reductions in emissions. Reality is, of course, much more complex. Emissions reductions that result from demand-side efficiency projects or renewable generation funded by a given utility may be difficult or impossible to apportion among the utility's ESPS-regulated fossil power plants. Moreover, the emissions reductions from any such project are unlikely in many cases to come from even a single firm's fossil plants. The electric power system is interconnected and interdependent. It is even possible that reductions in generation would come from non-emitting sources not regulated under the plan. Resolving these issues will require detailed ex ante modeling and ex post monitoring.

Building Blocks 3 and 4 and the incentives they create for demand-side energy efficiency and renewables are often characterized as EPA's boldest step in the CPP. However, the close connection between such tools and emissions reductions at regulated facilities themselves makes them arguably more similar to the traditional technology and work-practice tools than inter-facility trading is, at least in a legal sense. But difficulties of measurement, verification, and attribution of emissions reductions to specific regulated facilities may be significant practical barriers and could create legal difficulties if courts conclude that the connection with specific regulated facilities is too tenuous. As noted above, the discussion of trading in this paper is focused on trading among regulated sources, not off-site projects envisioned under Building Blocks 3 and 4.

### *D. The Trading Debate So Far*

#### 1. The Mainstream View—Trading Is Legal

Such trading among regulated facilities is Type 1 (or Type 2) flexibility. As discussed above, I have argued in the past that trading is likely legal under § 111(d) ESPS. A number of other scholars and advocacy groups share my initial optimism. Most of these arguments in favor of trading under § 111(d) focus on the § 111(a) definition of "standard of performance," and in particular its language requiring such standards to "reflect" the "best system of emissions reduction." For example, one of the first academic reviews of carbon policy options under the Clean Air Act argued:

> "Cap-and-trade can easily qualify as the 'best' system 'taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements'. . . . Ultimately, some form of cap-and-trade will fit under the statutory definition of 'standard of performance.'"[136]

Further, a 2011 literature review by scholars from Resources for the Future (including me) and legal scholars at New York and Columbia Universities concluded that trading among sources was likely legal.[137] With respect to trading among sources in the same source category, we argued at the time that the § 111(a) definition of performance standards is

> [a]lmost certainly is broad enough to enable both [the] EPA and states to incorporate compliance flexibility: using their statutory discretion, those authorities can define many flexible approaches as the most efficient (and therefore the 'best') systems for reducing emissions at the sector level. This discretion to define statutory criteria is central to [the] EPA and states ability to implement any flexibility mechanisms.[138]

Moreover, the environmental group Natural Resources Defense Council produced a comprehensive policy proposal for power-sector ESPS in 2012 that included both trading and crediting of energy-efficiency projects, with accompanying legal analysis arguing that both options are compatible with § 111(d). That analysis argued that "nothing in the language of Section 111 limits the EPA to considering measures implemented at the source itself when setting standards or guidelines. The term 'best system of emission reduc-

136. Chettiar & Schwartz, *supra* note 57, at 88.
137. WANNIER ET AL., *supra* note 129, at 8.
138. *Id.* at 4.

tion' points toward a broader perspective" and that an approach including trading makes sense given the structure of the electric power sector.[139]

In the past, the EPA itself has used similar arguments as the legal basis for trading under § 111(d) ESPS. In 2005, the agency proposed the Clean Air Mercury Rule (CAMR), which would have created a national cap-and-trade program for mercury emissions from power plants.[140] In that rulemaking, the agency "interpret[ed] the term 'standard of performance' as applied to existing sources, to include a cap-and-trade program," in part because it determined cap-and-trade was the "best system of emission reduction."[141] CAMR was, however, vacated by the D.C. Circuit on unrelated grounds. The EPA has allowed trading in one active ESPS program, for municipal waste combustors.[142] As discussed below, however, this program may not provide much precedential value.

As also discussed in the next section, and in an apparent shift since its position in the CAMR rulemaking, however, the EPA does *not* rely heavily on the "best system of emission reduction" language in legal arguments it makes in favor of trading in its proposed Clean Power Plan.[143]

Summarizing these arguments, the current mainstream view among scholars and analysts appears to be that trading among regulated sources is permissible under § 111(d) ESPS, at least in some form. Moreover, the legal justification for this authority is widely understood to come from the agency's conclusion that trading is the "best system of emission reduction." In short, this standard interpretation says that ESPS may use any "system of emission reduction" that the agency determines is "best" based on the criteria specified in the statute. This is a broad grant of authority based on broad language—the statute leaves it to the agency to determine both what qualifies as a "system" and which such system is "best".

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139. DAVID DONIGER, NATURAL RESOURCE DEFENSE COUNCIL, QUESTIONS & ANSWERS ON THE EPA'S LEGAL AUTHORITY TO SET "SYSTEM BASED" CARBON POLLUTION STANDARDS FOR EXISTING POWER PLANTS UNDER CLEAN AIR ACT SECTION 111(D), at 5 (2013), http://www.nrdc.org/air/pollution-standards/files/system-based-pollution-standards-IB.pdf.

140. EPA, "Clean Air Mercury Rule", Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, 70 Fed. Reg. 28, 606, (May 18, 2005) (establishing nationwide cap-and-trade program for mercury emissions under section 111 of the Clean Air Act).

141. *Id.* at 28, 616.

142. New Jersey v. EPA, 517 F.3d 574, 583–84 (D.C. Cir. 2008) (vacating the CAMR rule on the grounds that EPA had improperly delisted mercury from §112 of the CAA).

143. *See infra* Section 0 and accompanying notes.

2. Counterarguments—§ 111 Does Not Allow Trading

Support for this view, however, is not uniform. Many critics of the CPP argue that § 111 limits compliance flexibility. These critics begin by making a substantially narrower reading of the "best system" language, arguing that it (at least alone) does not give the agency wide latitude to choose the "best" among many regulatory approaches qualifying as "systems." They then make broader precedential, textual, or intent arguments against trading under § 111(d).

For example, Jeff Holmstead, former EPA general counsel under the George W. Bush administration and currently a private lawyer and industry lobbyist, stated in 2014 Congressional testimony that

> [the] EPA focuses on the word "system" and argues that a "system" can involve many different things that all fit together, like the electricity system in a state. But the statute does not say that [the] EPA can regulate a "system." It says that [the] EPA and the states are to set standards for emissions of air pollutants based on the "application of the best system of emissions reduction." The question is not what a "system" may be. Rather, the question is the best system as "applied to what"? [The] EPA says, "as applied to anything that produces or uses electricity in the state." But the answer, according to the statute and almost 40 years of regulatory history, is "as applied to the individual sources within the source category being regulated." In the context of Section 111(d), this means to "any existing source," as long as, "in applying a standard of performance to any particular source," the state is able to "take into consideration, among other factors, the remaining useful life of the *existing source* to which such standard applies.[144]

In short, therefore, the "best system" term, however broad, does not grant regulators the authority to target the sector-wide or sector-average emissions reduction goals implied by an approach that allows trading.

Opposition to trading under § 111 is not restricted to industry advocates, however. Georgetown University law professor Lisa Heinzerling, a well-known advocate of strong climate policy, argued in her 2004 paper, written in response to the EPA's CAMR rulemaking, that cap-and-trade (and presumably other forms of trading) were incompatible with § 111:

144. *See EPA's Carbon Plan: Failure by Design: Hearing Before the H. Comm. on Science, Space, and Technology*, 113th Cong. 4 (2014) (testimony of Jeffrey R. Holmstead), http://docs.house.gov/meetings/SY/SY00/20140730/102574/HHRG-113-SY00-Wstate-HolmsteadJ-20140730.pdf.

> The EPA argues that the language of § 111(a)(1), which refers to the "best system of emissions reduction," gives it the power to adopt a cap-and-trade program for mercury emissions from power plants. [The] EPA is mistaken. Most notably, although § 111 was amended in 1990 to omit the requirement that § 111 limits reflect technological systems of emissions reduction, not a peep was heard from Congress about the possibility that a trading regime could be installed under § 111. This silence, again, is significant in light of the fact that Congress was at that very time enacting our first trading program, in Title IV of the Act.[145]

Professor Heinzerling reiterated these arguments in later congressional testimony on § 111 carbon regulation in 2008, arguing that "[§ 111] appears to require individual, technology-based requirements for each individual facility, a requirement in considerable tension with a cap-and-trade scheme."[146]

Heinzerling and Holmstead use different evidence and arguments to reach their conclusion that trading is impermissible under § 111(d)—Holmstead bases his argument on past EPA practice and an emitting-facility focus he argues is evidenced by § 111 as a whole. Heinzerling focuses on congressional intent. But both start with a rejection of the "best system of emission reduction" language as the source of EPA authority to allow trading. This is the heart of their disagreement with the pro-trading view shared by most scholars and the EPA itself.

