

POWER PLANT REGULATION UNDER THE CLEAN AIR ACT: A
BREAKTHROUGH MOMENT FOR U.S. CLIMATE POLICY?

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| | |
|---|-----|
| I. INTRODUCTION AND SUMMARY | 98 |
| A. Why the CAA and Why Now?..... | 99 |
| B. The Legal Framework | 99 |
| C. The CCS Debate for New Coal Plants | 100 |
| D. The Existing Source Standard..... | 100 |
| II. THE PATH TO THE PRESIDENT’S CLIMATE PLAN | 102 |
| A. International Negotiations | 103 |
| B. The Bush Years | 103 |
| C. The Supreme Court’s Intervention | 104 |
| D. The Obama Era..... | 105 |
| E. Initial Implementation of <i>Mass v. EPA</i> | 106 |
| F. The President’s Pivot to a Full-Throated Embrace of the CAA | 109 |
| III. THE LEGAL FRAMEWORK AND RULEMAKING SCHEDULE..... | 111 |
| IV. EPA’S NSPS PROPOSAL—BANNING OR PROVIDING A TECHNOLOGY PATH FOR NEW COAL PLANTS? | 114 |
| V. EXISTING SOURCE STANDARDS: WHAT TOOLS CAN EPA USE TO REDUCE THE POWER SECTOR’S GHG FOOTPRINT?..... | 118 |
| A. The Scope of BSER—What’s a System of Emission Reduction?..... | 118 |
| B. Conducting a BSER Analysis Under a Systems-Based Approach..... | 122 |
| C. Mass-Based vs. Emission Rate Targets..... | 124 |
| D. The National Emission Reduction Target | 125 |
| E. Assigning Emission Targets to the States..... | 126 |
| F. Selection of Baseline Year for Determining State Compliance Obligations..... | 130 |

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| | |
|---|-----|
| G. Working Against the Clock—Realistic Dates for Implementation and Compliance | 131 |
| VI. CONCLUSION: LOOKING AHEAD | 132 |

I. INTRODUCTION AND SUMMARY

In June 2013, President Obama announced a Climate Action Plan that directs the Environmental Protection Agency (“EPA”) to use the Clean Air Act (“CAA”) to reduce greenhouse gas emissions from fossil-fueled power plants—both new and existing—and sets a demanding schedule for EPA rulemaking.¹ This plan puts the prestige and credibility of the White House squarely behind EPA regulation of greenhouse gas (“GHG”) emissions from the electric power sector. Power plants are by far the nation’s largest emitting category and are responsible for around thirty-two percent of total U.S. GHG emissions.²

The president’s plan represents a striking departure from the measured approach of the first Obama term. Before 2012, the president’s personal commitment to Executive Branch action on climate change was often equivocal and EPA and other agencies felt constrained in how far they could go. By contrast, EPA leadership knows now that the president “has its back,” and this has removed a major source of uncertainty and indecision in the Agency’s approach to GHG emission reduction.

With the president’s firm support, rulemaking for the power sector under the CAA will be the Agency’s top priority for the remainder of the second term, and EPA will spare no resources in meeting the president’s expectations. That doesn’t mean, however, that the path forward will be easy—far from it. The complexities of regulating power plants under the CAA are enormous, and EPA will need to tackle daunting legal, political, economic, and technical challenges. The presidentially-mandated deadlines for completing rulemaking and the subsequent state planning process are extraordinarily tight, and EPA will strain to stay on track despite an all-court-press and White House backing.

¹ EXEC. OFFICE OF THE PRESIDENT, THE PRESIDENT’S CLIMATE ACTION PLAN (2013), available at <http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>; Memorandum on Power Sector Carbon Pollution Standards, 78 Fed. Reg. 39, 535 (July 1, 2013).

² U.S. ENVTL. PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2012 ES-23 (2014).

This article examines the factors that led the Obama Administration to select the CAA as the major driver for reducing U.S. GHG emissions and reviews the legal framework for EPA's rulemaking and the presidentially-mandated schedule for completing it. It then discusses the legal and policy choices that EPA must make and their implications for the outcome of the rulemaking process, including the level of emission reduction it will be able to achieve and legal and political obstacles it will face.

A. Why the CAA and Why Now?

For two decades, there was little interest in using existing U.S. laws to reduce GHG emissions. Instead, policymakers focused on negotiation of international commitments and domestic legislation. But the Supreme Court's 2007 *Massachusetts v. EPA* decision created previously unrecognized opportunities under the CAA to address climate change. During the Obama first term, EPA cautiously tested the limits of the Act as the White House pinned its hopes on cap-and-trade legislation. However, in the second term, with Congress at an impasse and the president's re-election secured, the White House turned to the CAA as the primary tool to achieve significant reductions in the power sector.

Factors motivating this shift in thinking included greater confidence in the workability of the Act, the downward trend of U.S. power plant emissions due to low-cost natural gas, reduced demand for electricity and the growth of non-emitting renewable sources of power, and the lack of other viable options for accelerating emission reduction. Mindful of his legacy, the president also felt an imperative to exercise global leadership by fulfilling his Copenhagen commitment to a seventeen percent reduction in U.S. emissions by 2020 and laying the groundwork for more ambitious reduction targets in the next set of international negotiations, culminating in the 2015 Conference of the Parties in Paris.

B. The Legal Framework

The cornerstone of EPA's efforts to reduce GHG emissions from fossil fuel power plants is CAA § 111, which authorizes "standards of performance" for emission source categories.³ EPA is empowered under § 111(b) to issue standards for new and modified sources (called New Source Performance Standards or NSPS) and, upon promulgating such standards, to issue emission guidelines for existing sources (called Existing Source Performance Standards or ESPS) under § 111(d).

³ Clean Air Act of 1970, 42 U.S.C. § 7411 (1990).

Although the NSPS program is well-established, EPA has less frequently exercised its authority under § 111(d), and the framework for existing source control is less fully defined. Unlike promulgation of NSPS, the development of ESPS is a cooperative state-federal process, with EPA setting minimum emission reduction targets and compliance schedules and states adopting and implementing actual standards of performance. However, the Act creates a federal backstop if states fail to meet minimum requirements.

C. The CCS Debate for New Coal Plants

On September 20, 2013, EPA met the first milestone in the president's schedule—issuance of a proposed NSPS for coal and gas-fired power plants.⁴ The proposal sets an emission limit for coal combustion that is well below the emission levels of even the best performing traditional coal plant technology. EPA's rationale for this stringent limit is that it is achievable using Carbon Capture and Storage ("CCS"), a technology for capturing and storing CO₂ emissions underground before they are released in the atmosphere.

No traditional coal plants are being built now that would be subject to EPA's rule. Nonetheless, opposition to the proposal has been intense. Members of Congress from coal states and the industry have argued that EPA's proposal amounts to a *de facto* "ban" on new coal plants because large-scale deployment of CCS is not a realistic option in the immediate future. Litigation challenging EPA's final rule is inevitable whatever form it takes. The record before the reviewing court will probably show that CCS is a technology of proven effectiveness in controlling CO₂ emissions from coal plants but, because of costs and other constraints, its near-term deployment is likely to be limited. The court will need to determine whether an emission limit based on the performance of CCS is within EPA's discretion under § 111(b)—a provision which was intended to drive innovations in pollution control where a new technology is demonstrated but not yet at the stage of widespread commercial application.

D. The Existing Source Standard

Expected this June, EPA's ESPS proposal will have far greater real-world consequences than the NSPS. Although based on similar legal

⁴ Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 1430 (Jan. 8, 2014) (to be codified at 40 C.F.R. pts. 60, 70–71, 98).

concepts, the NSPS and ESPS pose very different challenges. The traditional end-of-pipe technology focus of CAA emission standards may be relevant to GHG control at new plants, but it has serious drawbacks when applied to existing plants because technology upgrades at these plants have limited potential to reduce GHG emissions. The downward trajectory of GHG emissions in the power sector since 2005 has occurred because of dynamic changes in the entire energy supply system, including shifts in the overall fuel mix, investments in gas generation and retirement of coal units, growth of renewables and moderation in energy demand due to increased efficiency and grid improvements. Accelerating these changes through smart policies and incentives would seem to be the best strategy for reducing existing plant emissions, but whether the CAA authorizes this approach is the subject of intense debate.

Battle lines have already formed around narrow and broad readings of the term “best system of emission reduction,” the critical concept in setting standards of performance under §111(a) (“BSER”). Under the narrow reading, BSER would only encompass emission reduction strategies of known effectiveness that can be implemented within the boundaries of the regulated source, i.e. the power generating plant emitting GHGs.⁵ Under the broad reading, BSER could include actions outside the source boundary but within the capability of the source that reduce emissions, such as investments in demand reduction or renewable power that lower or offset emissions by the power plant itself. The former interpretation is often termed the “source-based” approach; the latter is described as the “systems-based” approach.⁶ The source-based approach might only be capable of justifying emission reductions in the 2-6 percent range, while the systems approach could unlock a broader mix of strategies (including fuel switching, growth of non-emitting generation and demand reduction) that could support much greater reductions (perhaps in the range of thirty percent of 2005 emissions). Legal considerations aside, the Obama administration is likely to be partial to the more ambitious emission reduction goals that the systems approach would justify because power sector reductions will need to be well above seventeen percent in order to achieve the president’s economy-wide target of seventeen percent by 2020, given the limited potential for reductions elsewhere in the economy.

