Cap Without Trade: A Proposal for Resolving the Emissions Trading Problem Under CAA §111

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Summary

A "cap-without-trade program" to regulate greenhouse gas emissions under §111 of the CAA—a program that applies a mass-based cap to each regulated source—provides compliance flexibility, making it feasible to rely on end-use energy efficiency as a compliance technique, without running the legal risks involved in trying to graft an emissions trading program on the technology-based structure written into §111. These risks are substantial but vary with the scope of the trading program. A "cap-without-trade" approach also provides pollution sources with continuing incentives to favor comprehensive legislation addressing climate disruption and may facilitate a negotiated solution to §111 controversies.

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In the absence of federal legislation creating a trading program addressing global climate disruption,[1] the U.S. Environmental Protection Agency (EPA) has begun to regulate greenhouse gas (GHG) emissions under the Clean Air Act (CAA).[2] Much of its future activity will likely focus on §111 of the Act, which requires "new source performance standards" (NSPS) for air pollutants and existing source performance standards for nontoxic pollutants, like most GHGs, not subject to a national ambient air quality standard (NAAQS).[3] A number of analysts have urged EPA to regulate GHG emissions under §111 through an emissions trading approach.[4] This position, while perhaps desirable for existing sources, proves legally problematic.

This Article proposes an alternative—"cap-without-trade"—in which EPA establishes a mass-based cap on emissions, but does not authorize trading. This approach provides existing pollution sources with much of the flexibility that might be attainable through a cap-and-trade approach under §111 while avoiding the legal pitfalls of seeking to use §111 as the basis for a trading approach. Furthermore, cap-without-trade has a distinct political economy advantage over proposals to use §111 to implement an emissions trading approach. It leaves industry in a position where the only way it can obtain the even greater flexibility that might be available through a broad emissions trading program is to lobby the U.S. Congress for comprehensive climate disruption legislation. Comprehensive legislation remains a superior option to regulation through the CAA, because, if properly designed, it could provide more certainty to the industry and for the environment than laborious regulation and litigation under the CAA. So, preserving industry incentives to support legislation remains important.

1. I use the term "climate disruption" rather than global warming or climate change because it better describes the problem at issue. *See* DAVID M. DRIESEN ET AL., ENVIRONMENTAL LAW: A CONCEPTUAL AND PRAGMATIC APPROACH 25 (2d ed. 2011). "Climate change," while certainly accurate, conveys nothing about the change's nature. As White House Science Advisor John Holdren has noted, the term "global warming" suggests, wrongly, something gradual, uniform, and benign. *Id.*
2. 42 U.S.C. §§7401-7671q, ELR STAT. CAA §§101-618.
3. 42 U.S.C. §7411.
4. *See* M. Rhead Enion, *Using Section 111 of the Clean Air Act for Cap-and-Trade of Greenhouse Gas Emissions: Obstacles and Solutions*, 30 UCLA J. ENVTL. L. & POL'Y 1, 47 (2012) (urging EPA to employ a cap-and-trade approach under §111); Nathaniel Richards et al., *Greenhouse Gas Regulation Under the Clean Air Act: Structure, Effects, and Implications of a Knowable Pathway*, 41 ELR 10098, 10098 (Feb. 2011); Timothy J. Mullins & M. Rhead Enion, *(If) Things Fall Apart: Searching for Optimal Regulatory Solutions to Combating Climate Change Under Title I of the Existing CAA if Congressional Action Fails*, 40 ELR 10864 (Sept. 2010); Hannah Chang, *Cap-and-Trade Under the Clean Air Act?: Rethinking §115*, 40 ELR 10894, 10901-04 (Sept. 2010); IMAI M. CHETTIAR & JASON A. SCHWARTZ, THE ROAD AHEAD: EPA'S OPTIONS AND OBLIGATIONS FOR REGULATING GREENHOUSE GAS EMISSIONS 61 (2009) (finding cap and trade "the best strategy for a comprehensive climate change strategy").

This Article will begin by providing some basic background, explaining how §111 came to play such a central role in regulating GHG emissions and why many analysts find emissions trading attractive. It will then examine the legal merits of emissions trading under §111. Distinctively, this Article argues that the degree of legal risk involved in promulgating a trading program varies with trading's scope and applicability.[5] In the third part, it will explain why a cap-without-trade program provides a superior option to going out on a legal limb to graft emissions trading onto §111.

I. Environmental Benefit Trading and §111 of the CAA

A. *Environmental Benefit Trading Under the Kyoto Protocol*

The Kyoto Protocol authorizes, but does not require, international environmental benefit trading programs addressing global climate disruption. Accordingly, a number of countries and some U.S. states have created trading programs designed to achieve reductions in GHG emissions. I refer to these programs as "environmental benefit" trading programs, because they contemplate allowing pollution source owners to use credits for carbon sequestration, obtained, for example, by planting trees, in lieu of some of their emission reduction obligations. Carbon sequestration reduces atmospheric GHG concentrations, providing an environmental benefit, but does not reduce emissions. Accordingly, I use the term environmental benefit trading when referring to common trading programs under the Kyoto Protocol or trading as a general concept, reserving the term "emissions trading" for programs where only emission reductions earn credits.

Environmental benefit trading has become extremely popular as a policy tool primarily because it reduces the cost of achieving environmental goals. A trading program provides regulated companies with the flexibility to buy credits obtained through GHG reductions, or even carbon sequestration, carried out far from their plants, indeed, potentially in another country. They can use this flexibility to avoid costly local reductions in favor of credits realized through cheaper projects elsewhere.

Although many analysts argue that environmental benefit trading fosters innovation, I have questioned that claim on these pages (and elsewhere).[6] Many of the most important innovative technological changes likely to seriously advance our capabilities to address climate disruption have high initial costs. Deployment of advanced solar technologies or better nuclear power plant designs can help us learn how to lower costs over time and prepare us to phase out fossil fuels, but they are not the cheapest short-term way of achieving near-term GHG abatement targets. Because trading creates the flexibility to avoid costly changes, it may encourage the exhaustion of cheap standard possibilities before it ever promotes significant innovation. Indeed, it allows companies to escape the pressure for valuable innovation that relatively high cost requirements from traditional regulations can otherwise create.