These competing understandings of how § 111—and in particular the "best system of emission reduction" language—should be interpreted have dominated debates over trading under the ESPS, which, as discussed above, is likely the single most important issue for the policy's costs and environmental effectiveness.

### *E. The ESPS Two-Step*

In my view, the advocates of flexibility make stronger arguments regarding interpretation of the "best system" language—my views on this subject have not changed since my 2011 and 2012 papers cited above. However, the debate over whether the "best system" language allows the EPA to set up a trading system is, I believe, beside the point, despite all of the ink spilled to date. This is because the § 111(a)(1) defi-

145. Lisa Heinzerling & Rena I. Steinzor, *A Perfect Storm: Mercury & the Bush Administration*, 34 ELR 10297, 10309 (2004).

146. *Strengths & Weaknesses of Regulating Greenhouse Gas Emissions Using Existing Clean Air Act Authorities: Hearing Before the Subcomm. on Energy & Air Quality of the H. Comm. on Energy & Commerce*, 110th Cong. 92 (2008) (prepared testimony of Lisa Heinzerling), http://www.gpo.gov/fdsys/pkg/CHRG-110hhrg51574/html/CHRG-110hhrg51574.htm.

nition that includes the "best system" language does not and cannot resolve the question of whether regulated sources can actually trade with each other. To see why, it is useful to look deeper at some industry critics' arguments against the CPP (and a response to those arguments).

Some of these critics argue that, even if the statute does not grant the agency authority to consider trading and other forms of flexibility in setting standards, it does not necessarily block sources subject to those standards from using such tools to *comply*. In other words, they argue that the EPA must ignore the cost savings associated with trading when balancing the criteria it is directed to consider in setting standards, but sources can still take advantage of those savings once the standard is set.[147] This view may seem self-serving and/or hypocritical, but it in fact identifies crucial elements of § 111's structure with major effects on its interpretation, as we shall soon see.

Kate Konschnik and Ari Peskoe of Harvard Law School confront and ultimately reject these critics' arguments in a 2014 paper, arguing in favor of a "symmetry principle" they say is implied by the text of § 111 and relevant case law.[148] Under this symmetry principle, the statute should be interpreted to require regulators to look ahead and consider compliance options available to emitters when they set the standards' stringency. The symmetry comes from the fact that regulators' inability to consider options *unavailable* to emitters is a well-understood and fairly obvious result of the statutory language.[149]

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147. *See, e.g.*, David Roberts, *Obama's Carbon Rule Hangs on this One Legal Question*, GRIST.ORG (Feb. 9, 2015), http://grist.org/climate-energy/obamas-carbon-rule-hangs-on-this-one-legal-question/ (stating, in what admittedly amounts to hearsay, that "[c]onservatives argue that power producers should have a wide array of compliance options, so that there's flexibility and lower costs, but that the full array of compliance options shouldn't be taken into account when setting the performance standard, only within-the-fenceline stuff"). Jeffrey Holmstead, former EPA Assistant Administrator for Air and Radiation argues that "EPA is supposed to provide states with guidance about what constitute[s] the best system of emission reduction that can be applied to an individual power plant ("any existing source"). To make things easy, let's just assume that EPA were to look at a variety of different boiler types and vintages and were then to establish presumptive heat rates for boilers in each of these subcategories, based on the BSER that can be applied to such boilers. It could then say that, because there are boiler-specific issues that are difficult to take into account, it recommends that a state allow for trading around this presumptive heat rate. . . In my view, this type of "trading" would clearly be allowed." Email from Jeffrey Holmstead, partner and head of the Environmental Strategies Group at law firm Bracewell & Giuliani, to author (Feb. 8, 2015) (on file with author).

148. KATE KONSCHNIK & ARI PESKOE, HARVARD LAW SCH. ENVTL. LAW PROGRAM, EFFICIENCY RULES: THE CASE FOR END-USE ENERGY EFFICIENCY PROGRAMS IN THE SECTION 111(D) RULE FOR EXISTING POWER PLANTS 5 (Mar. 3, 2014), http://blogs.law.harvard.edu/environmentallawprogram/files/2013/03/The-Role-of-Energy-Efficiency-in-the-111d-Rule.pdf.

149. *See, e.g.*, Clean Air Act § 111(a)(1)(a), 42 U.S.C. 7411(a)(1)(a) (2012) (indicating that standards may only "reflect" systems of emission reduction that the agency "determines ha[ve] been adequately demonstrated").

Despite their disagreement, Konschnik, Peskoe, and the industry critics share a crucial insight. Specifically, they recognize that stringency and compliance are two different stages in the regulatory process with (at least potentially) different legal standards.

This means that the issue of whether trading is legally permissible under § 111 is really two separate questions. First, may the EPA consider trading in setting regulatory requirements? Second, must each source individually comply with those requirements? Or, may they trade with each other such that they meet the requirements on average?

In short, the CAA performance standard process has two steps. Can these steps have different rules? Even if one ultimately rejects these industry critics' conclusion that the answers to the two questions may be (or are) different, the division of the issue is important. The reason is simple: the text of § 111 may answer the first question, but it does almost nothing to answer the second.

1. Stringency and Compliance Are Different

To understand how this is the case, consider the § 111(a)(1) definition of "standard of performance" that includes the "best system" language. Despite its presence in the "Definitions" section of § 111, it is not really a definition at all, but rather a provision describing the regulator's authority to determine the *stringency* of performance standards. Contrary to what one might expect from a definition, § 111(a)(1) says little, if anything, about what performance standards look like in practice (in contrast to other regulatory tools). For example, nothing is said about what form performance standards may take: must they be an emissions rate, or can they be based on other performance measures? If they are emissions rates, over what time period must those emissions be measured (an issue that has led to significant past controversy and litigation)?[150]

This is not to say that § 111(a)(1) necessarily *should* have specified these details rather than leaving them implicitly to agency discretion, but that such characteristics of performance standards—rather than substantive factors for consideration in determining regulatory stringency—are the kind of thing one might naively expect to find in a provision purporting to define them. As most law students could tell you, it is not a surprise to find a statutory scheme in which the definitions are "doing the work." But the degree to which this is the case in § 111 is unusual.

Instead, the § 111(a)(1) definition describes how the regulator must identify the "best system," including the factors it must consider (cost, whether a system has been "demonstrated," etc.).[151] Once the agency

150. *See, e.g.*, Envtl. Def. v. Duke Energy Corp., 549 U.S. 561 (2007).

151. Clean Air Act § 111(a)(1).

identifies the "best system," § 111(a)(1) indicates that it sets a standard at a level that "reflects" that system.[152] In other words, the "definition" tells us how the regulator goes about determining the stringency of the standards.

The § 111(a)(1) definition, including the "best system" language, says nothing about how regulated sources may comply with the standard, however. This is implicit in the nature of performance standards themselves: as noted above, the core characteristic of performance standards is that they give regulated parties flexibility to determine how to meet measurable standards set by the regulator—though note that this does not mean that regulated parties have *no* restrictions on how to comply with performance standards. Unlike traditional command-and-control regulation, however, the process by which the regulator selects the stringency of the regulation does not dictate the compliance options available. In other words, once the "best system" has been identified and used as a basis for determining the stringency of performance standards, it ceases to be relevant for compliance purposes. In simplest terms, BSER is about stringency, not compliance.

This is the insight at the heart of some critics' argument that the EPA may (and, they say, should) allow trading and other forms of compliance flexibility even if the agency must take a narrow, source-focused view when setting the standards. The critics have a narrow reading of "best system" that may or may not be correct insofar as it purports to restrict the EPA's range of options in setting stringency, but they are correct in their understanding that stringency and compliance options are separate issues in the § 111 context (and indeed in the context of any performance standard).

2. Are Stringency and Compliance Connected?

An alternative argument is that § 111 should be interpreted such that the range of options available to the regulator in determining the "best system" and the range of options available to sources in complying with the resulting standard are one and the same. If this reading were correct, then even though the § 111(a)(1) definition and the "best system" language only directly control the range of options available to the regulator in setting stringency, they implicitly also control compliance options as well. However, this argument cannot be correct—at most this connection operates in only one direction.

The reason is simple—it cannot be true that sources complying with a performance standard are restricted to the compliance options considered by the regulator in setting the standard. This is implicit in the char-

152. *Id.*

acter of performance standards themselves, and is crucial to their ability to create incentives for innovation. For example, under the § 111(a)(1) definition of performance standards, regulators may not consider emissions-reducing technologies or other compliance options that are not "demonstrated." But a firm complying with the resulting standard could develop new technology to do so, or use a technology or work practice that, while previously available, had not been adequately demonstrated when the standard was written. Moreover, one of the best justifications for performance standards over command-and-control regulation is that regulators have imperfect information about compliance options. If sources may only comply using options considered by the regulator, this advantage is absent.