⁵ *Overview Presentation of Clean Air Act Section 111*, U.S. ENVTL. PROT. AGENCY, <http://www2.epa.gov/carbon-pollution-standards/what-epa-doing> (last updated Mar. 16, 2014).

⁶ *Id.*

If EPA sets an ambitious national goal for power plant emission reductions, the translation of a national emission reduction guideline into targets for state performance standards will present EPA with difficult choices. States differ markedly in their generation mix, historical investment in energy efficiency and renewables, previous progress in reducing GHG emissions, electricity market structure and acceptance of emission reduction as a policy goal. How EPA accommodates these differences will have far-reaching political and economic repercussions and the potential to pit states and regions against each other. As discussed below, several options are available for allocating emission reduction burdens among the states; in weighing these options, EPA must decide whether to treat all states equally or to recognize unique factors, such as a state's heavy historical reliance on coal generation or previous success in reducing emissions. Tied to these choices is the "baseline" that EPA uses to calculate the additional reductions that states must make; a 2005 baseline will give credit to "early mover" states while a 2014 baseline may be more attractive to states with minimal emission reductions over the past decade.

If EPA issues strong § 111(d) guidelines with ambitious reduction targets, reactions will be sharply divided across the political spectrum. The agency can count on the strong support of states with progressive climate policies but will face die-hard opposition from other states bitterly opposed to federal environmental mandates. In the middle will be states where renewables, natural gas generation, and energy efficiency have begun making significant inroads, but concern will surround the cost and disruption of accelerating this transition. These divisions are likely to be mirrored in Congress and the power industry.

The impact of EPA's proposals on future mining of coal and its combustion to generate power will be a driving force in the political and policy debate. Coal has historically accounted for around fifty percent of U.S. power production, but its share has declined markedly in the last decade because of competition from low-cost natural gas. Further declines will be the inevitable byproduct of EPA-mandated emission reductions and will intensify anxiety about the industry's future. EPA will need to walk a tightrope between showing fairness and flexibility to coal-reliant states and regions and pushing for substantial emission reductions that are only achievable by shifting the generation mix away from coal and toward natural gas and renewables.

II. THE PATH TO THE PRESIDENT'S CLIMATE PLAN

The U.S. climate policy story is a tortured history of false starts, high hopes that proved unrealistic, political gridlock, simmering scientific

controversy, and surprising judicial activism. It is doubtful that the president would be turning to the CAA now if other approaches—both domestic and to some extent international—hadn't reached an impasse.

A. International Negotiations

As the world's largest GHG emitter until it was recently surpassed by China, the U.S. has exerted enormous influence on international climate policy over the last 25 years, often exercising leadership but then pulling back from commitment at critical junctures in response to economic concerns and domestic political pressures.

The first President Bush was a reluctant participant in the 1990 Rio Earth Summit. After nearly scuttling it, the U.S. agreed to the UN Framework Convention on Climate Change, which set a goal of “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”⁷ President Clinton sought to build on the Convention with the voluntary Climate Change Action Plan,⁸ but it had little teeth and, despite large ambitions, failed to slow the growth in U.S. GHG emissions.

The next international milestone came in 1997 with the Kyoto Protocol, which called on developed countries to reduce GHG emissions by an average of five percent below 1990 levels between 2008 and 2012.⁹ The U.S. was instrumental in negotiation of the Protocol, with Vice President Gore making a dramatic eleventh hour intervention in Kyoto. But political opposition to signing the Protocol was widespread, and the U.S. did not make a serious effort to become a party.¹⁰

B. The Bush Years

The second Bush Administration had little enthusiasm for tackling climate change. However, the issue remained in the limelight because of rising public concern about climate change impacts, spurred by new expert reports reflecting an acute sense of alarm and a seeming

⁷ U.N. Framework Convention on Climate Change art. 2, May 9, 1992, S. Treaty Doc. No. 102-38, 1771 U.N.T.S. 107, *available at* <http://unfccc.int/resource/docs/convkp/conveng.pdf>.

⁸ PRESIDENT BILL CLINTON & VICE PRESIDENT AL GORE, THE CLIMATE CHANGE ACTION PLAN (1993), *available at* <http://www.gcrio.org/USCCAP/toc.html>.

⁹ Kyoto Protocol to the U.N. Framework Convention on Climate Change art. 3, Dec. 11, 1997, 2303 U.N.T.S. 162, *available at* <http://unfccc.int/resource/docs/convkp/kpeng.pdf>.

¹⁰ The Senate went on record as opposing ratification of Kyoto by an overwhelming margin. See Byrd-Hagel Resolution, S. Res. 98, 105th Cong. (1997) (enacted).

consensus in the scientific community.¹¹ As the scientific case solidified, there was growing acceptance by business leaders and other mainstream constituencies of the need to curb GHG emissions. Bills were introduced in the Senate to reduce emissions through a cap-and-trade system and received growing bi-partisan support in successive sessions of Congress.¹² Environmental groups and large corporations formed a coalition (the U.S. Climate Action Partnership) to build support for legislation.¹³

C. The Supreme Court's Intervention

As climate policy lurched forward in the second Bush term, a remarkable game-changing event occurred. In 2007, the Supreme Court issued a 5-4 decision in *Massachusetts v. EPA*, putting the CAA and EPA squarely in the middle of the climate policy debate.¹⁴ The Court not only held that CO₂ was a “pollutant” under the Act¹⁵ but went further and held that EPA had an obligation to use its authority to reduce CO₂ emissions if it found, based on the scientific evidence, that these emissions “endangered” the public health or welfare.¹⁶

The Court's decision easily could have gone the other way. As the dissenting opinions illustrated, there was a strong argument that the state petitioners lacked standing.¹⁷ And, as the dissenters also argued, the Bush Administration's decision not to regulate CO₂ could have been

¹¹ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (Solomon et al. eds., 2007), available at http://www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html; NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., SURFACE TEMPERATURE RECONSTRUCTIONS FOR THE LAST 2,000 YEARS (2006); NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., UNDERSTANDING CLIMATE CHANGE FEEDBACKS (2003).

¹² McCain-Lieberman Climate Stewardship and Innovation Act of 2007, S. 280, 110th Cong. (2007); McCain-Lieberman Climate Stewardship and Innovation Act of 2005, S. 1151, 109th Cong. (2005); McCain Amendment to Energy Policy Act of 2005 S. 826, 109th Cong. (2005); McCain-Lieberman Climate Stewardship Act of 2003, S. 139, 108th Cong. (2003).

¹³ Press Release, U.S. Climate Action Partnership, Joint Statement of the United States Climate Action Partnership (Jan. 19, 2007), available at

http://www.us-cap.org/media/release_USCAPStatement011907.pdf. The United States Climate Action Partnership (USCAP) was announced in January of 2007 and included corporate leaders such as BP America, General Electric, DuPont and PG&E, as well as non-governmental organizations like the Environmental Defense Fund, National Resources Defense Council and the Pew Center on Global Climate Change.

¹⁴ *Massachusetts v. Env'tl. Prot. Agency*, 549 U.S. 497 (2007).

¹⁵ *Id.* at 528–532.

¹⁶ *Id.* at 533 (stating that “[EPA] shall by regulation prescribe . . . standards applicable to the emission of any air pollutant from any class of new motor vehicles”).

¹⁷ *Id.* at 540 (Roberts, J., dissenting).

upheld as within the traditional discretion of agencies to decide whether, how, and when to use their regulatory authority.¹⁸ Why did the majority take such a bold position? Attributing motives to the justices is a tricky business, but—reading between the lines of the majority opinion—the justices seemed deeply troubled by the history of governmental inaction in the face of increasingly compelling scientific evidence, and they wanted to create an action-forcing mechanism that could overcome the inertia of the Executive Branch and Congress.¹⁹

Despite its obvious importance, the Bush Administration had little appetite for implementing *Mass v EPA*. As a result, the Agency's tentative plans for tackling GHG emissions under the CAA fell on deaf ears at the White House as the clock wound down in the second Bush term.²⁰

D. The Obama Era

Barack Obama's election in 2008 seemed to represent a major breakthrough for climate policy. The president had campaigned on pledges to address climate change,²¹ and his administration appeared poised to provide momentum for decisive domestic and international action. Again, however, expectations were dashed. The Waxman-

¹⁸ *Id.* (Scalia, J., dissenting).

¹⁹ There are several portions of the majority opinion reviewing scientific findings on climate change and the history of international negotiations. *Id.* at 508 (“Drawing on expert opinions from across the globe, the IPCC concluded that ‘emissions resulting from human activities are substantially increasing the atmospheric concentrations of . . . greenhouse gases [which] will enhance the greenhouse effect, resulting on average in an additional warming of the Earth’s surface.’ . . . Some five years later—after the IPCC issued a second comprehensive report in 1995 concluding that ‘[t]he balance of evidence suggests there is a discernible human influence on global climate’—the UNFCCC signatories met in Kyoto, Japan, and adopted a protocol that assigned mandatory targets for industrialized nations to reduce greenhouse gas emissions. Because those targets did not apply to developing and heavily polluting nations such as China and India, the Senate unanimously passed a resolution expressing its sense that the United States should not enter into the Kyoto Protocol. See S. Res. 98, 105th Cong., 1st Sess. (July 25, 1997) (as passed). President Clinton did not submit the protocol to the Senate for ratification.”).