Although the literature usually refers to trading programs addressing climate disruption as "cap-and-trade" programs, actual climate disruption trading programs usually rely on a hybrid model that applies a mass-based cap to targeted sources, but allows the targeted polluters to offset some of their emissions with credits from pollution sources lacking caps or from carbon sequestration projects, sometimes in countries with scant resources for monitoring emissions or sequestration claims.[7] These hybrid programs, to the extent they use offsets, replicate design features of the failed bubble programs, that produced significant cost savings but compromised environmental goals in the process.[8] Recognizing this, all trading regimes addressing GHGs create very complicated rules to try to ensure the integrity of offset credits, which is a very difficult thing to accomplish.[9]

5. *Cf.* Richard B. Herzog & Nicholas W. Fels, *Offsets Under §111 of the Clean Air Act: The Inconvenient Need for Additionality and the Role of Super-Categories*, 43 ELR 10257, 10258 (Mar. 2013) (recognizing but bypassing the question of whether the Act limits the scope of potential trading even if some trading is allowed).

6. *See* David M. Driesen, *Does Emissions Trading Encourage Innovation?*, 33 ELR 10094 (Jan. 2003); *see also* Margaret Taylor, *Innovation Under Cap and Trade Programs*, 109 PROC. NAT'L ACAD. SCI. 4804 (2012) (providing empirical evidence that price uncertainty in cap-and-trade programs has undermined innovation); David Driesen, *Sustainable Development and Market Liberalism's Shotgun Wedding: Emissions Trading Under the Kyoto Protocol*, 84 IND. L.J. 21, 51-57 (2008) (explaining why global emissions trading has not encouraged valuable innovation as well as more targeted programs); David Popp, *Pollution Control Innovations and the Clean Air Act of 1990*, 22 J. POL'Y ANALYSIS & MGMT. 641, 658 (2003) (finding that the rate of innovation fell under the acid rain trading program to rates lower than those obtained under command and control, but that the nature of the innovation changed); David Driesen, *Free Lunch or a Cheap Fix?: The Emissions Trading Idea and the Climate Change Convention*, 26 B.C. ENVTL. AFF. L. REV. 1, 41-49 (1998) (disputing the assumption that broad global environmental benefit trading maximizes innovation); David Driesen, *Is Emissions Trading an Economic Incentive Program?: Replacing the Command and Control/Economic Incentive Dichotomy*, 55 WASH. & LEE L. REV. 289, 332-36 (1998) (discussing the tension between maximizing spatial flexibility and maximizing innovation). *Cf.* David Driesen & Amy Sinden, *The Missing Instrument: Dirty Input Limits*, 22 HARV. ENVTL. L. REV. 65 (2009) (arguing that a trading limit imposed on dirty inputs rather than on outputs would better encourage innovation).

7. *See* DRIESEN ET AL., *supra* note 1, at 310-13 (introducing the concept of a hybrid trading model and some of the issues it creates).

8. *See* U.S. EPA, Proposed Open Market Trading Rule for Ozone Smog Precursors, 60 Fed. Reg. 39668, 39670 (Aug. 3, 1995) (recognizing quality control problems reducing bubble's "environmental effectiveness"); RICHARD A. LIROFF, REFORMING AIR POLLUTION REGULATION: THE TOIL AND TROUBLE OF EPA'S BUBBLE 80-89 (1986); RICHARD A. LIROFF, AIR POLLUTION OFFSETS: TRADING, SELLING AND BANKING 28-29 (1980) (discussing the problem of "paper offsets"); *see, e.g.*, California Air Resources Board and U.S. EPA, Phase III Rule Effectiveness Study of the Aerospace Coating Industry 4 (1990) (finding that large sources operating under bubbles are "not achieving" required emission reductions); David Doniger, *The Dark Side of the Bubble*, 4 ENVTL. F., 33-35 (Mar. 1985) (giving examples of bubbles that avoided requirements to reduce emissions; *cf.* Daniel J. Dudek & John Palmisano, *Emissions Trading, Why Is This Thoroughbred Hobbled?*, 13 COLUM. J. ENVTL. L. 217, 236-37 (1988) (characterizing emissions trading as the "harbinger of bad news").

9. *See* Herzog & Fels, *supra* note 5, at 10259 (characterizing the policing of offsets as "complex, controversial, [and] resource-intensive"); *see, e.g.*, Citizens Climate Lobby v. California Air Resources Board, CCG-12-519554, (Cal. Sup. Ct., Cty. of San Francisco, Dep. No. 613, 2013) (slip op.) (upholding

When a legislature creates a trading program, it can potentially address all pollution sources at once over a long period of time. Perhaps for that reason, not only companies hoping to reduce compliance costs and obtain regulatory certainty, but also many environmental groups, supported legislation creating a GHG abatement regime relying heavily on environmental benefit trading. At the dawn of the first Obama Administration, it seemed likely that Congress would enact comprehensive legislation addressing climate disruption through a hybrid trading program. But Congress ultimately failed to enact such a program.

B. *GHG Abatement Under the CAA: A Brief History*

During the George W. Bush Administration, when passage of legislation seemed hopeless (as it may remain at this moment), states concerned about climate disruption and environmental groups pursued a litigation strategy to force EPA to regulate GHG emissions under the CAA. The centerpiece of the strategy involved petitioning EPA to list GHGs as pollutants in order to trigger obligations to regulate them. EPA denied the coalition petition regarding such a listing under CAA §202 on various political grounds and on the ground that EPA lacks authority to list GHGs under the CAA, which requires listing of any pollutants that endanger public health or the environment.[10] In *Massachusetts v. EPA*,[11] the U.S. Supreme Court required EPA to base its decision about whether to list GHGs on the criterion stated in the statute—the endangerment criterion. EPA then did what any law-abiding, scientifically competent agency would do: listed GHGs in light of the abundant science linking GHGs to serious environmental and health consequences.[12]