The reverse, however, is likely not the case. In setting the standard at the level of the "best system of emissions reduction," regulators may not consider compliance options that are not, in reality, available to emitters that must comply with the standard. The "adequately demonstrated" prong of § 111(a) addresses this from a practical standpoint—it prevents the regulator from requiring a level of performance that cannot actually be met in practice.

As noted above, Kate Konschnik and Ari Peskoe of Harvard take this concept further, arguing that regulators *must* consider compliance options that regulators *know* are available to emitters when they set the standard's stringency.[153] According to their symmetry principle, "any adequately demonstrated system of emission reduction eligible for compliance with a performance standard must also drive the standard's stringency."[154] In short, the symmetry principle is an expansion of the central principle of performance standard stringency setting: agencies may not consider unavailable options, and *also* must consider available options. This puts Konschnik and Peskoe squarely at odds with the view held by some industry critics of the CPP and summarized at the beginning of this Section: that regulators should allow trading as a compliance tool for standards whose stringency is based only on compliance options available at individual facilities.

However, even with the addition of the symmetry principle, the § 111(a)(1) definition doesn't say what compliance options are actually available. This is fairly obvious: The agency still must do extensive analysis to determine what technological or work practice compliance options are available and adequately demonstrated. In other words, despite its name, the symmetry principle does not operate in reverse in this sense. Just because a regulator decides a compliance option is part of the best system does not make it available—technically *or legally.*

153. KONSCHNIK & PESKOE, *supra* note 148, at 5.
154. *Id.*

The process of assessing technological, economic, and practical availability of compliance options is well established and understood (albeit complex and burdensome for the agency). But there are legal as well as technical limits. Section 111 itself restricts at least some compliance options, such as emissions offsets, as discussed in Section IV.B above.[155] Other parts of the CAA (or other environmental statutes and regulations) also impose legal barriers to some compliance options.[156] Even more simply, background legal principles limit emitters' compliance options.

It would be inequitable and arguably illegal for regulators to base a performance standard on compliance options that would require emitters to violate any of these legal requirements. For example, regulators presumably could not base a performance standard on a "best system" that "[r]equires release of pollutants into water instead of air, in violation of Clean Water Act requirements[,] . . . [w]ould cause such large increases in emissions of other pollutants that emitters would be able to meet other CAA requirements[,] . . . [or] [i]nvolves use of dangerous technology that is illegal in some jurisdictions."[157]

Legal as well as practical limits on the compliance options available to emitters therefore must be considered when regulators set performance standards' stringency. The symmetry principle is an important corollary to this—if an option is available, Konschnik and Peskoe argue, the regulator must consider it. But the range of options regulators may consider under one's interpretation of the "best system" language does not similarly restrict (or broaden) sources' compliance options. The relationship between the two ranges is one-way—the range of compliance options that are actually available must be reflected in stringency setting, but the broad range of options implied by the "best system" language does not mean a similarly broad range of compliance options is actually available, both technically and legally.

If this reading is correct, then debates over the legality of trading *as a compliance option* under § 111 have focused on a part of the statutory text—"best system of emissions reduction"—that does not and cannot answer the legal issue, no matter how broadly or narrowly it is interpret-

155. *See* Richardson, *supra* note 133.

156. For example, emitters of hazardous pollutants regulated under § 112 of the CAA must comply individually with emissions standards reflecting "maximum available control technology" or MACT, and must do so individually, without trading. *See generally* Clean Air Act § 112. This makes sense in the hazardous pollution context since trading might allow "hot spots" to occur with emissions levels sufficient to endanger public health, even if a trading system led to reduced average emissions within the sector. The lack of trading under § 112 is what led EPA to attempt to move mercury regulation from that section of the statute to § 111. The DC Circuit rejected this move in *New Jersey v. EPA*, cited in *supra* note 142.

157. Clean Air Act § 111(a)(1).

ed. Although I raised this possibility in passing in earlier work,[158] it has to my knowledge otherwise been missing from these debates.

3. The EPA's View of the "Best System"

The EPA appears to recognize this in the proposed ESPS rulemaking. The agency does point to the § 111(a)(1) definition of "standard of performance" in its defense of trading, but does not use "best system of emissions reduction" or any of the specific language in the § 111(a)(1) definition in that defense.[159] Instead, the agency simply argues that the § 111(a)(1) definition is "broad enough" to allow flexibility before pointing to alternative sources—essentially, the dictionary definition of "standard"—that it argues shine greater light on the question.[160] The EPA's arguments are discussed in greater detail in Section VI.I below.

If (as most have argued), the reason flexibility is available under § 111(d) is that it is part of the "best system," or if the reason that such flexibility is *not* available is that "best system" should be interpreted narrowly, then it would be a major surprise if the agency failed to discuss (or attempt to refute) that line of reasoning. As the EPA therefore implicitly recognizes, guidance on what compliance options are available under § 111 performance standards must come from elsewhere in the statute, not the § 111(a)(1) definition and its "best system" language.

*F. Does § 111 Give Any Guidance on Compliance Options?*

If the § 111(a)(1) definition gives no guidance on what compliance options are available to sources regulated with performance standards, one might hope to find such guidance elsewhere in § 111. No such luck, unfortunately—§ 111 is quite short[161] and gives little detail on how performance standard regulation is to operate in practice. Much of the section covers procedural requirements and technical details[162] rather than substantive guidance (there is even a provision whose applicability is limited to grain elevators).[163] Only one provision explicitly discusses compliance options, and it gives no detail on what options are or are not available—its only effect is to prevent regulators from requiring that certain technology be used to comply (in other words, it requires that § 111

158. *See* Richardson, *supra* note 133.

159. CPP, *supra* note 3, at 34,927.

160. *Id.*

161. Clean Air Act § 111 is around 3000 words, and § 111(d) is only about 300 words. In contrast, the three sections (§ 108-10) that define the NAAQS process total over 7500 words.

162. *See, e.g.*, Clean Air Act §§ 111(f), (g), (a)(8).

163. *See id.* at § 111(i).

regulations be technology-agnostic performance standards rather than command-and-control rules).[164]

This lack of detail on compliance options is perhaps unsurprising to the extent that the primary purpose of § 111 is to establish a regulatory program for *new* sources. As discussed above, practical limitations and legal restrictions outside of § 111 limit new sources' compliance options to technology, operational practices, and fuel choice—each of which result in emissions reductions at the regulated source. Since trading isn't a realistic option for new sources, there is little need for it to be discussed in the bulk of § 111. Arguably, the drafters of § 111 never considered trading among sources or other forms of compliance flexibility for new sources, and with good reason.

But § 111(d) creates an almost entirely separate regulatory program in the existing-source context where compliance flexibility (as discussed above) *does* matter a great deal. Accordingly, one might hope that the drafters of § 111(d) provided some guidance in the subsection regarding compliance options. But if § 111 is short relative to the scope of the regulatory program it creates, that mismatch is far greater in the specific case of § 111(d). Section 111(d) is only about 300 words long, and most of that length is devoted to procedural issues and the division of authority between states and the federal government.[165] Section 111(d) is little help.

The result is that § 111 gives almost no guidance on what compliance options are available to regulated sources.[166] This is unusual within the context of the CAA. Other parts of the statute establishing other regulatory programs generally *do* give guidance on what compliance options are available, and that guidance can be quite extensive.

### *G. Trading Elsewhere in the CAA*

One might, therefore, hope to find support for trading under ESPS (or a clear indication that it is not available) by looking at § 111 in the context of the broader statute. But other sections of the CAA do not appear to be very helpful.

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164. *See id.* at § 111(b)(5) (stating that "[e]xcept as otherwise authorized under subsection (h) of this section, nothing in this section shall be construed to require, or to authorize the Administrator to require, any new or modified source to install and operate any particular technological system of continuous emission reduction to comply with any new source standard of performance").

165. *See id.* at § 111(d); for example, subsection (d)(2) details EPA's authority to issue a federal plan when states fail to act.

166. As noted above, the only guidance is § 111(b)(5)'s statement that standards are performance targets, not technological requirements.

1. § 110 and § 111(d)'s Cross-Reference to It

The first and most obvious place to look is § 110, which governs implementation of the NAAQS. Section 110 explicitly authorizes states to use trading in their state implementation plans aimed at meeting the federally-set NAAQS: plans may include "fees, marketable permits, and auctions of emissions rights" among other tools.[167] Of course it cannot be assumed that authorization of trading under § 110, by itself, makes trading available under § 111. In fact, the opposite inference could be made, as discussed further below—§ 110(a)(2)(A) indicates that Congress knows what trading is and how to authorize it, but failed to do so (or give any other guidance on compliance tools) in § 111.