²⁰ EPA Advance Notice of Proposed Rulemaking: Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44,354 (July 30, 2008); ENVTL. PROT. AGENCY, DRAFT OUTLINE OF PROPOSED ENDANGERMENT FINDING FOR GREENHOUSE GASES (2007) (released on FOIA request Oct. 2009); Katharine Boyle, *Climate: EPA to leave GHG regulation to next administration*, GREENWIRE (July 11, 2008).

²¹ Barack Obama, U.S. Senator of Ill., Statement of Senator Barack Obama on the Climate Change Bill (June 6, 2008) (transcript available at <http://www.presidency.ucsb.edu/ws/?pid=91070>); Press Release, Obama to Announce New Plan to Make America a Global Energy Leader (Oct. 8, 2007), available at <http://www.presidency.ucsb.edu/ws/?pid=93305>.

Markey cap-and-trade bill narrowly passed the House in mid-2009,²² but it stalled in the Senate as the president's overall agenda faced growing resistance and the sharp economic downturn took center stage politically. With the Republican takeover of the House in 2010, climate legislation ceased to be viable. A backlash took hold, as Tea Party activists ridiculed the concept of cap-and-trade and climate skeptics mounted a new set of attacks on the scientific evidence for global warming.²³

On the international front, action also fell short of expectations, as the Copenhagen conference of the parties in late 2009 failed to deliver the hoped-for agreement on a new set of international goals and compliance mechanisms. Despite considerable diplomacy in advance and the president's personal engagement, the parties could only agree to offer non-binding emission reduction goals for their individual countries.²⁴ The U.S. commitment was to a seventeen percent emission reduction from 2005 levels by 2020,²⁵ a laudable target but one without a clear path toward implementation in the absence of a legislative mandate to reduce emissions.

E. Initial Implementation of Mass v. EPA

While focused on legislation, the Obama White House gave EPA the green light to use the authority conferred by the Supreme Court, and the agency moved ahead with initial steps to apply the CAA to mobile and stationary emission sources.

In 2009, EPA issued the "endangerment finding" called for by the Supreme Court's decision.²⁶ This finding was supported by a

²² Waxman-Markey American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (2009); Carl Hulse & David Herszenhorn, *Democrats Call Off Climate Bill Effort*, N.Y. TIMES (July 22, 2010), http://www.nytimes.com/2010/07/23/us/politics/23cong.html?_r=0.

²³ John M. Broder, *Climate Change Doubt is Tea Party Article of Faith*, N.Y. TIMES (Oct. 20, 2010), <http://www.nytimes.com/2010/10/21/us/politics/21climate.html>; Leo Hickman & James Randerson, *Climate Skeptics Claim Leaked Emails Are Evidence of Collusion Among Scientists*, THE GUARDIAN (Nov. 20th, 2009), <http://www.theguardian.com/environment/2009/nov/20/climate-sceptics-hackers-leaked-emails>.

²⁴ *Key Powers Reach Compromise at Climate Summit*, BBC (Dec. 19, 2009), <http://news.bbc.co.uk/2/hi/8421935.stm>; U.N. Framework Convention on Climate Change, Copenhagen, Den., Dec. 7-19, 2009, *Report of the Conference of the Parties on its Fifteenth Session*, FCCC/CP/2009/11/Add.1, Decision 2/CP.15 (March 30, 2010).

²⁵ Letter from Todd Stern, U.S. Special Envoy for Climate Change, to Yvo de Boer, Exec. Sec'y, U.N. Framework Convention on Climate Change (Jan. 28, 2010), *available at* http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/unitedstatescphaccord_app.1.pdf.

²⁶ Endangerment and Cause or Contribute Findings for Greenhouse Gases Under § 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009) (to be codified at 40 C.F.R. ch. 1).

comprehensive compilation of the scientific evidence linking GHG emissions to the buildup of GHGs in the atmosphere and changes in the climate that included increases in temperature, sea-level rise, drought, and other phenomena. Citing this evidence, EPA concluded that man-made emissions posed an “endangerment” to public health and welfare within the meaning of the CAA. The endangerment finding was the predicate for rules, proposed in September 2009 and finalized in May 2010, requiring reductions in GHG emissions from light-duty vehicles under the CAA § 202(a).²⁷ Developed in partnership with the Department of Transportation (“DOT”), these rules were accompanied by a parallel set of fuel economy standards under DOT’s CAFÉ program. The two sets of standards applied to model years (“MYs”) 2012-2016, and were predicted to result in a fleet-wide reduction in GHG emissions of twenty one percent.²⁸ They were later complemented by rules requiring deeper emission reductions by the light-duty fleet during MY 2017-2025.²⁹

According to EPA’s interpretation of the Act, light-duty emission regulations triggered the application of CAA new source review (“NSR”) and prevention of significant deterioration (“PSD”) permitting requirements to emissions of GHGs from new and modified sources.³⁰ As a result, EPA faced the possibility that thousands of relatively small GHG emitters might be subject to these requirements by virtue of modest emission increases above the CAA’s thresholds, which had been designed for conventional pollutants. In response, EPA developed a “tailoring rule” that raised the emission thresholds for PSD and NSR permitting to levels that reduced the potential permitting universe to a manageable number of sources on the theory of “administrative

²⁷ Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 74 Fed. Reg. 49,454 (Sept. 28, 2009); 40 C.F.R. §§ 85, 86, 600; 49 C.F.R. §§ 531, 533, 536–37 (2010).

²⁸ OFFICE OF TRANSP. & AIR QUALITY, ENVTL. PROT. AGENCY, EPA AND NHTSA FINALIZE HISTORIC NATIONAL PROGRAM TO REDUCE GREENHOUSE GASES AND IMPROVE FUEL ECONOMY FOR CARS AND TRUCKS 2 (2010).

²⁹ 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); 40 C.F.R. §§ 85, 86, 600; 49 C.F.R. §§ 523, 531, 533, 536–37 (2012).

³⁰ The EPA based their justification of the Tailoring Rule on the two step doctrine outlined in *Chevron v. Natural Res. Def. Council*, 467 U.S. 837 (1984), and the CAA itself: “EPA also has authority for this Tailoring Rule under CAA section 301(a)(1), which authorizes the Administrator ‘to prescribe such regulations as are necessary to carry out his functions under [the CAA].’” Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 40 C.F.R. §§ 51, 52, 70, 71 (2010).

necessity.”³¹ The rules were proposed on October 27, 2009 and finalized on June 3, 2010.³²

Important as they were, these steps were relatively cautious. The vehicle rules resulted from close collaboration with the automobile industry, which had repudiated its historical opposition to improved fuel economy and instead wanted federal standards to forestall more disruptive initiatives by California and other states. The industry’s support provided the Obama Administration with political inoculation and eliminated an important source of legal challenges. In the case of the tailoring rule, EPA avoided the backlash and administrative gridlock that a more comprehensive permitting program would have created and wisely focused on sources whose emissions could impact the overall GHG inventory. Moreover, in the wake of the rule, the permits issued by EPA and the states were relatively innocuous and generally accepted the emission control measures proposed by the permit applicant while failing to push the envelope on more meaningful and innovative reduction strategies.

The agency moved into more ambitious territory in December 2010 by entering into settlement agreements with environmental groups committing to use the authority in § 111 of the CAA to set first-ever GHG emission standards for new and existing sources in the power plant and refining sectors.³³ However, the White House kept a wary distance from these initiatives and restrained EPA from going too far. The agency was able to propose a New Source Performance Standard (“NSPS”) for new fossil-fueled power plants on April 13, 2012,³⁴ but

³¹ Ala. Power Co. v. Costle, 636 F.2d 323, 358 (D.C. Cir. 1979) (“Considerations of administrative necessity may be a basis for finding implied authority for an administrative approach not explicitly provided in the statute.”); Texas v. Env’tl. Prot. Agency, 726 F.3d 180, 196 (D.C. Cir. 2013) (“EPA justified the phased-in approach of the *Tailoring Rule* on the administrative law doctrines of ‘absurd results,’ ‘administrative necessity,’ and ‘one-step-at-a-time’”).

³² Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 40 C.F.R. §§ 51, 52, 70, 71 (2010); Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 74 Fed. Reg. 55,292 (Oct. 27, 2009).

³³ Notice of Proposed Settlement Agreement, 75 Fed. Reg. 82,390 (Dec. 30, 2010); David Doniger, *Clean Air Standards Coming for America’s Biggest Carbon Polluters*, NRDC STAFF BLOG (Dec. 23, 2010), http://switchboard.nrdc.org/blogs/ddoniger/clean_air_standards_coming_for.html (Under the settlements, “standards for fossil-fueled power plants will be proposed by July 26, 2011, and issued in final form by May 26, 2012. Standards for oil refineries will be proposed by December 10, 2011, and issued in final form by November 10, 2012.”).