This listing triggers regulatory obligations under the CAA. The statute probably requires EPA to establish NAAQS for pollutants with such ubiquitous sources.[13] If EPA promulgated a NAAQS for GHGs, it would have to specify the GHG concentrations in the ambient air that would adequately protect health and the environment and states would have to develop state implementation plans (SIPs) designed to provide for attainment of these standards.[14] GHG concentrations, however, depend on global emission levels. Although EPA has promulgated NAAQS for pollutants with some international sources, it has not used this section to address a pollutant levels so totally dependent on global emissions. Even though the CAA contains provisions addressing international contributions to ambient air quality problems in the United States, states probably could not formulate adequate SIPs without much more international cooperation than has been forthcoming so far, if at all.[15] Accordingly, EPA has not been eager to use the SIP process to address global climate disruption.[16]

The CAA has a number of provisions, however, that authorize source-specific controls, even in the absence of a NAAQS. The first Obama Administration relied on one of these provisions, §202,[17] to produce the most significant GHG abatement measures the federal government has ever enacted, standards for GHG emissions from new automobiles designed to produce the GHG emission levels that correspond to a fleet average of 54.5 miles per gallon by 2025.[18] It also promulgated a rule limiting GHG emissions from trucks and buses and a renewable fuels standard.[19]

The CAA also requires stationary sources to have permits for any air pollutants and new sources to comply with the requirements of the broad prevention of significant deterioration (PSD) program. Thus, states have obligations now to permit GHG emissions sources and to control new sources of GHG emissions with the best available control technology.[20]

EPA has, however, limited the sources to which these programs and other stationary source programs apply by adopting a Tailoring Rule exempting smaller sources from stationary source requirements.[21] Since this exemption solved a major political and administrative problem for a program of GHG regulation, it produced rather odd

California rules defining additionality generically for certain types of offset projects and reviewing evidence of the failure of additionality review in the Clean Development Mechanism context).

10. *See* 42 U.S.C. §7521(a)(1); Massachusetts v. EPA, 549 U.S. 497, 510-14, 37 ELR 20075 (2007) (describing the petition and the reasons EPA gave for denying it).
11. *Massachusetts*, 549 U.S. at 533, 535.
12. *See* Coalition for Responsible Regulation v. EPA, 684 F.3d 102, 114, 116-26, 42 ELR 20141 (D.C. Cir. 2012) (upholding EPA's finding that GHGs endanger public health and the environment).
13. *See* Train v. Natural Resources Defense Council, 545 F.2d 320, 7 ELR 20004 (2d Cir. 1976) (interpreting the Act to make listing of ubiquitous pollutants mandatory); Kassie Siegel et al., *Strong Law, Timid Implementation, How the EPA Can Apply the Full Force of the Clean Air Act to Address the Climate Crisis*, 30 UCLA J. ENVTL. L. & POL'Y 185, 208-10 (2012) (arguing that a NAAQS for GHGs is mandatory). *Cf.* CHETTIAR & SCHWARTZ, *supra* note 4, at 34-39 (arguing that EPA may have discretion to forego a NAAQS listing notwithstanding *Train*, but finding such a position "risky"); Craig N. Oren, *When Must EPA Set Ambient Air Quality Standards? Looking Back at* NRDC v. Train, 30 UCLA J. ENVTL. L. & POL'Y 157 (2012) (suggesting that EPA may have some authority to choose §111 over §110, in spite of the *Train* precedent).
14. *See* Craig N. Oren, *Is the Clean Air Act at a Crossroads?*, 40 ENVTL. L. 1231, 1246 (2010).
15. *See, e.g.*, 42 U.S.C. §7509(a) (authorizing approval of an SIP if a state can show that it would have met a NAAQS but for foreign emissions).
16. *Cf.* Holly Doremus & W. Michael Haneman, *Of Babies and Bathwater, Why the Clean Air Act's Cooperative Federalism Framework Is Useful for Addressing Global Warming*, 50 ARIZ. L. REV. 799, 827-28 (2008).
17. 42 U.S.C. §7521(a).
18. *See* 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62624, 62627 (Oct. 15, 2012) (to be codified at 40 C.F.R. pts. 85, 86, and 600 & 49 C.F.R. pts. 523, 531, 533 et al., and 600); Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 75 Fed. Reg. 25233, 25330 (May 7, 2010) (codified at 40 C.F.R. pts. 85, 86, and 600 & 49 C.F.R. pts. 531, 533, 536-538). These rules also relied upon the U.S. Department of Transportation's authority under Energy Policy and Conservation Act (EPCA), specifically 49 U.S.C. §§32902, 32904(c).
19. *See* Opening Statement of Regina McCarthy, Assistant Administrator for Air and Radiation, U.S. Environmental Protection Agency, Hearing on EPA Regulation of Greenhouse Gases Subcommittee on Energy and Power Committee on Energy and Commerce, U.S. House of Representatives (June 29, 2012), *available at* http://www.epa.gov/ocir/hearings/pdf/2012_GHG_testimony_final.pdf; American Petroleum Inst. v. EPA, No. 12-1139 (D.C. Cir. 2013) (slip op.) (upholding the standard except with respect to cellulosic biofuels).
20. *See* Coalition for Responsible Regulation v. EPA, 684 F.3d 102, 115, 133, 42 ELR 20141 (D.C. Cir. 2012).
21. *See id.* at 115-16 (describing the Tailoring Rule and the reasons for it).

litigation stances, with large emitters seeking to overturn a regulation limiting the scope of an air pollution control program and environmental groups not opposing a major program contraction. Even though the Tailoring Rule conflicts with the relevant statutory language, the U.S. Court of Appeals for the District of Columbia (D.C.) Circuit upheld it, finding that the large emitters and their state allies lacked standing to challenge the rule (which environmentalists did not challenge).[22]

C. Section 111

Absent a NAAQS, however, the federal government can only regulate nontoxic GHGs from stationary sources under §111 of the CAA. Accordingly, environmental groups and their state allies also petitioned for actions under §111, and EPA has settled these actions with respect to petroleum refineries and power plants in light of *Massachusetts*.[23] Accordingly, EPA has recently published a proposed rule designed to regulate GHGs from new power plants.[24] And member scholars of the Center for Progressive Reform have asked President Barack Obama to issue an executive order setting deadlines to regulate other major sources of GHGs, such as chemical manufacturers, smelters, cement plants, and industrial boilers.[25]