However, § 111(d) explicitly references § 110 by directing EPA to "establish a procedure similar to that provided by section 110" under which states submit plans to the agency for approval. Some have argued that direct reference does import the list of tools in § 110(a)(2)(A) into § 111(d), or at least imply congressional approval for doing so.[168] However, § 111(d)'s cross-reference to § 110 is explicitly procedural—EPA is directed to set up a *process* similar to § 110, not to import the substantive requirements of the NAAQS regime, whether they apply to initial standard-setting or compliance tools available to emitters. To import both procedure and substance would be to simply re-create the NAAQS or at least a similar regime under § 111.

It is true that § 111(d) refers to § 110 as a whole, including both its procedural and substantive elements. It could have referred only to the state plan/EPA approval process within § 110, perhaps by referencing § 110(a)(1) only. But the fact that it is not so limited does not necessarily mean that the cross-reference is unbounded. This is because the limitation of the cross-reference to process alone comes not from the scope of the citation, but rather from the text of § 111(d) surrounding the reference: § 111(d) directs the EPA to "establish a procedure similar to" § 110—to mimic it more broadly.

This reading is supported by reading § 111(d) within the broader § 111 context. As discussed above, whether they are EPA setting NSPS under § 111(b) or states submitting plans under § 111(d), regulators are required to use performance standards, as defined in § 111(a).[169] In other words, regulators operating under § 111 are restricted to a single regulatory tool—performance standards. This is in contrast to § 110, where states are given a substantive target—the NAAQS—along with explicit flexibility to choose among a wide variety of regulatory tools to meet

167. Clean Air Act § 110(a)(2)(A).

168. WANNIER ET AL., *supra* note 129 at 4.

169. Clean Air Act §§ 111(b)(1)(B), 111(d)(1)(A) (stating that states must submit a plan that "establishes standards of performance").

that target. The primary differences between § 111(b) NSPS and § 111(d) ESPS are that they cover different sources (new vs. existing) and that ESPS include an important state role—not that they use different regulatory tools. The reference to § 110 does not change this. Instead, it allows a well-developed cooperative federalism *process* to be imported into § 111(d). Without it, drafters would have had to create a new process from scratch, which is something that would have arguably been a waste of effort under any conditions and maybe impossible when § 111(d) was drafted as a late compromise in negotiations over the 1970 Act.[170] There is nothing wrong with such expediency, but it should not be taken to mean more than what it explicitly claims to be—a procedural model for § 111(d).

Section 111(d) also contains a second reference to § 110: § 111(d)(2)(A) refers to § 110(c) in giving EPA authority to impose a federal plan when states fail to submit a satisfactory plan, as discussed above. This reference also appears purely procedural, and in any case § 110(c) says nothing about trading.

2. Trading Elsewhere in the CAA

Looking beyond § 110, other sections of the CAA and related statutes also explicitly or implicitly allow emissions trading or similar mechanisms. This section details two such examples.

Perhaps most notably, Title IV of the Act, added in the 1990 CAA amendments, creates an expansive regulatory program covering sulfur dioxide. Emissions trading is at the heart of this program and is discussed at length, beginning with Congress' declared "Purposes" in § 401(b), stating that "limitations may be met through alternative methods of compliance provided by an emission allocation and transfer system".[171] The statute also details emissions allowance allocation[172] and the EPA's regulatory authority to create a trading market.[173] Congress' intent not only to allow but also to require emissions trading under Title IV could not be clearer.

Title II of the Act, governing vehicle emissions, does not explicitly allow trading, but instead directs the EPA to issue "standards" while (in this respect like § 111) remaining silent on whether these may include trading.[174] However, the primary means of regulating vehicle emissions, the CAFE standards, are issued jointly and under separate legal authority

170. Nordhaus & Zevin, *supra* note 42, at 11096–97.

171. Clean Air Act § 401(b).

172. *Id.* at § 403(a).

173. *Id.* at § 403(b).

174. *See id.* at §§ 202(a)(1), 213. The term "standards" is not defined in Title II, though the definition of "emission standard" in section 302(k) may apply. This definition does not explicitly discuss trading.

by the EPA and the Department of Transportation (DOT). DOT authority under 49 U.S.C. § 329 *does* explicitly allow trading.[175] Averaging across vehicle types in a manufacturer's fleet has been allowed since the 1970s, and the 2007 Energy Independence and Security Act allowed trading between manufacturers.[176] Subsequent EPA/DOT CAFE standards finalized in 2010 and 2012 aimed at reducing carbon emissions from vehicles have allowed inter-manufacturer credit trading.[177]

Taken together, these statutory provisions show Congress is aware of trading as a regulatory tool in the air pollution context and is certainly able to write and pass statutory text explicitly making it available. Congress' failure to do so (or to forbid trading) in § 111 generally or § 111(d) specifically—and indeed its failure to give almost any guidance about compliance options for § 111 performance standards—makes the availability of trading under ESPS an open (and to date untested) legal question. The next section discusses how reviewing courts might resolve that question.

### *H. Historical Arguments*

Arguments both for and against trading under § 111(d) can be made based on the evolution of the statutory language over time. While probably not dispositive, and not (or at least not widely) discussed in debates over ESPS trading, they are at least worth mentioning.

As discussed above, the original version of § 111(d) directed states to impose "emission standards" rather than "standards of performance." The former term is not defined in the statute and might be susceptible to a broader reading. If so, Congress' 1977 restriction of state § 111(d) powers regarding "performance standards" could be interpreted as indicating an intent to narrow that authority, possibly to foreclose trading.

Other changes in § 111's text point in the other direction. In the 1977 CAA amendments, Congress modified the definition of performance standards in § 111(a) to state that they were to reflect the "best technological system of continuous emission reduction" for new sources and "best system of continuous emission reduction" for existing sources, in contrast to the previous, simpler "best system of emission reduction." Then, in the 1990 amendments, Congress returned to the earlier phrase for both new and existing sources.[178] This could be interpreted as evi-

175. *See* 49 U.S.C. § 32903 (2012).

176. *See* Energy Independence & Security Act of 2007, Pub. L. No. 110-140, § 104, 121 Stat. 1491, 1502 (2007).

177. *See* EPA, Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, *supra* note 60, at 25,338; EPA, 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, *supra* note 60, at 62,628.

178. Nordhaus & Zevin, *supra* note 42, at 11096–97.

dence of congressional intent to broaden the definition of "systems" regulators can consider in setting performance standards.

However, as discussed above, even a very broad understanding of "best system" is unhelpful in determining what compliance options are available since that phrase applies only to regulators' stringency determination.

### *I. The EPA's Argument for Trading*

Before discussing how a court might resolve this question, however, it is important to first examine the EPA's view. It reflects a close reading of the statute and is likely to receive significant deference from a reviewing court under the *Chevron* doctrine.

Given the absence of guidance in § 111 on compliance options and (as noted above) the agency's refusal to adopt the mainstream view that the "best system" language is sufficient to allow ESPS trading, where does the agency find authority to allow it? As noted above, the EPA bases its argument that trading is available on the term "performance standard" itself:

> CAA section 111(d) plans may include standards of performance that authorize emissions averaging and trading. . . . The EPA proposes that the definition of ''standard of performance'' is broad enough to incorporate emissions averaging and trading provisions. . . . The term ''standard'' in the phrase ''standard for emissions of air pollutants'' is not defined in the CAA. As the Supreme Court noted in a CAA case,[179] a ''standard'' is simply ''that which 'is established by authority, custom, or general consent, as a model or example; criterion; test.' ''A tradable emission rate or a tradable mass limit is a ''standard for emissions of air pollutants'' because it establishes an emissions limit for a source's air pollutants, and as a result, qualifies as a ''criterion'' or ''test'' for those air pollutants.[180]

In other words, the EPA argues, any regulation that plausibly fits within the dictionary definition of "standard" is permitted under § 111, as long as it meets the statute's more specific requirements, which, as we have seen, deal only with determining stringency, not compliance options. Since allowing trading doesn't fundamentally change the nature of the regulatory approach, § 111 regulators may allow it.

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179. Engine Mfrs. Ass'n v. S. Coast Air Quality Mgmt. Dist., 541 U.S. 246, 252–53 (2004) (quoting Webster's Second International Dictionary, at 2455 (1945)).