³⁴ Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electricity Utility Generating Units, 77 Fed. Reg. 22,392 (Apr. 13, 2012) (to be codified at 40 C.F.R. pt. 60).

plans to regulate emissions from existing power plants and petroleum refineries were quietly postponed.

F. The President's Pivot to a Full-Throated Embrace of the CAA

During the first Obama term, expectations for the CAA as a tool of climate policy were generally low. The conventional wisdom—including in the administration—was that the threat of invoking the CAA was useful to prod Congress into acting, but the Act itself was a poor and probably unworkable vehicle for meaningful emission reduction.

With his Climate Action Plan, however, the president pivoted away from the conventional wisdom and embraced the CAA as a central tool for emissions reduction. Why did this change in thinking occur? The most obvious explanation is that, after his re-election, the political pressures on the president had eased, and he had more maneuvering room to address an urgent but politically divisive issue. Equally important, however, were several changes in the political and policy landscape that created a compelling case for action under the CAA.

First, with continued Republican control of the House of Representatives, it was now painfully apparent that Congress would not act, despite widespread sentiment that legislation was preferable to regulation. Thus, while the president continued to call for Congressional action, political reality left no choice but to rely on existing law in order to show progress in addressing climate change. Otherwise, the president faced the prospect that the U.S. would fail to deliver on his Copenhagen commitment to a seventeen percent emission reduction by 2020, which would represent not only a personal embarrassment but a significant setback in rallying world leaders to the cause of deeper emission reductions in the years to come.

Second, common predictions that the CAA was too blunt an instrument to address climate change proved unfounded during the first term. Despite fears of widespread disruption of the economy, EPA's initial actions under the Act were tame and relatively benign. For example, by narrowing the universe of sources required to seek NSR and PSD permits, the tailoring rule greatly reduced administrative burdens and, despite dire predictions, did not bring new manufacturing capacity to a standstill. Moreover, along with the endangerment finding and vehicle standards, the tailoring rule withstood sweeping legal

challenges in the D.C. Circuit,³⁵ and threatened appropriations riders to block its implementation failed to pass in Congress. Given EPA's positive track record, the White House now had more reason for confidence that the CAA could be a targeted and effective tool for emissions reduction.

Third, despite a vigorous effort to cast doubt on the science around climate change, a series of extreme weather events coupled with well-documented rises in sea levels and melting of polar ice-caps and glaciers seemed to validate the science and dramatize the impacts of climate change in a way the public could easily understand. In the Georgetown University speech announcing the Climate Action Plan, the president dwelled on both the short-term and long-term consequences of climate change, and he highlighted recent developments such as Hurricane Sandy to illustrate the related disruption and cost to affected communities.³⁶

Finally, changes in the U.S. energy system created potential opportunities to reduce emissions that few would have predicted four or five years earlier. Plentiful, cheap natural gas unlocked from shale formations had undercut the historical dominance of coal by accelerating the retirement of high-emitting coal-fired power plants and increasing reliance on cleaner natural gas as a fuel for power production.³⁷ The growth in non-emitting renewable power (wind, solar, and hydro) had further lowered the carbon intensity of the energy

³⁵ *Coal. for Responsible Regulation v. Env'tl. Prot. Agency*, 684 F.3d 102 (D.C. Cir. 2012). The Supreme Court subsequently accepted certiorari on one narrow issue: "Whether EPA permissibly determined that its regulation of greenhouse gas emissions from new motor vehicles triggered permitting requirements under the Clean Air Act for stationary sources that emit greenhouse gases." *American Chemistry Council v. U.S. Env'tl. Prot. Agency*, 134 S.Ct. 468 (2013) (one of six consolidated appeals addressing the same question). On February 24, 2014, the Supreme Court heard argument for these consolidated cases. SUPREME COURT OF THE U.S., GRANTED & NOTED LIST FOR ARGUMENT IN OCTOBER TERM 2013 (2014).

³⁶ President Barack Obama, Remarks on Climate Change at Georgetown University, Washington D.C. (June 25, 2013) (transcript available at <http://www.whitehouse.gov/the-press-office/2013/06/25/remarks-president-climate-change>) ("The twelve warmest years in recorded history have all come in the last fifteen years. Last year, temperatures in some areas of the ocean reached record highs, and ice in the Arctic shrank to its smallest size on record—faster than most models had predicted it would . . . Now, we know that no single weather event is caused solely by climate change . . . But we also know that in a world that's warmer than it used to be, all weather events are affected by a warming planet. The fact that sea level in New York, in New York Harbor, are now a foot higher than a century ago—that didn't cause Hurricane Sandy, but it certainly contributed to the destruction that left large parts of our mightiest city dark and underwater . . . Americans across the country are already paying the price of inaction in insurance premiums, state and local taxes, and the costs of rebuilding and disaster relief.").

³⁷ U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2014, EARLY RELEASE EXECUTIVE SUMMARY 1–2 (2013), available at <http://www.eia.gov/analysis/>.

sector.³⁸ At the same time, demand for electricity had declined in relation to economic output as a result of an increased emphasis on energy efficiency and new tools (like smart metering) for managing electricity consumption.³⁹

The result of these trends was that, for the first time in the last several decades, U.S. GHG emissions actually declined. According to EPA's latest GHG emission inventory, economy-wide emissions were ten percent lower in 2012 than in 2005, with the power sector outpacing the rest of the economy with an estimated reduction of more than fifteen percent over this period.⁴⁰ This surprising reversal in the decades-long trend of U.S. emissions growth provided evidence that the U.S. was on a sustainable path to lower emissions and that, with the right drivers and incentives, further reductions could be achieved without threatening economic growth.

III. THE LEGAL FRAMEWORK AND RULEMAKING SCHEDULE

The statutory provisions that the president directed EPA to apply to power plant emissions are in CAA § 111. This section creates a two-step process for issuing “standards of performance” for emission sources. The first step, under § 111(b), is to set standards for new and modified sources, generally called new source performance standards (“NSPS”). The second step, permissible only after the first has been completed,⁴¹ is to set performance standards for existing sources under § 111(d). Both provisions are subject to the definition of “standard of performance” in § 111(a)(1). The NSPS program is well developed; EPA has set and updated standards for dozens of source categories in several industry sectors. By contrast, only a small number of these source categories are subject to existing source performance standards

³⁸ *Id.* at 2.

³⁹ U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2013 59 (2013), *available at* [http://www.eia.gov/forecasts/aeo/pdf/0383\(2013\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2013).pdf).

⁴⁰ U.S. ENVTL. PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2012 2-22 to 2-23 (2014); *See also* U.S. ENERGY INFO. ADMIN., U.S. ENERGY-RELATED CARBON DIOXIDE EMISSION 2012 (2013), *available at* <http://www.eia.gov/environment/emissions/carbon/>; U.S. ENVTL. PROT. AGENCY, GREENHOUSE GAS REPORTING PROGRAM 2012 DATA (2013), *available at* <http://www.epa.gov/ghgreporting/ghgdata/reported/index.html>; Russell Gold, *Rise in US Gas Production Fuels Unexpected Plunge in Emissions*, WALL ST. J. (Apr. 18, 2013), *available at* <http://online.wsj.com/news/articles/SB10001424127887324763404578430751849503848>.

⁴¹ Section 111(d)(1)(A)(ii) authorizes standards of performance for existing sources “to which a standard of performance would apply if such existing source were a new source.” Although worded awkwardly, this language indicates that, in the absence of an NSPS for a source category, existing sources in the category are not eligible for standards of performance.

(“ESPS”),⁴² largely because § 111(d) is limited to pollutants that are not otherwise regulated under titles I and III of the CAA.⁴³ Adding to the uncertainty, EPA regulations provide a general framework for ESPS but do not address many key issues.⁴⁴

In contrast to NSPS, ESPS are to be developed through a federal-state partnership based on the State Implementation Plan (“SIP”) process for achieving ambient air quality standards (“NAAQS”) under CAA Title I.⁴⁵ Under § 111(b)(1), states must submit to EPA a “plan” establishing standards of performance and providing for their “implementation and enforcement.” EPA’s role is to “prescribe regulations” that establish a process by which states will exercise these responsibilities and EPA will provide oversight. Under § 111(d)(2), where a state fails to submit a “satisfactory plan,” EPA has the same authority to impose a Federal Implementation Plan (“FIP”) that it

⁴² The following are some examples: Emissions Guidelines and Compliance Times for Municipal Solid Waste Landfills, 40 C.F.R. §§ 60.30c–.36c (1996); Emissions Guidelines and Compliance Times for Large Municipal Waste Combustors That Are Constructed on or Before Sept. 20, 1994, 40 C.F.R. §§ 60.30b–.39b (1995); Emissions Guidelines and Compliance Times for Sulfuric Acid Production Units, 40 C.F.R. §§ 60.30d–.32d (Dec. 19, 1995).