Section 111 requires that EPA write rules establishing emission standards reflecting the emission reductions "achievable through the application of the best system of emission reduction . . . which the Administrator determines has been adequately demonstrated."[26] Section 111 requires such standards for a "new source," defined as "any stationary source" constructed or *modified* after the proposal of regulations.[27] And it defines modification as "any physical change or change in the method of operation of a stationary source" that increases emissions or creates emissions of a pollutant not previously omitted.[28] Although §111 requires that an NSPS apply to "modified" plants, not just newly constructed ones, EPA's proposal leaves out modified sources, because EPA claims that it lacks sufficient information to design an NSPS for modified sources.[29] In addition, §111(d) requires (at least in the absence of a NAAQS or an applicable national emission standard for hazardous air pollutants (NESHAP)) that EPA regulate existing sources through an SIP-like procedure in which states establish performance standards for existing, meaning neither new nor modified, sources.[30] The Supreme Court affirmed §111(d)'s mandatory nature in *American Electric Power, Inc. v. Connecticut*,[31] and this affirmation was integral to its conclusion that the CAA provided a comprehensive scheme displacing federal common-law nuisance actions for carbon abatement. Several public interest and academic organizations have proposed that it use this authority to regulate existing sources as well, but so far, EPA has not proposed to do so.[32] Important to this Article's topic, the Natural Resources Defense Council (NRDC) has proposed a trading approach to the implementation of §111(d).[33]

Examining all of the wrinkles in EPA's NSPS proposal would take us a little far away from the emissions trading question, but suffice it to say that its core is extremely simple. EPA bases its standard on the emission reductions achievable by using natural gas combined-cycle technology, rather than a new coal-fired power plant. Recently, utilities have consistently chosen to employ this technology anyway for its new plants, because natural gas now costs less than coal.[34] Accordingly, EPA projects that this NSPS will generate no costs. Moreover, if utilities wish to use coal, they may do so under this proposal, so long as they meet the rule's emissions limits, which they could do through application of carbon capture and sequestration technology.

Thus, it appears that regulation under §111 has a bright future. President Obama could well choose to implement his call to address global climate disruption through a vigorous program under §111.[35] Even if he does not aggressively implement the CAA, litigation will likely compel regulation under §111, including, eventually, regulation of existing sources.

II. The Legality of Environmental Benefit Trading Under §111

I have used the term trading rather generally, but some distinctions among trading designs may matter to legality. The acid rain program involves trading among all firms

22. *See id.* at 116.
23. *See* Robert Glicksman et al., *Seven New Executive Orders for President Obama's Second Term* 5 (2012), *available at* http://www.progressivereform.org/articles/ Stroke_of_the_Pen_1215.pdf.
24. *See* Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22392 (Apr. 13, 2012) [hereinafter Power Plant NSPS].
25. *See* Glicksman et al. *supra* note 23; *see also* Portland Cement Ass'n v. EPA, 665 F.3d 177, 193 (D.C. Cir. 2011) (noting that EPA has proposed to collect more information before regulating cement kilns).
26. 42 U.S.C. §§7411(a)(1), (b)(1)(A), (B).
27. 42 U.S.C. §§7411(a)(2), (b)(1)(B) (emphasis added).
28. 42 U.S.C. §7411(a)(4). *See* New York v. EPA, 413 F.3d 3, 35 ELR 20135 (D.C. Cir. 2005) (adjudicating challenges to 2002 rules defining an emission increase under the modification provision).
29. Power Plant NSPS, 77 Fed. Reg. at 22420.
30. 42 U.S.C. §7411(d); American Electric Power Co. v. Connecticut, 131 S. Ct. 2527, 2537, 41 ELR 21202 (2011) (holding that §111(d) requires regulation of existing sources for which EPA has promulgated an NSPS); United States v. Atlantic-Richfield Co., 478 F. Supp. 1215, 1218, 10 ELR 20089 (1979) (stating that the Act requires states to apply a promulgated NSPS to existing sources under 42 U.S.C. §7411(d)(1)).
31. *See American Electric Power*, 131 S. Ct. at 2527 (finding §111(d)'s mandatory nature "most relevant" to the question of whether the CAA displaces federal common law).
32. *See* NRDC, *Closing the Power Plant Carbon Pollution Loophole: Smart Ways the Clean Air Act Can Clean Up America's Biggest Climate Polluters* 3-4 (2012), *available at* http://www.nrdc.org/air/pollution-standards/files/pollution-standards-report.pdf (describing a specific approach to implementing §111(d)); Glicksman et al., *supra* note 23, at 5.
33. *See* NRDC, *supra* note 32, at 3.
34. *See* Power Plant NSPS, 77 Fed. Reg. at 22392, 22432.
35. *See* Richard W. Stevenson & Robert M. Broder, *Speech Gives Climate Goals Center Stage*, N.Y. TIMES A1 (Jan. 21, 2013) (linking President Obama's inauguration address remarks on climate change to EPA regulation of power plants).

within a single industry, but not beyond it. Call this industrywide trading. By contrast, many emissions trading programs under the Kyoto Protocol involve what I will call broad trading, which allows trading among firms in multiple industries.[36] So, questions of legality may have different answers depending on whether we employ industrywide trading or broad trading. I will also argue that at least with respect to industrywide trading, the arguments for trading are stronger in the existing source than in the new source context under §111.

A. *Trading and the Source Definition*

EPA has traditionally promulgated NSPS rules for particular pieces of equipment, not entire plants.[37] As the D.C. Circuit explained in the 1970s: "An entire plant is an awkward unit to set standards for."[38] The concept of technology-based regulation often implies a focus on particular pieces of equipment, because any end-of-the-pipe technology limiting emissions would have to apply to a particular piece of equipment. And the NSPS program exemplifies technology-based regulation.

The Agency's traditional position enjoys strong support under §111. Section 111 requires EPA to list "categories of stationary sources."[39] It then must promulgate and periodically revise "standards of performance for new sources within such category," not for the category as a single entity.[40] Section 111(e) prohibits the owner of any new source from operating that source in violation of any performance standard applicable to such source under §111 after its effective date.[41] This makes apparent that each new (including modified) source must operate in conformance with an NSPS. Operating a single new source so that its emissions exceed the limit provided in an NSPS constitutes a violation, even if other sources have diminished their pollution enough to make up for it.