180. CPP, *supra* note 3, at 34,927 [some footnotes omitted].

Alternatively, the EPA points to the CAA's general definitions section, § 302, which defines "performance standard" as "a requirement of continuous emission reduction"[181] and states that

> . . . although there may be doubt that the definition of ''standard of performance'' in CAA section 302(l) applies to CAA section 111(d) in light of the fact that the definition of the same term in CAA section 111(a)(1) is more specific, even if the CAA section 302(l) definition does apply, an averaging or trading requirement qualifies as a ''continuous emission reduction'' because, in the case of a tradable emission rate, the rate is applicable at all times, and, in the case of a tradable mass limit, the source is always under the obligation that its emissions be covered by allowances.[182]

These arguments place great weight on a few terms and are not altogether satisfying. There is almost no regulatory scheme or compliance option that would not fall within the broad dictionary definition of "standard." If the general § 302(l) definition is applicable, it does add the requirement of "continuous emission reduction," but that also does little to limit the range of compliance options available. It is somewhat puzzling that the EPA cites the § 302(l) definition in support of its case for the availability of trading since, if anything, it appears to offer more support for the position that trading is *not* permissible. Sources that are permitted to trade may not do any "emissions reduction" at all if they buy credits instead of making local improvements, and even those that do may not do so on a "continuous" basis.

The EPA also argues that there is precedential support for trading under § 111(d) ESPS by pointing to two previous ESPS programs that included trading.[183] However, this support is very weak. One of the two cited programs, the 2005 Clean Air Mercury Rule (CAMR),[184] was never implemented because it was rejected by courts on unrelated grounds.[185] The legality of trading under § 111 was controversial at the time and had been briefed, but the court never reached the issue. It is hard to understand how CAMR, therefore, gives any precedential support. The other cited program, aimed at municipal waste combustors,[186] is in place, but is

181. *Id.* at 34, 927; Clean Air Act § 302, 42 U.S.C. § 7602 (2012).

182. CPP, *supra* note 3, at 34,927.

183. *Id.*

184. *See* EPA, "Clean Air Mercury Rule", *supra* note 140.

185. *See* New Jersey v. EPA, 517 F.3d 574, 583–84 (D.C. Cir. 2008) (holding that EPA's preliminary move de-listing mercury from the list of hazardous air pollutants in Section § 112 of the CAA, a necessary prerequisite for regulating under § 111, exceeded the agency's authority).

186. *See* EPA, Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: *supra* note 91, at 27,324.

co-authorized by a different CAA provision that complicates any legal analysis.[187]

It is also possible to make arguments grounded in the statute *against* the availability of trading under § 111(d) regulation—Jeff Holmstead[188] and Lisa Heinzerling's[189] positions, summarized briefly above, are both at least partly textual, though both bring in other sources of authority. Nevertheless, these and any similar argument suffer the same weakness as pro-trading arguments grounded in the text of § 111—that text just doesn't offer guidance on what compliance options are available to regulated sources. This is why neither Holmstead nor Heinzerling can rely on the text of § 111 alone and are forced to bring in other sources of authority (extra-statutory evidence of congressional intent in Heinzerling's case, and longstanding EPA practice in Holmstead's).

## VII. TRADING UNMOORED

As discussed above, in the absence of guidance under either the § 111(a)(1) definition or § 111(d), it becomes difficult to identify a statutory basis for trading under the ESPS. One is forced either to read the tealeaves in the CAA text as best as possible, or simply to conclude that the statute is silent and proceed accordingly.

### *A. Who Would Sue?*

As a result of this ambiguity (and the level of controversy and attention surrounding the CPP), the issue of trading under the carbon ESPS is almost certain to be litigated. This is despite the fact that most participants in the ESPS process—the EPA, environmental groups, states, and industry groups—broadly favor trading as a compliance option (though, as discussed above, there is sharp disagreement over whether trading can be considered in setting the standard). All it takes is one plaintiff with standing to raise a legal issue, however, and it is not difficult to imagine a plaintiff claiming in litigation that trading is incompatible with § 111(d) ESPS. For example, some environmental groups are ideologically opposed to emissions trading.[190] Industry and/or state litigants

187. The municipal waste combustor program is jointly authorized under CAA § 111 and CAA § 129, the latter of which details extensive additional and specific requirements for the program. § 129 indicates that existing sources are to be subject to § 111(d) performance standards, but also indicates that these performance standards are to include "emissions limitations," which is not defined.

188. *See* Testimony of Jeffrey R. Holmstead, *supra* note 144.

189. *See* Heinzerling & Steinzor, *A Perfect Storm: Mercury & the Bush Administration*, *supra* note 145.

190. *See, e.g.*, Ass'n of Irritated Residents v. CARB, 206 Cal. App. 4th 1487 (2012) (illustrating instance of environmental justice groups unsuccessfully challenging Califor-

might also be willing to make any claim that would slow or threaten the ESPS regulation.[191] A clever industry litigant might also base a suit (and arguments for standing) on Konschinik and Peskoe's symmetry principle, discussed above. Under this theory, a hypothetical plaintiff would argue that the ESPS' stringency is much greater than it would be had the EPA not assumed that states would allow regulated sources to trade with each other. In short, it is unlikely that a trading scheme under § 111(d) would survive simply because no plaintiff would want to challenge it or have standing to do so.

A related issue not addressed here is whether litigation over trading would properly come as a challenge to the EPA's final § 111(d) rulemaking or to a state plan submitted under that rulemaking. It is possible that a challenging party would only have standing once a state plan actually imposes compliance obligations along with the ability to trade. The distinction is likely unimportant for resolution of the legal question, however, because § 111(d) requires states to use performance standards in their plans.[192] The definition of performance standards in the CAA therefore controls—while states' police powers certainly allow them to impose an emissions trading system, the CAA controls whether such a system may be included within a § 111(d) plan or, more accurately, whether the EPA can approve such a plan.

### *B. Possible Outcomes*

In any case, once the issue has been raised in litigation and standing has been established, the reviewing court (initially the D.C. Circuit, and possibly the U.S. Supreme Court on appeal) would be required to determine whether trading is legally compatible with § 111. This section discusses potential bases on which a court might resolve this question. To cut to the chase, the outcome is fraught with uncertainty.

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nia's cap-and-trade program on the grounds that it would result in concentration of emissions in vulnerable communities).

191. Many industry litigants might lack standing to challenge the availability of trading since such a claim would fail the injury-in-fact prong of standing doctrine—if trading lowers compliance costs, then many emitters would benefit from it. However, some sources could establish injury. For example, a relatively clean source might claim that it is better off if sources must individually comply since it would be able to do so but that relatively dirty competitors could not (though one might ask why such a source would not prefer to sell credits to its dirty competitors). Additionally, a state challenger might argue that it is disadvantaged by trading if it has a small, homogenous set of emitting sources, and other states with which it is competing for investment have a more diverse mix of sources that would disproportionately benefit from trading.

192. Clean Air Act § 111(d), 42 U.S.C. § 7411(d) (2012).

1. Deference to the EPA—*Chevron*

Despite the apparent weakness of some of the agency's arguments, it may prevail due to the deference shown by courts to agency interpretations of their own governing statutes. Therefore, perhaps the best argument that trading is permissible under § 111(d) ESPS is simply that the statute apparently does not forbid it. Since the dictionary definition of "standard" to which the EPA refers in its proposal is so broad, the agency's "textual" argument for trading arguably distills to the same thing—the statute is silent. The EPA's view is that this silence gives § 111 regulators license to allow trading.

In more precise legal terms, the simplest and arguably most likely outcome of litigation is preservation of trading under § 111(d) based on *Chevron* deference to the EPA. Under *Chevron*, agency interpretations of law are entitled to deference, so long as they do not contradict the plain meaning of the statutory text (*Chevron* step one) and are within a "reasonable" interpretive range (*Chevron* step two).[193]

Analysis of the trading issue under this doctrine might proceed as follows. First, § 111 is clearly ambiguous with regard to whether trading is permissible as a compliance option because (as discussed at length above) the statute is silent on this subject. Statutory arguments in favor of trading, such as the EPA's reliance on the dictionary definition of "standard," or those against trading, such as those based on the source-focused or technology-focused character of § 111 performance standards, are at best illuminating, but do not resolve this ambiguity. In other words, neither side initially appears likely to prevail based on *Chevron* step one plain meaning arguments.

Under *Chevron* step two, the agency interpretation receives significant deference—agencies only rarely lose at this stage.[194] The just-mentioned arguments against trading appear insufficient to establish that the EPA's interpretation is unreasonable. Therefore, the agency appears likely to prevail at *Chevron* step two, with the result that trading remains permissible under the statute.

2. Plain Meaning

This analysis may, however, be too simplistic. Despite the statute's silence on the question of compliance options, a reviewing court might

193. *See* Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 842-43 (1984).