⁴³ The scope of this limitation has recently engendered considerable interest because of differences between the operative language passed by the Senate and House and the failure of the conference report to reconcile these versions. In both versions, § 111(d)(1)(A)(i) limits existing source standards to pollutants “for which air quality criteria have not been issued or which [are] not included on a list published under” § 108(a) of the CAA. These are “criteria pollutants” for which ambient air quality standards (NAAQS) are required under Title I of the CAA. However, the two versions differ in the scope of a further exclusion keyed to the hazardous air pollutant requirements in § 112 of the CAA. The House version excludes *source categories* regulated under § 112, whereas the Senate version excludes *pollutants* regulated under this provision. It has been argued that the House version should prevail and that, since power plants are regulated under § 112, their GHG emissions are outside the scope of § 111(d). WILLIAM J. HAUN, THE CLEAN AIR ACT AS AN OBSTACLE TO THE ENVIRONMENTAL PROTECTION AGENCY’S ANTICIPATED ATTEMPT TO REGULATE GREENHOUSE GAS EMISSIONS FROM EXISTING POWER PLANTS 14 (2013), http://www.fed-soc.org/doclib/20130311_HaunEPAWP.pdf. Disputing this view, others have argued that, because GHGs are not hazardous air pollutants and are not regulated under § 112, they are covered by § 111(d) under the Senate version, and EPA should have discretion to decide how to reconcile the two versions since the statute is contradictory on its face. Ben Longstreth, *Grasping at Straws: Why a Legislative Glitch Will Not Exempt Power Plants from Carbon Standards*, NRDC BLOG (Nov. 1, 2013), http://switchboard.nrdc.org/blogs/ddoniger/grasping_at_straws_why_a_legis.html.

⁴⁴ Adoption and Submittal of State Plans for Designated Facilities, 40 C.F.R. pt. 60, subpt. B (2012).

⁴⁵ Section 111(d)(1) in fact references the SIP development process in § 110 of the CAA as a model for development and implementation of existing source performance standards. The Supreme Court recently described the § 111(d) process as follows: “For existing sources, EPA issues emissions guidelines, see 40 C.F.R. §60.22, .23 (2009); in compliance with those guidelines and subject to federal oversight, the States then issue performance standards for stationary sources within their jurisdiction, §7411(d)(1).” *Am. Elec. Power v. Connecticut*, 131 S.Ct. 2527 (2011).

possesses under § 110 in the event of an inadequate SIP submission. It may also enforce the provisions of a state plan where the state fails to enforce them itself, again in accordance with the SIP enforcement mechanisms in CAA §§ 113 and 114.

The EPA regulations under § 111(d) (1) call for the agency to initiate development of an ESPS by issuing “emissions guidelines” that provide a framework for development of state plans.⁴⁶ Among other provisions, the guidelines must (1) describe systems of emission reduction that the agency considers adequately demonstrated and the degree of reduction achievable and (2) set a minimum level of emission performance and implementation schedule.⁴⁷ As in the SIP process, the states have flexibility to select the compliance measures included in their implementation plans. However, the state standards must be “no less stringent” than the EPA guidelines and must meet EPA compliance deadlines.⁴⁸

The EPA regulations specify timeframes for some but not all of the steps necessary for developing standards of performance under § 111(d). In the case of the ESPS for power plants, however, the president has taken the unusual step of prescribing a detailed schedule that EPA must follow.⁴⁹ Under this extremely ambitious timeline, EPA must (1) issue proposed NSPS by 9/20/13, (2) issue proposed 111(d) ESPS guidelines by 6/1/14, (3) issue final guidelines by 6/1/15, and (4) require states to submit implementation plans under § 111(d) by 6/30/16. The president did not specify a date for promulgating a final NSPS, but under § 111(b)(1)(B), a final rule would be required within a year of proposal.⁵⁰ The president also did not address the timing of EPA review

⁴⁶ Adoption and Submittal of State Plans for Designated Facilities, 40 C.F.R. §§ 60.22(a)–(b) (1989).

⁴⁷ *Id.*

⁴⁸ 40 C.F.R. § 60.24(c) (2012). Some state attorneys general have argued that since states, and not the EPA, develop the standards of performance under § 111(d) and EPA’s role is to issue “guidelines,” states are not required to achieve any minimum level of emission reduction, but may consider or reject EPA’s views as they see fit. JOHN BRUNING ET AL., PERSPECTIVE OF 18 STATES ON GREENHOUSE GAS EMISSION PERFORMANCE STANDARDS FOR EXISTING SOURCES UNDER § 111(D) OF THE CLEAN AIR ACT (2013), *available at* www.americaspower.org/sites/default/files/AG%20White%20Paper.pdf. This view, however, is contradicted by EPA’s express authority to issue its own plan where the state plan is unsatisfactory, as well as the explicit analogy to the § 110 SIP process, under which state plans that EPA deems inadequate to meet federal air quality standards in a timely manner must be rejected. EPA could not properly exercise this authority if it could not establish minimum requirements that state plans must meet.

⁴⁹ Memorandum on Power Sector Carbon Pollution Standards, 78 Fed. Reg. 39,535 (July 1, 2013).

⁵⁰ 42 U.S.C. § 7411(b)(1)(B) (2006).

of state plans, but under the agency's regulations that review must be completed within four months of plan submission (by 10/30/16); if EPA rejects a state plan, a federal plan would be required within the following two months (by 12/30/16).⁵¹

IV. EPA'S NSPS PROPOSAL—BANNING OR PROVIDING A TECHNOLOGY PATH FOR NEW COAL PLANTS?

EPA met the first milestone in the president's schedule by issuing a proposed NSPS on September 20, 2013.⁵² This proposal is in fact a re-proposal as a GHG NSPS for fossil-fueled power plants had been proposed in April of 2012.⁵³ The major difference between the two proposals involves the legal framework for establishing emission limits. The original proposal treated coal and natural gas plants as a single category, with the latest natural gas generation technology driving the proposed emission limit because it could achieve lower emissions than the best coal plants currently in operation. Reflecting legal concerns about creating a single category, the re-proposal contains separate standards for natural gas and coal. Nonetheless, the emission limits are very similar to those in the 2012 proposal (1000 pounds of CO₂ per megawatt hour for natural gas and 1100 pounds for coal) and remain well below the emission levels of the best performing traditional coal plant technology. EPA's rationale for applying these stringent limits to coal plants is that they are achievable using Carbon Capture and Storage ("CCS"), a technology for capturing CO₂ emissions before they are released and storing them underground.⁵⁴

No traditional coal plants are being built now that would be subject to EPA's rule, and none are expected so long as low natural gas prices

⁵¹ Adoption and Submittal of State Plans for Designated Facilities, 40 C.F.R. §§ 60.27(c), 60.28(a)–(c) (2000).

⁵² Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 1429 (Jan. 8, 2014). The one-year deadline in §111(b)(1)(B) for finalizing the proposed NSPS will fall on January 8, 2015.

⁵³ Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22,391 (Apr. 13, 2012).

⁵⁴ 79 Fed. Reg. 1429 (Jan. 8, 2014) ("The EPA notes that, since the original April 2012 proposal, a few coal-fired units have reached the advanced stages of construction and development, which suggests that proposing a separate standard for coal-fired units is appropriate Continued progress on these projects is consistent with the EIA modeling which projects that few, if any, new coal-fired EGUs would be built in this decade and that those that are built would include CCS Partial capture CCS has been implemented successfully in a number of facilities over many years When considered against the range of costs that would be incurred by projects deploying non-natural gas-fired electricity generation, the implementation costs of partial CCS are reasonable.").

make new coal plants uncompetitive. Thus, the significance of the NSPS proposal is symbolic: environmental groups see restricting new coal plants as essential for making deep emission reductions in the U.S. and other countries given coal's large carbon footprint, and the industry wants to preserve the viability of coal as an essential part of the future energy mix.

In principle, CCS could provide a path forward for coal in a carbon-constrained world by equalizing the carbon profile of coal and natural gas, at least until CCS is required for natural gas units. EPA's proposal makes the case that, while CCS requires further improvement, it is a sufficiently realistic option for coal to justify an emission limit corresponding to its performance capability. To support this approach, the proposal points to several factors that, in EPA's view, support a finding that CCS has been "adequately demonstrated" as required under § 111(a)(1). These factors include strong evidence that CO₂ can be safely stored in underground repositories for extended periods without appreciable leakage, the successful operation of numerous pilot facilities demonstrating the feasibility of CCS, and ongoing construction of commercial-scale power plants employing CCS in the U.S. and Canada.⁵⁵

EPA has crafted its proposal to provide breathing space for the maturation of CCS through technological improvements, growing investment, reductions in cost, and practical field experience. EPA's proposed emission limit of 1100 pounds of CO₂ per megawatt hour presumes fifty percent CO₂ capture, well below the capture capability of existing technology. This allows plant operators flexibility in installing and operating of CCS equipment and provides latitude to generate power while optimizing the technology.⁵⁶

⁵⁵ 79 Fed. Reg. at 1435 ("An assessment of the technical feasibility and availability of CCS indicates that nearly all of the coal-fired power plants that are currently under development are designed to use some type of CCS."); 79 Fed. Reg. at 1472 ("Existing project and regulatory experience (including EOR), research, and analogs (e.g. naturally existing CO₂ sinks, natural gas storage, and acid gas injection), indicate that geologic sequestration is a viable long term CO₂ storage option."); 79 Fed. Reg. at 1471 ("The EPA proposes to find that partial CCS is feasible because each step in the process has been demonstrated to be feasible through an extensive literature record, fossil fuel-fired industrial plants currently in commercial operation and pilot-scale fossil fuel-fired EGUs currently in operation, the progress towards completion of construction of fossil fuel-fired EGUs implementing CCS at commercial scale.").