The Act defines a stationary source as "any building, structure, facility, or installation which emits or may emit any air pollutant."[42] For much of the 1970s, EPA interpreted the then-new Act as requiring a unit-specific interpretation.[43] In 1974, however, EPA adopted a "bubble" concept for the purpose of facilitating evasion of NSPS for modified facilities.[44] In *ASARCO v. EPA*,[45] the D.C. Circuit reversed and remanded, finding this selective application of the bubble concept to part of the trigger question contrary to the CAA's language and purpose.

The Supreme Court, however, in *Chevron v. Natural Resources Defense Council*[46] held that EPA had substantial discretion in interpreting the term "stationary source." The *Chevron* Court reviewed netting out for purposes of the Act's requirements for new source review (NSR) programs.[47]

Since *Chevron*, however, EPA has still favored narrow definitions of the affected facility for purposes of formulating particular NSPS.[48] Indeed, the ruling under review in *Chevron* defended EPA's extension of the bubble to nonattainment areas for NSR, in part by stating that NSPS would continue to apply to individual pieces of equipment.[49]

One reason that EPA may have maintained a narrow source definition for the NSPS program involves the NSPS program's purposes. As the *ASARCO* court explained, that program aimed to ensure that the best technology applies to new and modified sources in order to improve air quality in nonattainment areas.[50]

B. *The Industrywide Possibility*

An industrywide trading program requires a severing of NSPS from the stationary source definition. Recall that the stationary source definition encompasses a "building, structure, facility or installation."[51] *Chevron* held that these terms can accommodate either a plantwide or a unit concept of a source. But the definition's terms do not linguistically permit that the source to which requirements apply be broader than a single installation.

CAA §111 does link NSPS to the stationary source definition. The Act requires EPA to create lists of source categories, traditionally defined in terms of an industry.[52] It then requires EPA to propose standards "for new sources within such category" and to promulgate "such standards with such modifications as [it] deems appropriate."[53] The most natural reading of this requirement to write standards

36. It is possible to distinguish among different types of broad trading programs as well, but doing so at this juncture would complicate the exposition.
37. *See* Clean Air Council v. Sunoco, 2003 WL 1785879, 7 (D. Del. 2003) (the NSPS program regulates "individual pieces of equipment" not entire plant sites); ASARCO v. EPA, 578 F.2d 319, 323 n.9, 8 ELR 20277 (D.C. Cir. 1978) (noting that even under the regulations establishing the first bubble for purposes of defining modifications EPA sets standards for "facilities" defined as an emitting unit, not for the entire plant); 40 C.F.R. §60.2 (2007) (defining an "affected facility as "any apparatus to which a standard is applicable"); *see, e.g.*, 40 C.F.R. §60.100(a) (defining various "affected facilities" within petroleum refineries). This is a bit of an oversimplification, because at times, a convenient emitting unit encompasses an entire plant. Still, EPA has traditionally made this source-specific regulation.
38. *ASARCO*, 578 F.2d at 323 n.9.
39. *See* 42 U.S.C. §7411(b)(1)(A).
40. *See* 42 U.S.C. §7411(b)(1)(B).
41. 42 U.S.C. §7411(e).
42. 42 U.S.C. §7411(a)(3).
43. *See ASARCO*, 578 F.2d at 322-23.
44. *See id.* at 325 (pointing out that EPA did not "consistently apply" the plantwide definition, instead making it applicable only to modifications).
45. *See id.* at 326-29.
46. 468 U.S. 837, 841-42 & n.6 (1984) (defining judicial limiting of EPA's discretion on the stationary source question as a "basic legal error").
47. *See id.* at 858 (describing the EPA ruling under review as applying a bubble to PSD, NSR, and a moratorium on construction of new sources in areas without adequate implementation plans).
48. *See* Star Enterprises v. EPA, 235 F.3d 139, 148, 31 ELR 20348 (3d Cir. 2000) (noting that EPA defines the affected facility in each NSPS and applying the definitions for parts of petroleum refineries); Standards of Performance for New Stationary Sources; Volatile Organic Compound Emissions From the Synthetic Organic Chemical Manufacturing Industry, 55 Fed. Reg. 26912, 26915-16 (June 29, 1990).
49. *See Chevron*, 468 U.S. at 858 n.30 (quoting EPA's offset ruling as stating that NSPS will continue to apply "regardless of the attainment of nonattainment new source review") (internal quotations omitted).
50. *See ASARCO*, 578 F.2d at 327-28.
51. *See* 42 U.S.C. §7411(a)(3).
52. *See* 42 U.S.C. §7411(f).
53. 42 U.S.C. §7411(b)(1)(B).

for sources would suggest that NSPS apply to sources, not to an entire industry at once.[54]

Similar language also governs the existing source program under §111(d). It requires state plans to establish "standards of performance for any existing source" that would be subject to NSPS if it were a new source. This reinforces the point that NSPS are for "sources" and shows that existing standards apply to sources, not entire industries.

Section 302(l) supports this conclusion.[55] That subsection defines a standard of performance as "a requirement for continuous emission reduction, including any requirement relating to relating to the operation or maintenance of a source to assure continuous emission reduction."[56] The focus on operational and maintenance standards of a source as a method of assurance of continuous emission reductions suggests that the core performance standard itself, the "requirement for continuous emission reduction," should be source-specific. That said, this language does not require operational or maintenance standards and therefore does not, by itself, completely foreclose emissions trading. It does, however, show (in combination with other provisions) that this legislation envisioned source-specific controls, not trading.

Advocates of a trading approach, however, have some counterarguments available. They could argue that a standard that allocates an emission reduction obligation to a new source in a category is a standard "for new sources," even if a new source might meet that obligation by purchasing credits rather than by making reductions. This argument seems most plausible if the trading program only allows new sources to obtain credits from other new sources. This argument takes advantage of the plural form of the statutory language by establishing standards of performance for "new sources" on average. To allow a new pollution source to avoid having any standard apply to it merely because it purchased credits from an existing source, however, would clearly violate the obligation to promulgate standards for new sources. Such standards would, in effect, be general, not new source, performance standards.