194. *See* David S. Tatel, *The Administrative Process and the Rule of Environmental Law*, 34 HARV. ENVTL. L. REV. 1, 4 (2010) (quoting D.C. Circuit judge stating that "[b]ut even where Congress has left an agency statutory space to choose its own interpretation, that interpretation must still be reasonable. Although agencies rarely lose at this '*Chevron* step two' stage, it remains a limitation that courts carefully enforce").

not so readily find that § 111(d) is ambiguous in the relevant respect. In fact, a court might find that silence itself to be evidence that Congress intended trading *not* be allowed. In other words, silence might be considered either evidence of ambiguity or evidence against it.

That argument might go something like this. First, trading is not discussed in the bulk of § 111 because, for the reasons discussed above, it is not practical or plausible in the new source context. Even the strongest advocates for trading under § 111(d) ESPS do not argue that it should be available for new sources, so silence on the question in most of § 111 is not informative.

Moreover, § 111(d)'s further and specific silence regarding trading in the existing source context is not sufficient to create statutory ambiguity on the question. Congress understands how to clearly indicate that trading and other flexible tools are available to state regulators in other CAA contexts, including in § 110 (which, as described above, is explicitly cited in § 111(d) as a procedural model).

The reviewing court could then recite trading critics' arguments regarding the technology-focused and source-focused character of performance standards. These arguments, even if not dispositive on their own, are instructive. It could be argued that they place the burden on the statutory text of § 111(d) to show some evidence that trading might be permissible—something, as discussed at length above, that it probably cannot do. The result, the court could at least plausibly conclude, is that the statutory text is not ambiguous at all. Under this reading, traditional tools of statutory interpretation are sufficient to foreclose trading under ESPS.

To put it most simply, the first sentence of an opinion finding against trading would recite the legal fact that the EPA, or any agency, only has those powers granted to it by Congress. The remainder of the opinion would search for such authority in § 111 and ultimately fail to find it.

Despite the deference ostensibly shown to agencies under *Chevron*, there is significant recent evidence of courts showing skepticism toward EPA interpretations of the CAA that share important similarities with trading under § 111 ESPS. On two relatively recent occasions, the D.C. Circuit has rejected EPA rulemakings including trading in programs aimed at reducing interstate air pollution under § 110 and § 129 of the statute.[195] Although the latter of these two decisions was later reversed by the U.S. Supreme Court,[196] the resulting regulation has been stripped

195. *See* North Carolina v. EPA, 531 F.3d 896, 930 (D.C. Cir. 2008) (per curiam) (vacating EPA's Clean Air Interstate Rule); EME Homer City Generation v. EPA, 696 F.3d 7, 38 (D.C. Cir. 2012) (rejecting EPA's replacement, the Cross-State Air Pollution Rule).

196. *EME Homer City Generation*, 134 S. Ct. at 1610.

of its most significant trading provisions.[197] In the rulemakings at issue in these cases, the EPA allowed interstate trading despite there being little or no statutory text to support it.

Among other reasons, the D.C. Circuit rejected this trading as inconsistent with the statute since it would allow states to buy emissions allowances rather than abate their emissions as (the court ruled) required by the statute. This view closely parallels that of some critics of § 111 trading—as noted above, if trading is allowed, some sources will not meet the emissions rate target in the performance standard, instead buying allowances from other sources that over comply. Critics of trading claim that this is inconsistent with § 111 because, they argue, such sources would no longer comply with the performance standards.[198]

The D.C. Circuit's rulings were driven by traditional tools of statutory interpretation, leading the court to conclude that the EPA's interpretation was inconsistent with the plain meaning of the statute.[199] These arguments are probably stronger in the textual context of the interstate trading cases than for trading under § 111(d), in large part because the text at issue in those sections provides a specific substantive goal for the regulatory program (elimination of "significant contribution" from upwind states to downwind states' nonattainment of national air quality standards).[200] No such goal is explicitly stated in § 111. Nevertheless, the interstate trading cases do illustrate that courts may be willing to reject trading in CAA programs, using *Chevron* step one-style arguments, when the statute is silent.

Even if § 111(d) is determined by a reviewing court to be ambiguous in the relevant sense, the same or similar arguments could be deployed to establish that the EPA's interpretation is outside the "reasonable" or "permissible" range. Some scholars have recognized this rhetorical and possibly doctrinal similarity between *Chevron*'s ostensibly separate steps, and argued that in reality *Chevron* has only one step.[201]

197. *See* Nathan Richardson, *Death of Cap-and-Trade?*, THE PROGRESSIVE FIX (July 8, 2010), http://www.progressivepolicy.org/issues/death-of-cap-and-trade/.

198. *See, e.g.*, Testimony of Lisa Heinzerling, *supra* note 146 (arguing that § 111 requires each individual facility to comply with performance standards).

199. *See North Carolina*, 531 F.3d at 907 (holding that EPA's proposed cap-and-trade program fails to comply with the statutory mandate to prohibit pollution from one state from interfering with air quality in downwind states).

200. *Id.*

201. *See generally* Matthew C. Stephenson & Adrian Vermeule, *Chevron Has Only One Step*, 95 VA. L. REV. 597 (2009) (arguing that Step One and Step Two analyses are conceptually indistinguishable, and that the two-step approach has resulted in unnecessary confusion).

3. A High-Stakes Exception to *Chevron?*

Even if *Chevron* doctrine does give additional deference to agencies when the statutory text is ambiguous, that deference does not necessarily mean agencies will prevail. Though agencies lose at *Chevron* step two only rarely, the two most well-known such defeats were in CAA cases at the U.S. Supreme Court, in opinions authored by Justice Scalia.[202] In both of these cases, Justice Scalia supported his textual arguments with a general principle that courts are, or at least should be, skeptical of agency claims to find support for ambitious regulatory programs in sparse statutory text.[203] Congress, Scalia stated, "does not hide elephants in mouse holes,"[204] and the U.S. Supreme Court "expect[s] Congress to speak clearly if it wishes to assign an agency decisions of vast 'economic and political significance.'"[205]

It is possible that these statements are no more than dicta added for rhetorical effect. Alternatively, however, they can be understood as an exception to *Chevron* deference. The zone of "reasonableness" may narrow when regulations with large practical or economic impact are based on thin statutory support. If this "*Whitman* exception" to *Chevron* is indeed an element of Supreme Court doctrine, it is hard to imagine a more likely case for it to be applied than in litigation over § 111(d) ESPS. As discussed above, the ESPS will have extremely large economic and environmental effects, and are based on a tiny, rarely used statutory provision. The issue of trading is central to their form, extent, cost, and environmental impact. Courts might therefore show the agency less deference—perhaps substantially less—than *Chevron* would appear to indicate. In fact, some observers argue that Scalia added the language regarding ambitious agency interpretations of narrow statutory text to the recent *UARG* decision specifically as a warning to the EPA (which had at the time of the decision only just recently proposed its carbon ESPS).[206]

More broadly, an agency loss on *Chevron* step two, a "*Whitman* exception," or even a rejection of agency authority on nondelegation grounds (as discussed below) can each be viewed as judicial responses to

202. *See* Whitman v. Am. Trucking Ass'n, 531 U.S. 457 (2001); Util Air Regulatory Grp. (UARG) v. EPA, 134 S. Ct. 2427 (2014).

203. *See Whitman*, 531 U.S. at 468; *UARG*, 134 S. Ct. at 2445.

204. *Whitman*, 531 U.S. at 468.

205. *UARG*, 134 S. Ct. at 2445 (quoting *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 160 (2000)).

206. *See* Marita Noon, *You Cannot Rewrite Laws to Achieve Your Political Agenda*, REDSTATE.COM (July 14, 2014, 10:11 AM), http://www.redstate.com/diary/energyrabbit/2014/07/14/marita-noon-rewrite-laws-achieve-political-agenda/ (quoting Tom Wood, partner at Stoel Rives LLP, stating that "the Supreme Court decision seems to give more ammunition to those who want to challenge an expansive view of 111(d)").

the same perceived underlying problem. When an administrative agency takes action with large economic effects based on ambiguous statutory text, it invites additional judicial scrutiny, and if that scrutiny leads to a rejection of the agency's position, it can be dressed in a variety of doctrinal clothes.

4. Does *Chevron* Even Apply?

It is further possible that the EPA's interpretation of the § 111 text to allow trading is not even entitled to *Chevron* deference at all. Under § 111(d) ESPS, states—not the EPA—are the primary regulators. States will therefore determine (at least initially) whether trading is allowed under their ESPS programs, what form it will take, and who may participate. Even if trading is consistent with § 111, the EPA almost certainly cannot require a state to use it. The EPA takes this position in its rulemaking—in its defense of § 111 trading in the ESPS proposal, it argues that "CAA section 111(d) plans *may* include standards of performance that authorize emissions averaging and trading."[207] The agency is therefore offering an interpretation of the CAA that governs states' authority, not its own.