⁵⁶ 79 Fed. Reg. at 1470 ("The operator of the plant could then choose to achieve those deeper capture rates during non-peak electricity demand periods and to achieve lesser capture rates (and thus generate more electricity) during peak electricity demand periods. This type of operational flexibility provides owners and operators the opportunity to optimize the operation and minimize the cost of CCS in new fossil fuel-fired projects.").

However, opposition to EPA's proposal has been intense, with members of Congress from coal states and the industry arguing that the proposal amounts to a *de facto* "ban" on new coal plants because large-scale deployment of CCS is not a realistic option in the immediate future.⁵⁷ In support of this position, opponents of the proposal cite the prohibitive cost of CCS in most locations; the limited availability of enhanced oil recovery ("EOR") to provide a revenue stream that offsets these higher costs; the lack of an extensive pipeline network to transport captured CO₂ from power plants to locations where it could be sequestered or injected for EOR or other commercial purposes; and the extensive subsidies received by the commercial-scale facilities under construction, limiting their relevance in evaluating the viability of CCS for the industry as a whole.⁵⁸

An industry legal challenge to EPA's final rule is inevitable if it continues to require an emission limit for coal plants that is achievable only with CCS. Although a robust record will be developed in the rulemaking process, the rule's validity will likely turn on a basic issue of legal authority: that is, whether EPA can determine that a technology is "adequately demonstrated" under the definition of "performance standard" in § 111(a)(1) when it is known to be effective in controlling emissions and is expected to be commercially viable with further investment and technological improvement but at present has high costs and limited near-term potential for widespread deployment. On these facts, EPA's strongest case will be based on its discretion in applying the fairly general statutory language ("adequately demonstrated" after "taking into account the cost of achieving such reduction") and the technology-advancing purposes of section 111(b). On the latter point, EPA will be able to draw support from the caselaw interpreting §

⁵⁷ Nicolas Loris et al., *EPA Power Plant Regulations: A Backdoor Energy Tax*, THE HERITAGE FOUNDATION (Dec. 5, 2013), <http://www.heritage.org/research/reports/2013/12/epa-power-plant-regulations-a-backdoor-energy-tax>; *House GOP Advances Bill to Block EPA Utility CO₂ Rules*, INSIDEEPA.COM (Jan. 28 2014); Letter from House of Representatives, Comm. on Energy & Commerce, to Hon. Gina McCarthy, Adm'r, Env'tl. Prot. Agency (Nov. 15, 2013), available at <http://energycommerce.house.gov/sites/repUBLICANS.energycommerce.house.gov/files/letters/20131115EPA.pdf>.

⁵⁸ Critics have argued that the EPA cannot rely on demonstration projects receiving Department of Energy subsidies or tax credits because § 402(i) of the Energy Act of 2005 provides that the technologies used in such projects cannot be considered "adequately demonstrated" under CAA § 111. EPA responded to this criticism in a Notice of Data Availability published on February 26, 2014, which takes the position that the Agency can rely on information obtained from these projects in conjunction with other relevant information. Standard of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 10,750 (Feb. 26, 2014).

111(b). Reviewing the relevant legislative history, the D.C. Circuit has concluded that the NSPS authority was intended to “create incentives for new technology” and to “stimulate and augment the innovative character of industry in reaching for more effective, less costly systems to control air pollution.”⁵⁹ A technology forming the basis of an NSPS must be “adequately demonstrated” after considering costs under the terms of § 111(a)(1), but this does not necessarily imply that any existing plants must be able to meet the standard.⁶⁰ The statute “looks toward what fairly may be projected for the future, rather than the state of the art at present.”⁶¹

Beyond these legal issues, the larger question for policymakers and the regulated community is whether a path away from coal—which now accounts for twenty-three percent of all U.S. GHG emissions⁶²—is a practical imperative for a credible GHG reduction strategy. If the answer is yes, EPA’s NSPS proposal offers a roadmap to keep coal in the energy mix, albeit with a sizable leap in technology.

Perversely, some coal advocates have complained that EPA’s proposal will prevent the development and deployment of CCS.⁶³ But it seems more likely that a clear technology target will create incentives to develop new carbon capture systems and improve existing ones to lower costs and improve performance. With such a target, governments will be motivated to continue tax credits, direct grants and research and development programs to speed CCS commercialization. Investors will be more inclined to finance the initial generation of CCS plants to gain a “first mover” advantage that will provide market opportunities as the industry scales-up. Expanded pipeline networks to deliver CO₂ to EOR projects will be more likely to be built as the demand for CO₂ capture and commercial use increases and EOR realizes its full potential. In short, the NSPS may be in the industry’s long-term interest because it creates the conditions for coal to become environmentally sustainable if and when market conditions again favor coal plant construction.

⁵⁹ *Sierra Club v. Costle*, 657 F.2d 298, 346 n. 174 (D.C. Cir. 1981); *see also Nat’l Asphalt Pavement Ass’n v. Train*, 539 F.2d 775 (D.C. Cir. 1976).

⁶⁰ *Portland Cement Ass’n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973).

⁶¹ *Id.*

⁶² U.S. ENVTL. PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2012 (2014).

⁶³ Robert Duncan, *New EPA Rules Will Kill Clean Coal*, WALL ST. J. (Oct. 29, 2013), <http://online.wsj.com/news/articles/SB10001424052702304171804579121393922993208> (“Since only the expensive first-generation technology is now available to utility companies, the EPA is making new coal plants so expensive that no utility will build one.”).

V. EXISTING SOURCE STANDARDS: WHAT TOOLS CAN EPA USE TO REDUCE THE POWER SECTOR'S GHG FOOTPRINT?

While the NSPS may possess symbolic importance, the ESPS rulemaking offers a concrete opportunity to reduce the carbon footprint of today's power-generating fleet. Although the NSPS and ESPS are rooted in similar legal concepts, the implementation challenges they pose are very different. The traditional end-of-pipe technology focus of the CAA emission standards may be relevant to GHG control at new plants, but it has serious limitations when applied to existing plants. This is because there is no existing "off the shelf" pollution abatement equipment like scrubbers or selective catalytic reduction that can achieve significant GHG reductions at existing plants, and those technology upgrades that are practicable have limited emission reduction potential.⁶⁴ The downward trajectory of GHG emissions in the power sector since 2005 has occurred not because of individual plant upgrades but because of dynamic changes in the energy supply system as a whole, including shifts in the overall fuel mix, investments in gas generation and retirement of coal units, growth of renewables, and moderation in energy demand due to efficiency and grid improvements. Accelerating these changes through smart policies and incentives would seem the best strategy for reducing existing plant emissions, but this is not an approach EPA has traditionally employed in standard-setting under the CAA. A key issue to consider is whether EPA has the authority to apply a system-based framework in developing a power plant ESPS and, if so, how would it be accomplished and what could it achieve?

A. The Scope of BSER—What's a System of Emission Reduction?

The touchstone for emission limits under § 111(d), as under § 111(b), is the definition of "standard of performance" in § 111(a)(1). This term means a standard reflecting the "degree of emission limitation achievable" through the "best system of emission reduction" that the "Administrator determines is adequately demonstrated" after

⁶⁴ CCS may have some application to existing plants, but retrofitting such plants with CCS is believed to pose more significant technical and economic challenges than building new CCS-equipped plants. Early in the § 111(d) development process, EPA Administrator McCarthy stated that the agency did not view CCS as a feasible option for existing plants. Kate Sheppard, *Carbon Capture Won't Be Required for Existing Power Plants: EPA Chief*, HUFFINGTON POST (Sept. 23, 2013), http://www.huffingtonpost.com/2013/09/23/carbon-capture-power-plants_n_3975848.html.

considering costs and non-air energy and environmental impacts. This standard is often referred to as BSER.

Notably, by its plain meaning, a “system of emission reduction” is not only limited to emission control technology but also encompasses other methods of reducing emissions. Indeed, earlier versions of § 111 referred to emission reduction technology, but Congress substituted the term “system of emission reduction” in the 1990 CAA amendments.⁶⁵ Although EPA would seem to have discretion to define “system” to include any mix of strategies effective in reducing emissions, proponents of a narrow interpretation emphasize the focus on “source” in § 111(b). They argue that the “best system of emission reduction” encompasses only the emission performance of the “source” itself, and therefore it only extends to emission control improvements possible at individual power plants through technology upgrades or changes in operational conditions within the facility fence line.⁶⁶ By contrast, proponents of the broader reading argue that a “system of emission control” includes any method of reducing emissions available to power generators inside or outside the source boundaries, and it therefore covers the combination of interlocking elements within and beyond the fence line that determine the emissions profile of the power plant fleet.⁶⁷ Previous ESPS proposals provide some precedent for “beyond the fence line” approaches like trading of allowances among regulated sources, but a broad “system-based” framework for emission reduction would be groundbreaking under the CAA.⁶⁸

⁶⁵ The 1977 amendments to the Act used the term “best technological system of continuous emission reduction.” Clean Air Act, Pub. L. No. 95-95, § 109(c)(1)(A). However, the words “technological” and “continuous” were deleted in the 1990 amendments.