Even trading confined to new sources seems inconsistent with the Act's policy, as conventionally understood, of ensuring that the best technology be applied to each new source in order to maximize cleanup at the time when control would be most cost-effective. A trading approach would imply that a facility might avoid using the best technology if some other new source had done better than expected. Yet, this approach is potentially consistent with the policies as articulated in some of the leading legislative history, because of the use of plurals by legislators not anticipating emissions trading.[57]

The application of trading to existing sources, while more congruent with the Act's policies, seems even less congruent with statutory language. Section 111(d) directs states to "establish standards for any existing source" that would be subject to the NSPS if new. This use of the singular suggests source-by-source control even more strongly than the plural form. But here too, trading advocates might argue that a standard applies to an existing source if it faces an obligation to meet the standard locally or purchase equivalent credit.

Application of trading to §111(d), while clearly more linguistically problematic than a nontrading approach, causes less conflict with the Act's policies than trading among new sources. The consideration so dominant in creating the NSPS—that we must seize the opportunity presented by design or redesign of a facility to maximize technological improvement for each source—does not apply to existing sources. In addition, federalism considerations might support allowing states to create trading programs under §111(d).

The law reflecting the federalism policy of flexibility for state design decisions linguistically undermines the case for trading under §111, even while it points to policy considerations supporting it. In 1990, Congress amended §110 of the Act to authorize the use of marketable permits in SIPs.[58] This amendment makes it linguistically and formally hard to read §111 as authorizing trading. It distinguishes between "emission limitations" and "other control measures."[59] It includes "marketable permits" among the "other control measures," thus suggesting that Congress did not consider marketable permits a form of an emission limitation.[60] Section 111 defines a performance standard under §111 as "a standard for emissions of air pollutants which reflects the degree of *emission limitation*" achievable through application of the best technology.[61] This wording supports the conclusion that §111 standards are emission limitations. Accordingly, §110's distinction between emission limitations and "other control measures" suggests that §111 standards do not include limits underlying an emissions trading program.

At the same time, §110 shows congressional support for a federalism policy allowing states flexibility to use market mechanisms as part of their SIP planning. The same federalism policy consideration would support trading under §111(d). On the other hand, express inclusion of trading

54. The promulgation language should not be read to defeat the link to the stationary source definition in the finalization clause. The finalization clause does require promulgation of "such standards," an apparent reference to the standards proposed, which are linked to new sources. The authority to modify should apply how stringent the standards are, monitoring requirements, and other particulars, not to the statutory elements defining what the standards are.
55. *See* 42 U.S.C. §7602(l).
56. *Id.*
57. National Lime Ass'n v. EPA, 627 F. 2d 416, 426, 10 ELR 20366 (D.C. Cir. 1980) (describing the Act's purpose as ensuring that new or modified plants do not create significant air pollution problems) (citing H.R. Rep. No. 1146, 91st Cong. 2d Sess. 3 (1970), U.S. Code & Admin. News 1970, p. 5356, 5358); National Asphalt Paving Ass'n v. Train, 539 F.2d 775, 783, 6 ELR 20688 (D.C. Cir. 1976) (Act maximizes control of new sources in order to maintain existing air quality) (citing S. Rep. No. 91-1196, 91st Cong., 2d Sess. 2 (1970)).
58. *See* 42 U.S.C. §7410(a)(2).
59. *See* 42 U.S.C. §7410(a)(2)(A).
60. *See id.*
61. *See* 42 U.S.C. §7411(a)(1).

in §110 (and other sections) might imply that Congress deliberately chose not to include trading in §111(d). Certainly, Congress, in 1990, thought about increasing the use of market mechanisms, and made no decision to do so in §111(d).[62]

Hence, the least controversial interpretation of §111 does not authorize trading. But a position supporting trading under §111 is imaginable. The Act's policies support trading for existing sources, but render trading among new sources very problematic.

C. Broad Trading

A note on the scope of the broad trading concept appears appropriate in light of a conceptual ambiguity that the Regional Greenhouse Gas Initiative (RGGI) reveals. On the surface, the RGGI program appears to be an industrywide program, not a broad program as I have defined it, as it regulates the utility industry's emissions without requiring reductions from any other industry. My typology, however, would characterize this program as a broad trading program, because it does authorize pollution sources to take credits for activities taking place outside the utility industry, albeit in limited ways. These credits can reach carbon sequestration and other activities that have nothing to do with the amount of GHG emissions coming from electric utilities.

On the other hand, the NRDC proposal for trading under §111(d) in my parlance qualifies as an industrywide trading program, not a broad trading program, in spite of the apparent breadth of activities that can lead to credits. Almost all of the activities that could earn credits take place at utilities. It does, however, include credits for end-use efficiency, meaning energy-efficiency measures taking place in buildings that use electricity, not at utilities. Energy-efficiency improvements taking place in commercial buildings, factories, and residences consuming electricity, however, lead to lower utility emissions. So, even though the activity takes place offsite, the proposal remains focused narrowly on utility industry emissions.

Interindustry trading almost surely violates §111, especially as applied to new sources.[63] It leaves behind not only the link between the program and the source definition, but also any connection with the new source policies of the Act and the structure of the §111 program. For §111 is built on regulation of source categories, not regulation of the entire universe of sources (and potentially, carbon sinks) at one blow.

62. Robert McKinstry has argued that the language in §111(d) requiring EPA to adopt a "procedure" for state submission of plans under §111 similar to that set out in §110 for state SIP submissions authorizes trading. *See* Robert J. McKinstry Jr., *The Clean Air Act: A Suitable Tool for Addressing the Challenges of Climate Change*, 41 ELR 10301, 10305 (Apr. 2011). But the provision in §110 including marketable permits as part of the substance of SIPs does not establish any procedure. Section 111(d) makes §110's procedural provisions, not its substantive provisions, a model for §111. *See, e.g.*, 42 U.S.C. §7410(k).

63. *Cf.* Enion, *supra* note 4, at 47 (stating that §111(d) "does not contemplate" offsets).

III. Capping Without Trade, Political Economy, and Flexibility Without Significant Legal Risk

Industrywide trading appears to be legally defensible, but involves considerable legal risk, implying, perhaps, delays in realizing emission reductions and a lack of certainty for the regulated industry. A cap-without-trade approach can help avoid the legal risks and increase certainty for both the regulated industry and the environment.