Such an advisory interpretation is arguably not entitled to *Chevron* deference. In *United States vs. Mead Corp.*,[208] the U.S. Supreme Court held that *Chevron* deference is applicable only when Congress delegated interpretive authority to the agency, and when those interpretations carry the force of law.[209] The EPA's interpretation of the CAA to permit trading under ESPS arguably does not meet this standard since it does not actually implement a trading program or limit states' discretion to do so. Only if a state failed to submit a satisfactory plan and the EPA was forced to issue a federal plan including a trading provision would its interpretation of the statute with regard to trading "carry the force of law."[210]

Under *Mead*, the earlier, less-deferential *Skidmore*[211] standard is applied to agency interpretations that are not entitled to *Chevron* deference. This could increase the likelihood of the EPA's interpretation being overturned. However, Justice Scalia dissented in *Mead*, arguing that *Skidmore* deference has no place after *Chevron*.[212] Since he would likely be among the justices favoring a narrow interpretation of regulatory authority under § 111, he could be faced with an awkward choice between ac-

207. CPP, *supra* note 3, at 34, 927 (emphasis added).
208. U.S. v. Mead Corp., 533 U.S. 218 (2001).
209. *Id.* at 221.
210. *Id.*
211. Skidmore v. Swift & Co., 323 U. S. 134 (1944).
212. *Mead*, 533 U.S. at 239.

cepting *Mead* and showing less deference to the EPA, or maintaining his position that *Chevron* should control. A separate opinion (either concurring or dissenting, depending on the majority's position) could be the result, with Justice Scalia either accepting *Mead* under *stare decisis* but noting his continued objection, or analyzing the interpretive question under *Chevron* deference and perhaps still finding against the agency.

If this view of U.S. Supreme Court doctrine is correct, then the question of what degree of deference is shown to *state* interpretations of federal statutes becomes relevant. Since states will actually make the decisions regarding trading under § 111 that "carry the force of law," their interpretation of the statute might be entitled to greater deference than the EPA's advisory interpretation. But the level of deference shown to state interpretations is not clearly settled. At least some lower courts have applied *Skidmore* deference, or something like it,[213] but the U.S. Supreme Court has not indicated which level of deference (if any) should apply. The D.C. Circuit might apply *Skidmore*, *Chevron*, or a different standard.

*Mead* and ambiguity about deference shown to state interpretations has strategic significance for the EPA. If the agency believes that access to *Chevron* deference is important to the survival of its interpretation of the CAA allowing trading, then it might be better served not to mention that interpretation at all in its final rulemaking where it would be subject to legal challenge but could receive only *Skidmore* deference. A decision based on *Skidmore* rejecting trading under ESPS would appear to create controlling precedent even if the agency would have prevailed under *Chevron* deference. Instead, the agency could leave it to states to take formal positions on trading, since they might be entitled to greater deference. Alternatively, the EPA could take an interpretive position on trading, in the context of a federal plan for a state that refused to submit its own plan, in which context the agency would appear to be entitled to *Chevron* deference. These contradictory outcomes for similar or identical interpretations presented in different procedural contexts appear to illustrate the wisdom of Justice Scalia's critique of *Mead*.

5. Nondelegation

Even if a delegation of authority to an agency is clear from the statutory text, or is ambiguous but within the scope of deference shown to the agency's interpretation, it could—at least in theory—be rejected by a reviewing court on constitutional grounds. The nondelegation doctrine provides that Congress may not delegate its legislative authority, at least

213. Abbe R. Gluck, *Intrastatutory Federalism and Statutory Interpretation: State Implementation of Federal Law in Health Reform and Beyond*, 121 YALE L.J. 534, 601 (2011).

beyond certain limits. U.S. Supreme Court doctrine holds that, if congressional delegation of authority to an administrative agency provides no "intelligible principle" on which the agency is to base its decisions, an unconstitutional delegation of legislative authority has occurred.[214]

The doctrine is widely believed to be moribund—no law has been rejected by the U.S. Supreme Court on nondelegation grounds since the 1930s, and in the Court's most well-known recent nondelegation case, it rejected a challenge to another CAA regulatory program.[215] Nevertheless, there have been some attempts to revive the doctrine, most notably by Justice Clarence Thomas. Most recently in *Department of Transportation v. Association of American Railroads* (decided in 2015), Justice Thomas argued at length in a concurring opinion that

> [w]e have too long abrogated our duty to enforce the separation of powers required by our Constitution. We have overseen and sanctioned the growth of an administrative system that concentrates the power to make laws and the power to enforce them in the hands of a vast and unaccountable administrative apparatus that finds no comfortable home in our constitutional structure. The end result may be trains that run on time (although I doubt it), but the cost is to our Constitution and the individual liberty it protects.[216]

The doctrinal solution to this abrogation of duty, he argued, was revival of the nondelegation doctrine.[217] Justice Thomas' concurring opinion in *Whitman* also advocated for revival of the doctrine, albeit not in that particular case.[218] Despite Justice Thomas' more than two decades of advocacy, however, support from other Justices and from lower courts has not generally been forthcoming.

However, there is at least a plausible argument that § 111(d) violates the nondelegation doctrine even under its traditional understanding (rather than whatever expanded version Justice Thomas would prefer). Section 111(d)'s lack of guidance on compliance options (including trading) arguably leaves the EPA without an "intelligible principle" on which to base its decisions regarding state plans. Congress, in other words, delegated oversight authority to the EPA in § 111(d) without giving the

214. J. W. Hampton, Jr. & Co. v. U.S., 276 U.S. 394, 409 (1928) ("If Congress shall lay down by legislative act an intelligible principle to which the person or body authorized to fix such rates is directed to conform, such legislative action is not a forbidden delegation of legislative power.").

215. *Whitman*, 531 U.S. at 472.

216. Dep't of Transp. v. Ass'n of Am. Railroads, 135 S. Ct. 1225, 1254–55 (2015).

217. *Id.* at 1252 ("We should return to the original meaning of the Constitution: The Government may create generally applicable rules of private conduct only through the proper exercise of legislative power.").

218. *Whitman*, 531 U.S. at 486 (Thomas, J., concurring).

agency any principled basis for exercising that authority other than the purely procedural reference to § 110.

The silence of § 111(d) with respect to trading is but one illustration of this lack of an intelligible principle. The statute does not say whether and when the EPA can reject state plans on the grounds that their specified "best system of emission reduction" (and therefore the standards' stringency) is too lenient or too ambitious. Nor does it indicate (as discussed above) whether the EPA may accept state plans that will allow some sources to exceed the stated performance standard due to trading. The agency is (this argument suggests) forced to simply create criteria for accepting or rejecting state plans out of whole cloth.

Congress *could* have written § 111(d) so as to delegate authority over stringency to the EPA and authority over implementation to states, with the EPA retaining authority to reject plans that will fail to meet the EPA's stringency goals. This imaginary version of § 111(d) would give the EPA an "intelligible principle" for reviewing state plans closely mirroring that in § 110 (the threshold standard-setting part of which survived nondelegation challenge in *American Trucking*).[219]

This argument, however, has significant weaknesses. The EPA would argue that despite its brevity, § 111(d) does cross the low "intelligible principle" threshold. As the EPA has interpreted the § 111(d) process, it does have primary responsibility for determining the level of stringency that state plans must meet. If this view is correct, the agency then does have an intelligible principle on which to base its decisions regarding state plans—whether those plans will actually result in sources in the state meeting the EPA-specified emissions rate (individually or on average). The result is a process that looks both procedurally and substantively very similar to the § 110 SIP process.

A related issue is that the EPA's interpretation of the division of authority between it and states might be incorrect. Section 111(d) arguably delegates to states, not the EPA, the authority to determine the "best system" and therefore the stringency of resulting performance standards. Even under that view, however, the EPA could argue that it is still responsible for substantial oversight of state plans, including assessing whether they properly identified the "best system" and complied with the other requirements and considerations (cost, "adequately demonstrated," etc.) of performance standards as defined by the statute. Even if this review is relatively perfunctory and formulaic, it would not lack an "intelligible principle."

The U.S. Supreme Court's lack of receptiveness to nondelegation challenges makes any argument along these lines a long shot, at best.

219. *See generally id.* (reviewing EPA's authority to set national air quality standards under § 108 of the CAA without regard to cost).

*American Trucking* also provides strong evidence that even current U.S. Supreme Court justices who are concerned about federal overreach and skeptical of ambitious agency interpretations of statutes appear to be unwilling to resort to the nondelegation doctrine.