⁶⁶ NAT’L CLIMATE COALITION, NATIONAL CLIMATE COALITION PROGRAM DESIGN RECOMMENDATIONS (2013), available at <http://bipartisanpolicy.org/sites/default/files/NCC.pdf>; Hannah Northey & Jean Chemnick, *Utility Regulators Fret Over Grid Reliability as EPA Preps Emission Rules*, GREENWIRE (Oct. 21 2013), <http://www.eenews.net/greenwire/stories/1059989124>.

⁶⁷ DAVID DONIGER, NAT’L RES. DEF. COUNCIL, QUESTIONS AND 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) (2013), available at <http://www.nrdc.org/air/pollution-standards/files/system-based-pollution-standards-IB.pdf>.

⁶⁸ EPA provided for limited facility averaging of emissions in its ESPS guidelines for municipal waste combustors. Emissions guidelines for municipal waste combustor metals, acid gases, organics, and nitrogen oxides. 40 C.F.R. § 60.33b (2006). Of greater significance is the Agency’s 2005 Clean Air Mercury Rule (CAMR) allowing states to implement allowance trading programs for mercury. Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, 70 Fed. Reg. 28,606 (May 18, 2005) (codified at 40 CFR pts. 60, 63, 72, 75). In conjunction with that rule, EPA amended its 111(d) regulations to add “allowance system” to the description of emission standards that states can adopt. Previously, the regulations specified only allowable rates of emissions and equipment specifications for

In its narrowest form, the source-based approach would constrain emission reductions to performance improvements at existing coal power plants that are feasible economically and use adequately demonstrated techniques. For fossil-fueled power plants, the principal approach would be to upgrade equipment to increase efficiency and reduce heat rate (the amount of energy required to produce a unit of electricity). Co-firing with biomass or natural gas might also be an option for certain facilities. Knowledgeable sources predict that fleet-wide emission reductions using these techniques would likely be in the two to six percent range.⁶⁹

The broader system-based approach could achieve considerably larger reductions by focusing on demonstrated reduction strategies for the power production and distribution system as a whole. This would bring into play, for example, displacement of coal by gas through changes in the order of dispatch, resulting in greater utilization of gas capacity and reduced operation of coal plants, improvements in the efficiency of the grid by minimizing energy losses during transmission and distribution, demand reductions that decrease electricity output and hence emissions (i.e. DSM programs, building efficiency upgrades, more efficient product standards, replacement of older appliances etc.), and greater reliance on non-emitting generation (i.e. renewables, nuclear) to satisfy electricity demand. Most of these strategies would be implemented outside the boundaries of individual plants, although they would be within the capability of integrated utility systems and, to a lesser degree, generation fleets.

The choice between a source and system-based approach has important implications for state flexibility. A recurring theme among states offering input to EPA is the need to avoid micromanaging the

controlling emissions as types of standards states could adopt. 40 C.F.R. § 60.21(f) (2006). CAMR was struck down by the D.C. Circuit on the ground that EPA had improperly relied on § 111(d) instead of § 112 to control utility mercury emissions. *New Jersey v. Env'tl. Prot. Agency*, 517 F.3d 574 (D.C. Cir. 2008). The court did not reach the question whether § 111(d) allowed trading among facilities. Interestingly, environmental groups who now advocate a systems approach under § 111(b) opposed the trading provisions of CAMR. EPA itself had earlier taken the position the § 111 did not allow trading of allowances, although it reversed that position in defending CAMR.

⁶⁹ RICHARDSON ET AL., *GREENHOUSE GAS REGULATION UNDER THE CLEAN AIR ACT: STRUCTURE, EFFECTS, AND IMPLICATIONS OF A KNOWABLE PATHWAY* 36 (2010). A 2009 engineering analysis by the firm Sargent & Lundy estimates a maximum six percent heat rate improvement for the existing coal fleet using technology upgrades but industry sources estimate that the likely improvement is much lower because of economic and technical constraints. Co-firing with gas or biomass can achieve additional reductions but this will not be a practical option for many plants because of lack of access to a reliable, low-cost fuel supply. SARGENT & LUNDY, LLC, *COAL-FIRED POWER PLANT HEAT RATE REDUCTIONS*, SL-009597 at 2.5.1 (2009).

state planning process.⁷⁰ Senior EPA officials have recognized the need to maximize state discretion, not only to encourage decentralized decision-making but also to minimize costs to power producers and consumers.⁷¹ However, while state flexibility under § 111(d) is broad, it is not unlimited. The tools available for compliance would need to have a link to EPA's definition of BSER. If BSER is defined as within-the-fenceline plant improvements, then flexibility in implementing these improvements by averaging emissions within and perhaps across fossil-fueled facilities and fleets would probably be allowable. If BSER includes emission reduction strategies beyond the fenceline, however, additional tools would likely become available, including tradable energy efficiency and renewable credits and state programs to mandate demand reduction and scale-up of renewable sources of power.⁷² Thus, a systems-based approach could stimulate greater innovation and provide greater opportunities for cost-effective reduction strategies at the state level. While overall reductions could be greater, the costs per ton of CO₂ reduced could be lower. Moreover, the systems-based approach might increase the attractiveness of regional emission reduction programs by providing a larger mix of credits that can be transferred among power generators in different states.⁷³ This would achieve economies of scale by taking advantage of the integration of power plant fleets and grids across state lines.⁷⁴

⁷⁰ See, e.g., Letter from Leonard K. Peters, Sec'y, Kentucky Energy & Env't Cabinet, to Gina McCarthy, Adm'r, U.S. Env'tl. Prot. Agency (Oct. 22, 2013), available at <http://eec.ky.gov/Documents/GHG%20Policy%20Report%20with%20Gina%20McCarthy%20letter.pdf> (explaining the need for flexibility in § 111(d) compliance options based on "the vast differences among states in their resource potential and current generation portfolio").

⁷¹ *McCarthy Says Power Plant Rule Will Push Efficiency, Renewables*, INSIDEEPA.COM (Feb. 7, 2014); *Questions for State Partners*, INSIDEEPA.COM (Sept. 23, 2013).

⁷² Here too, however, flexibility would not be unlimited. There would need to be a nexus with power plant GHG emissions, the focus of EPA's rulemaking. Thus, telecommuting or landfill gas recovery programs that do not affect power demand on the grid could not be a source of credits.

⁷³ It is likely that § 111(b) would allow states to enter into agreements to create regional compliance programs that allow multi-state trading of credits along the lines of the existing RGGI program in the Northeast. State submissions to EPA have encouraged the Agency to allow regional programs of this type. Multi-state trading regions have been established by the Agency under its various rules to reduce interstate transport of ozone-forming NO_x and other pollutants.

⁷⁴ This multi-state approach has been advocated by the states participating in the RGGI program. See REGIONAL GREENHOUSE GAS INITIATIVE [RGGI], REPORT ON EMISSION REDUCTION EFFORTS OF THE STATES PARTICIPATING IN THE REGIONAL GREENHOUSE GAS INITIATIVE AND RECOMMENDATIONS FOR GUIDELINES UNDER SECTION 111(D) OF THE CLEAN AIR ACT (2013), available at http://www.rggi.org/docs/RGGI_States_111d_Letter_Comments.pdf; Jonas Monast et al., *Regulating Greenhouse Gas Emissions From Existing Sources: Section 111(d) and State Equivalency*, 42 ENVTL. L. REP. 10206 (2012).

B. Conducting a BSER Analysis Under a Systems-Based Approach

A critical question is what analysis EPA would need to conduct to determine BSER under a systems-based approach and how it would use this analysis to formulate an “emission guideline” for state plans. This is not an easy question to answer as EPA has issued few ESPSPs, and the systems approach itself is without precedent. However, if EPA has discretion under the CAA to examine emission reduction tools outside the fenceline, the focus would logically be on whether these tools are “adequately demonstrated” after considering their costs and non-air energy and environmental impacts. Thus, strategies of known effectiveness in reducing emissions like energy efficiency, displacement of fossil-fuel power generation with lower-emitting fuels, and changes in the order of dispatch could be considered “adequately demonstrated” if the costs and other impacts of implementing them are not unreasonable, and the resulting emission reduction target is achievable.⁷⁵

In this regard, EPA would need to consider how the costs of energy (i.e. electricity rates) might be affected and examine non-cost issues such as grid reliability and effects on non-GHG pollutants (NO_x, SO₂, mercury etc.). This portion of the analysis might be conducted by modeling a range of GHG reduction levels and mix of compliance strategies at the national and regional level to ascertain differences in costs, electricity rates, and other parameters. The scenario with the optimum relationship between reductions, costs, benefits, and non-GHG impacts might be selected as BSER. EPA might conclude on this basis that the resulting emission limits are “adequately demonstrated” even though some plants would be unable to comply and would shut down.