A. On the Political Economy of Trading and §111

Surprisingly, in the §111(d) context at least, some environmentalists seem to support trading, while industry seems to be in opposition. The reason, at least according to a blog post by NRDC's David Doniger, is that trading provides a way to cost effectively deliver reasonably ambitious emission reductions, while the industry sees avoidance of compliance flexibility as a way of avoiding any obligation to provide meaningful reductions from existing sources.[64]

Electric utility opposition to existing source emissions trading raises question about a standard argument about the political economy advantages of emissions trading. That argument maintains that regulators should favor emissions trading because by using it, they lower the cost of compliance, thereby facilitating industry cooperation and better pollution control.

The §111 story shows that this political economy argument needs qualification in a way that can help show regulators how to exhibit much more strategic savvy than they usually do. Only if the regulator is prepared to impose conventional regulation does the industry acquire an incentive to agree to a trading program to lower its compliance cost. Conversely, if the regulator will not regulate conventionally, then opposing trading becomes a means of avoiding regulation altogether (at least until the courts correct the illegality). A regulator committing itself in advance to trading makes it worthwhile to agree to trading only if the regulator weakens design features (such as stringency and monitoring requirements). The political economy of trading appears dependent on background institutional and political conditions.

This political economy argument suggests a strong advantage to Agency commitment to conventional regulation under §111. Such a position can make industry allies in lobbying Congress for cap-and-trade regulation. And even in the absence of that, such a position may make it advantageous for industry to accept a trading proposal under §111 when it otherwise would not be.

This suggests that EPA should at least propose a cap-without-trade program for existing sources. If EPA is pre-

64. *See* David Doniger, *The Three Elements of Power Plant Standards: Carbon, Mercury, and Irony* (Dec. 9, 2012), http://switchboard.nrdc.org/blogs/ddoniger/; *see also* Alice Kaswan, *Climate Change, the Clean Air Act, and Industrial Pollution*, 30 UCLA J. Envtl. L. & Pol'y 51, 101 (2012) (noting that trading's greater cost-effectiveness implies potential for greater stringency).

pared to implement such a program, a sensible industry might agree to a cap-and-trade program in order to obtain additional flexibility. If EPA is not committed to cap-without-trade, then industry can seek to defeat meaningful regulation by litigating against a program based on trading under §111.

B. *On the Choice Between Trading and Not Regulating*

If in fact EPA faces a choice between allowing trading and not meaningfully regulating existing stationary sources, it should choose the trading alternative. Declining to regulate existing sources is not a legally defensible position, and even industrywide trading, while quite questionable, is legally defensible. Furthermore, seeking to avoid existing source regulation does not treat climate disruption with the seriousness that President Obama suggested the issue merited in his second inaugural and State of the Union addresses. Since such a position is bound to be reversed in the courts eventually, it also increases uncertainty for the industry. If EPA regulates new sources, but not existing sources, it may create an incentive to keep dirtier facilities open longer, which is very bad for the climate and for public health. Finally, if EPA fails to regulate existing sources under §111 in a reasonably ambitious way, desperate environmentalists may force the Agency to use the much more awkward SIP process instead, further multiplying administrative headaches and uncertainty.[65]

EPA's stated reason for not regulating modified sources, insufficient information, does not appear at all convincing. Electric utilities have been a major focus of EPA air pollution regulation since the 1970s, and it is difficult to believe that the Agency does not have a good understanding of the emission control options. In fairness to EPA, *National Lime v. EPA*[66] potentially puts a burden of proof upon EPA that makes every NSPS an adventure. But EPA has in the past generally met its basic responsibilities in spite of that, and it has the authority to require the production of any information it needs.[67]

GHG regulation, however, does pose special challenges for regulators, which is why most experts prefer legislative cap and trade. Global climate disruption requires shifts away from fossil fuels in the long run, whilst NSPS regulation has traditionally focused primarily (not exclusively) upon end-of-the-pipe control. Almost anybody building a new power plant today would probably use the combined-cycle natural gas option forming the basis for EPA's new NSPS proposal in order to take advantage of cheap natural gas prices. Taking the position that existing sources should employ this same technology, however, implies that a regulation applying to existing sources would require a redesign of existing plants. A state could avoid that outcome by authorizing carbon capture and storage. But that technology is expensive and has some effectiveness and risk/risk issues associated with it.[68]

EPA has legal authority to apply its proposed NSPS to modifications, which the Act views as an upgrade opportunity identical to that offered with new "greenfield" sources. EPA must consider costs and feasibility in evaluating an NSPS, but the Agency has a lot of discretion in determining when a technology is so costly as to render it infeasible. In any case, any legal risks in promulgating an ambitious NSPS pales beside the legal risks in not regulating modified sources.

EPA does have the authority to base an NSPS on a fundamental redesign of a facility.[69] Section 111 requires that an NSPS be based upon "the best system of emission reduction."[70] Prior to 1990, Congress had required that an NSPS be based on a "technological system" of emission reduction in order to discourage regulation providing incentives to use clean fuels.[71] But in 1990, Congress removed this restriction from §111(a)(1) in order to give EPA broad authority in constructing an NSPS.[72] But EPA can avoid that issue, if it wants, by basing its NSPS on the capabilities of carbon capture and sequestration technology.

Meaningful regulation of nonmodified existing sources, however, does pose a quandary. Although there is less specific legal guidance to go on for existing source regulation under §111(d), courts may closely scrutinize a proposal that in effect demanded that existing sources either redesign their facilities or engage in extremely costly control.