Nevertheless, a nondelegation challenge to § 111(d) would seem to be substantially stronger than that to the § 110 NAAQS/SIP program at issue in *American Trucking*. CAA § 108, the provision at issue in *American Trucking*, contains a fairly clear principle—it requires the EPA to set national air quality standards at a level "requisite to protect public health with an adequate margin of safety." Challengers argued that § 108 nevertheless lacked an intelligible principle since it provided the agency with no other factors (cost presumably first among them) against which to balance or measure its safety determination. The U.S. Supreme Court rejected this challenge by finding that the safety requirement alone is sufficient to establish an intelligible principle.[220] But § 111(d) explicitly states no such criteria for approving state plans. As noted above, the EPA could argue that the § 110(a)(1) definition of performance standard gives such criteria, including cost. But taken alone, § 111(d) gives the EPA little, if any, guidance. It therefore may be somewhat more vulnerable to a nondelegation challenge that § 108.

Though it appears unlikely, ruling § 111(d) unconstitutional on nondelegation grounds would be extremely significant. Not only would it eviscerate the EPA's CAA climate regulation, but it would also be among the most important developments in recent administrative law—the most important and surprising at least since *Chevron*.

Relatedly, a looming nondelegation issue could influence a reviewing court's approach even if it does not formally decide the case on nondelegation grounds. Cass Sunstein has argued that, even if courts no longer decide cases based on the nondelegation doctrine, they have adopted a "nondelegation canon."[221] In other words, courts will interpret a statute so as to avoid a nondelegation issue, just as they explicitly do to avoid other constitutional issues. In this way, the presence of a colorable nondelegation argument against trading in the CPP could make a court more likely to reject trading under step one or step two of the traditional *Chevron* framework, as discussed above.

### *C. Results*

Again, the simplest and most likely result of a challenge to trading under ESPS is probably a victory for the EPA under *Chevron* deference.

220. *Id.* at 464.

221. *See* Cass Sunstein, *Nondelegation Canons*, 67 U. CHI. L. REV. 315, 315 (2000); *see also* John F. Manning, *The Nondelegation Doctrine as a Canon of Avoidance*, 2000 SUP. CT. REV. 223 (2000).

Since the agency believes trading is permissible, that result would allow states to employ it in their plans. But the opposite result appears possible on a variety of grounds—the agency could still lose under *Chevron*, the agency might not receive to *Chevron* deference, or the agency could face a nondelegation challenge that cannot be easily dismissed. Trading under § 111 ESPS faces a legal minefield. Given the significance of trading for the Plan, the resulting uncertainty has grave implications for the success of the regulatory program.

## VIII. IMPLICATIONS AND CONCLUSIONS

To date, arguments regarding the legality of trading under § 111(d) have focused on two battlegrounds. One is past EPA practice—proponents of trading point to trading provisions in a single implemented program for waste combustors and the failed CAMR rulemaking, while critics point to the absence of trading in every other § 111 program. The other battleground is over interpretation of one short phrase in the statute—the "best system of emission reduction."

As the above discussion illustrates, however, neither of these lines of argument can decide the issue. Victory on either (or even both) battlegrounds would not establish that trading is legal (or illegal) under § 111(d) performance standards. The rest of § 111 is similarly (and frustratingly) unhelpful.

It may simply be that § 111(d) falls somewhat short of being a masterpiece of statutory drafting. It was a late addition to the statute and was crafted as a compromise solution to a disagreement between the House and Senate over how to treat a relatively narrow group of pollution sources that otherwise might have fallen into a gap in the statute. It has little structure or substance of its own. Its scope is defined by the source categories created for § 111(b) NSPS, its procedure is imported directly from § 110, and its substance comes mostly from the § 111(a) definition of performance standards (which, unfortunately, says nothing about compliance options). In other words, § 111(d) is a grab bag of tools and content designed for other contexts. Clean Air Act critics complain that the statute was never designed for the climate problem. Section 111(d) arguably wasn't designed at all. That wasn't a big problem when it was a rarely used section of the statute aimed at small groups of sources. But when § 111(d) is brought to bear on the largest carbon-emitting sector in the economy, any limitations are bound to show.

Perhaps the greatest such limitation is that emissions trading lacks a strong foundation in the statute. As a result, neither proponents nor critics of trading (whether scholars and analysts today or litigants and judges in the future) will have legal arguments as strong as they would like. More accurately, neither side's arguments will be as strong as they claim.

Uncertainty about the legality of trading as a compliance mechanism is therefore much higher than most scholars and analysts—myself included—have previously appreciated. Since trading is so crucial to the cost-effectiveness and environmental ambition of the CPP, this legal uncertainty means success of the Plan itself—and with it short-to-medium-term U.S. climate policy—is also more uncertain than appreciated (even if one takes a dim view of the facial challenges to the Plan that have been filed or threatened to date).

My personal view remains that the arguments in favor of trading are somewhat stronger than those against. This view, however, relies largely on *Chevron* deference in the face of significant statutory ambiguity (and the EPA's current interpretation in favor of trading) rather than any specific statutory text. Dicta in some recent U.S. Supreme Court cases could, however, signal decreased willingness by some on the court to show deference to agency interpretations that (as here) allow broad regulatory authority.[222]

This risk is arguably increased by the scope and economic significance of the CPP. *Chevron*'s doctrine of deference to agency interpretations of laws has deep roots in modern administrative law, and it appears to work well for small ambiguities of limited significance. But when ambiguities are great or their significance is large, *Chevron* and its motivating intuitions break down. In such cases, courts have a variety of doctrines available to them for rejecting an agency's position. The simplest is to find a *Chevron* step one or step two violation by interpreting silence or ambiguity against the agency—though the latter is historically much less common, the analysis in each step is arguably the same.

Particularly at the U.S. Supreme Court, where doctrinal flexibility is broader, more innovative options are available to a skeptical court. Justice Scalia's repeated warnings to the EPA that "Congress does not hide elephants in mouse holes" and that such efforts to base large programs on narrow text will receive greater judicial scrutiny is an example of one such option. These dicta can be interpreted as an attempt to narrow *Chevron* or create a formal exception to it in high-stakes contexts. Alternatively, a revival of the nondelegation doctrine, as advocated by Justice Thomas, would achieve similar results. A cautious court, of course, would prefer to avoid constitutional questions but, as noted, a rejection of the EPA's authority to allow trading under ESPS is at least possible even on traditional *Chevron* grounds.

Beyond sketching out these possibilities, predicting the outcome of a D.C. Circuit decision or the votes of U.S. Supreme Court justices would be unwise. All that I can be confident of is that I don't know what the outcome of a case challenging trading under § 111(d) will be—to be

222. See *supra* Section VII.A.3 for a discussion of these dicta.

precise, I am less confident in the outcome of such a case than I once was, and less confident than most scholars appear to be today. My goal in this Article is not, therefore, to predict a particular result but to flag as uncertain a legal issue whose outcome many may have taken for granted.

That uncertainty alone has significant implications for the effectiveness of the Clean Power Plan. As states and other stakeholders have frequently (if predictably) complained, the timetable for states to submit and implement plans is quite short, at least by regulatory standards. If states cannot be sure that trading may be included in their plans, their decisions become even more difficult. Some may eschew trading entirely, due only to the risk that it will be declared illegal and they will lack sufficient time to adjust, or in the interest of providing certainty to industry. Alternatively, attempts to write plans that can be achieved with or without trading (such as including trading but making it legally severable) may require compromises that drive up costs even if trading is eventually deemed legal.

One is tempted to conclude from this and other problems and ambiguities regarding interpretation of § 111(d) that this section, to put it charitably, falls somewhat short of the congressional drafters' finest hour. That is perhaps not surprising—§ 111(d) was apparently a very late addition to the Clean Air Act, intended to fill a gap in regulatory tools for existing sources that was only discovered near the end of the legislative process. Had § 111(d) been drafted earlier in the process, further review and debate might have revealed its inadequacies and its particular lack of any guidance on compliance options.

A targeted amendment to § 111(d) could solve many of its problems. For example, the analogy to § 110 could be made explicitly substantive as well as procedural, allowing importation of § 110's broad scope of regulatory tools and compliance options (including "market-based" tools) into § 111(d) regulation. Alternatively, § 111 could be modified so as to make it clear that regulated emitters may only use compliance options available at each plant (and therefore, that regulators may only consider such measures when setting stringency). This latter option would clearly limit the cost-effectiveness of § 111(d) regulations, but would at least resolve the uncertainty.

Unfortunately there is little chance of any such clarifying amendment to the Clean Air Act given the current congressional political makeup and the controversy surrounding the CPP in particular. That is a minor tragedy today, and should lengthy litigation delay or ultimately derail the CPP because of ambiguity over trading, it will become a major one.

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