C. *A Proposal: Cap Without Trade*

Happily, the Agency need not choose between an unusually intrusive traditional performance standard and a legally problematic trading program. The NRDC trading proposal for existing sources (meaning nonmodified) appears attractive for reasons that are very interesting in terms of the theory of emissions trading. Like emissions trading generally, it facilitates incremental change while allowing facility operators to postpone fundamental changes, such as moving to combined-cycle natural gas. This proposal

65. *See* Siegel et al., *supra* note 13, at 213-14 (arguing that any advantages the NSPS process might offer over the NAAQS process remains "entirely theoretical" until EPA regulates existing sources under §111).
66. *See* National Lime Ass'n v. EPA, 627 F.2d 416, 431-33, 10 ELR 20366 (D.C. Cir. 1980) (requiring EPA to show a standard's achievability "under the range of relevant conditions" that can influence emissions given the position EPA took on that issue).
67. *See* 42 U.S.C. §7414(a).
68. *See* IPCC Special Report on Carbon Dioxide Capture and Storage 10-14 (Bert Metz et al. eds., 2005) (discussing costs and risks and suggesting that the latter can be appropriately managed through careful site selection and management).
69. *See* Sierra Club v. Costle, 657 F.2d 298, 368 n.288, 11 ELR 20455 (D.C. Cir. 1981) (holding that an NSPS can be based, in part, on fuel treatment).
70. 42 U.S.C. §7411(a)(1) (2006).
71. *See National Lime*, 627 F.2d at 441 n.84.
72. The phrase, however, lives on in other subsections. *See* 42 U.S.C. §§7411(a)(1), (b)(5), (g)(4)(B), (h)(1), (j). Two of these subsections operationalize a policy of preferring performance standards to directives to use particular technologies coupled with a grant of authority to direct uses of particular technology when measurement of emissions is not practicable. *See* 42 U.S.C. §§7411(b), (h)(1). The other operational subsections serve as triggers for standard revisions or waivers. *See* 42 U.S.C. §§7411(g)(4)(B), (j). None of them limit the compliance options EPA or the states may rely upon in crafting standards under §111.

allows pollution sources to realize incremental reductions in a wide variety of ways, including, for example, plant efficiency improvements, end-use efficiency programs, and manipulation of dispatch orders to favor cleaner units.[73] As such, it should appeal more to fans of cost-effectiveness and incremental change than to proponents of fundamental technological change.

Some, although not all, of the benefits of the NRDC proposal can be realized without trading. EPA could impose a mass-based cap on existing source emissions. This would allow for automatic crediting of both facility-specific and end-use efficiency improvements even without trading. That is because any energy-efficiency improvements, including end-use efficiency, would produce lower emissions at electric utilities. Accordingly, EPA could demand the reductions a utility making full use of the energy-efficiency possibilities could realize at costs not so exorbitant as to defeat achievability. Furthermore, to the extent EPA wants to rely on some movement to natural gas combined-cycle power or carbon capture and storage in its proposal, it can measure the economic feasibility of this technology by evaluating the impact of modest amounts of this technology on ratepayers, since in this industry costs get passed on to ratepayers through state utility regulation.

A mass-based cap represents a departure from the tradition of NSPS regulation, but one that avoids the legal risks involved in industrywide trading. Traditionally, EPA has regulated using rate-based limits in its NSPS programs.[74] For example, power plants have traditionally been regulated with emission limits expressed as pounds per million British thermal units (BTUs). These rate-based limits work nicely with end-of-the-pipe controls, because one can predict control efficiencies from end-of-the-pipe devices. They do not, however, make increases of efficiency within the plant useful for compliance purposes. Such efficiency improvements generally reduce the BTUs generated, but do not lower the amount of pollution per BTU. Accordingly, EPA in the 1990s revised its NSPS for power plants to express limits in terms of pounds of pollution per megawatt hour (MWh) of electricity produced. An energy-efficiency improvement within a utility plant would reduce the amount of pollution per MWh. But end-use efficiency (e.g., better-insulated homes or efficient light bulbs in commercial buildings) does not reduce the amount of pollution per MWh. It reduces the mass of a pollutant by reducing the amount of MW produced. A mass-based limit, expressed in tons per year, does make end-use efficiency improvements a viable compliance option. For end-use efficiency reduces the amount of tons of pollution a power plant emits, thereby making end-use efficiency a viable compliance method for an emissions limit expressed in terms of the mass of emissions.

The Act does not limit EPA's discretion in choosing units for measuring emission reductions. A standard of performance simply "means a standard for emissions of air pollutants"[75] and an "emission limitation" (another term in §111(a)) means a requirement that "'limits the *quantity*, rate, or concentration' of air emissions."[76] And a mass-based standard meets that definition.

I do not mean to suggest that cap-without-trade provides all of the compliance flexibilities available through cap and trade. For example, in a cap-without-trade program, one might manipulate dispatch orders to reduce a dirty unit's hours of operation and therefore its mass emissions as part of the compliance effort. Once the owner, however, had in place sufficient measures to meet the cap, there would be no incentive to continue dispatch using discharge orders to further reduce emissions. In a trading program, however, one might manipulate dispatch to generate additional credits to sell to other not-yet-compliant facilities. Without the ability to get credits for reduction below a cap, the incentives for environmentally friendly dispatch manipulation might be quite limited. But it is quite possible that other existing trading programs applicable to these sources provide adequate incentives to encourage environmentally favorable dispatch anyway. And the lack of maximization of dispatch orders would not limit the achievable emission reductions, but would, as one would expect in a nontrading context, lessen the cost-effectiveness of the program.

Even if dispensing with trading limits flexibility in some respects, the energy-efficiency opportunities by themselves seem quite large and capable of providing plants with all the opportunities they need to postpone costly conversions to combined-cycle natural gas. It would allow the Agency to justify an ambitious proposal as not necessarily terribly costly without great legal risk.

The regulated industry might well find it easier to manage both energy-efficiency improvements and other quick fixes in a trading context than outside of it. If so, it might agree to a trading program, if, and probably only if, EPA is prepared to impose a mass-based limit without trading absent an agreement.

IV. Conclusion

A cap-without-trade program offers a great deal of flexibility without incurring the legal risks involved in trying to convert §111 into a trading program for existing sources. These flexibilities can justify a reasonably ambitious mass-based cap that takes into account end-use efficiency and the possibility of using dispatch orders to lower emissions at facilities. In addition, cap without trade has significant political economy advantages, in that a serious proposal of such a program would create an incentive for industry to agree to a cap-and-trade program, rather than litigate in hopes of defeating all meaningful regulation.

73. *See* NRDC, *supra* note 32, at 11.
74. *See* U.S. Environmental Protection Agency, Background on Establishing New Source Performance Standards (NSPS) Under the Clean Air Act 2, *available at* http://epa.gov/carbonpollutionstandard/pdfs/111background.pdf.
75. 42 U.S.C. §7411(a)(1).
76. 42 U.S.C. §7602(k) (emphasis added).