⁷⁵ A potential objection to this approach is that power plant owners and operators may not have direct control over implementation of these strategies. For example, integrated utilities may have the capability to adopt demand management programs that result in emission reductions at their power plants, but merchant generating fleets in deregulated markets lack the ability to manage electricity demand. Even integrated utilities may have limited discretion under state law to launch energy efficiency programs or expand renewable generating capacity. Thus, the industry could argue that such strategies are not “adequately demonstrated” (i.e. feasible and achievable) for the sources (fossil-fuel emitting plants) to be regulated by the ESPSP although they may well be implementable by other players in energy markets or state agencies. To address this concern, EPA would need to posit that state plans will create or incorporate enabling mechanisms, such as PUC-mandated demand reduction programs or expanded renewable portfolio requirements, which will deliver a portion of the reductions required of power plants and potentially generate a source of credits that individual plants can use to meet their obligations. Given the strong interest of states in expanding these tools and including them in §111(d) implementation plans, this would seem a reasonable expectation.

Such an analysis presupposes that a BSER determination may focus on whether a mix of reduction strategies is “adequately demonstrated” at a national or regional level, taking into account its implementability across the electricity production and supply system. However, opponents will argue that this approach fails to consider the circumstances of individual power plants or generation fleets, for whom elements of BSER may not be feasible or may be prohibitively costly. For example, a coal-fired power plant owned by a municipality or rural cooperative may not be able to reduce hours of operation or dispatch power to the grid less frequently without diminishing the revenue stream to make debt payments and could need to close the plant, requiring the owner to write off its investment.

There is no statutory provision or direct precedent under § 111(d) requiring EPA to demonstrate that emission limits are achievable by every source subject to an ESPS. Moreover, since the trigger for implementing § 111(d) is an NSPS under § 111(b), Congress arguably contemplated that, once EPA has identified BSER for new plants, it should raise the performance of the existing fleet with the goal of approaching new source levels at existing plants. In this reading, 111(d) would have a technology-forcing thrust, tempered by the performance and cost constraints at existing plants but nonetheless raising the bar significantly for the existing fleet. From this perspective, EPA could argue that “adequately demonstrated” means achievable at a reasonable cost by the more modern, better performing coal and gas units, not by all plants.⁷⁶ Reinforcing this approach is the fact that cost is not determinative in defining a “standard of performance” under § 111(a) but only must be “taken into account” and that § 111(d) allows states to “take into consideration the remaining useful life” of existing sources (suggesting that performance standards could be set at a level that otherwise would require some sources to shut down).⁷⁷

⁷⁶ See *Env'tl. Prot. Agency v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 76 (1980) (stating that the costs of an existing source standard under the Clean Water Act are reasonable even if they lead some sources to curtail operation or close down).

⁷⁷ By authorizing states under § 111(d)(1) to consider the “remaining useful life” of a source covered by a standard of performance, Congress must have expected that BSER would be infeasible at specific plants and that the appropriate relief is to grant a “variance” in cases of hardship as opposed to lowering the overall standard of performance. The EPA § 111(d) regulations authorize such variances based on (1) the unreasonable cost of control resulting from plant age, location, or basic process design; (2) physical impossibility of installing necessary control equipment; or (3) other factors specific to the facility (or class of facilities) that make application of a less stringent standard or final compliance time significantly more reasonable. 40 C.F.R. § 60.24(f).

C. Mass-Based vs. Emission Rate Targets

Under § 111(a)(1), after determining BSER, EPA must establish a “standard” which “reflects the degree of emission limitation achievable” through application of BSER. This standard (or “guideline” in the terminology of EPA’s 111(d) regulations) could be framed in one of two ways. The first is an “emission rate” limit, which effectively prohibits emissions above a set level (normally lbs/MWhr) at an individual plant. EPA has traditionally used such limits to define NSPS requirements for new sources, and its ESPS regulations define “emission standard” as “an allowable rate of emissions into the atmosphere.”⁷⁸ The second approach, less common but not without precedent,⁷⁹ is a “mass-based” emission limit, which effectively places a ceiling on total allowable emissions of GHGs.

A number of states have argued for a mass-based GHG limit on the grounds that it would provide maximum flexibility in structuring state implementation plans and defining the obligations of generators.⁸⁰ For example, a state could decide to achieve a portion of its required emission reductions through state-administered efficiency or renewable programs, with power generators accountable for the remaining emissions to attain the state limit. By contrast, an emission rate limit would likely be implemented through an allowance-based program applicable to electricity generators.⁸¹ This program could allow averaging, trading, and credits as a means of meeting emission-rate limits, but ultimate accountability for achieving these limits would rest with power generators. While this approach would provide the benefit of maximum enforceability, it would also mean holding generators responsible for delivering emission reductions over which they lack direct control.

⁷⁸ 40 C.F.R. § 60.21(f) (2012).

⁷⁹ For example, EPA has used state-by-state emission budgets in the context of addressing interstate transport of pollutants emitted from power plants (NO_x and SO₂) that are contributing to violations of National Ambient Air Quality Standards (NAAQS) in downwind states.

⁸⁰ RGGI, *supra* note 74; KY ENERGY & ENV’T CABINET, GREENHOUSE GAS POLICY IMPLICATIONS FOR KENTUCKY UNDER SECTION 111(D) OF THE CLEAN AIR ACT (2013), *available at* <http://eec.ky.gov/Documents/GHG%20Policy%20Report%20with%20Gina%20McCarthy%20letter.pdf>.

⁸¹ EPA could, however, allow states to convert an emission rate limit into a mass-based limit, with the additional flexibility such a limit would provide.

D. The National Emission Reduction Target

However it is expressed, EPA's standard will need to reflect a projection of the national level of emission reduction by the power sector that is achievable with BSER. This projection will be seen as a measure of U.S. progress on climate change, and Congress, stakeholders, and the public will necessarily want to understand the size of the expected reduction as a percent of both power plant and total U.S. emissions. The baseline for this comparison could be 2013 emissions, but policymakers will more likely focus on a 2005 baseline since the president used this baseline at Copenhagen to frame the U.S. commitment to a seventeen percent emission reduction by 2020.

For the power sector alone, the seventeen percent target would seem well within reach as the sector is estimated to have reduced emissions by fifteen percent between 2005 and 2012 according to the 2014 EPA GHG inventory.⁸² However, power plant reductions have outpaced those by the economy as a whole, estimated to be ten percent since 2005 in the 2014 EPA inventory.⁸³ Although the president's Climate Action Plan is economy-wide in scope and transportation emissions are on a pronounced downward trend because of increases in vehicle fuel economy,⁸⁴ the incentives to reduce emissions in other sectors are weak, and it is unlikely that a 17% reduction outside of the power sector is achievable by 2020.⁸⁵ Meeting the 17% goal would therefore require reductions above this level by power plants in order to compensate for smaller reductions elsewhere in the economy. There is evidence that, even without EPA regulation, announced but not yet implemented coal plant retirements and expected increases in renewable capacity will spur a further 5-7% decline in emissions by 2020 beyond the 15 percent already achieved in 2012.⁸⁶ If EPA rules were then to require another 8-

⁸² U.S. ENVTL. PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2012 2-22 (2014).

⁸³ *Id.* at 22-23.

⁸⁴ *AEO2014 Early Release Overview*, U.S. ENERGY INFO. ADMIN. (Dec. 16, 2013), http://www.eia.gov/forecasts/aeo/er/executive_summary.cfm.

⁸⁵ The President's plan addresses a number of non-electricity emission sources, including use of hydrofluorocarbons (HFCs) and several methane-emitting sources, including landfills, oil and gas production and animal agriculture. Recently, the Administration issued a strategy to address methane emissions, which represent nine percent of total U.S. GHG emissions. THE WHITE HOUSE, CLIMATE ACTION PLAN – STRATEGY TO REDUCE METHANE EMISSIONS 1 (2014). How much emission reduction this strategy will achieve is uncertain, given the mix of voluntary and regulatory measures. Moreover, the president's plan does not extensively address other sectors (like manufacturing) that are responsible for substantial emissions. *Id.* at 2.

⁸⁶ For example, a recent Morgan Stanley report predicts an additional decline in carbon emissions of ten to eleven percent by 2020 with minimal costs and pricing impacts. This would

10% reduction, the result might be an overall emission decline by the power sector of 30% from 2005, which would likely be within the ballpark necessary for an economy-wide cut of 17%.⁸⁷

Emission cuts of this magnitude will seem ambitious and even disruptive to many in the industry and states although one advocacy group has argued that even deeper reductions are achievable at a reasonable cost.⁸⁸ Plainly, EPA could not achieve reductions in the range of 30% under a source-based approach to defining BSER, creating a powerful impetus for the Obama Administration to adopt the systems-based approach. However, even with a § 111(d) framework that encourages demand reduction, clean renewable generation, fuel-switching and allowance trading, EPA's ability to set an ambitious national reduction target will depend on whether its modeling of costs to electricity consumers, impacts on system reliability, effects on employment and other key parameters supports a conclusion that the target it selects is achievable technically and economically and thus meets the § 111(a) "adequately demonstrated" test.⁸⁹ There is likely to be considerable controversy about EPA's analysis, particularly if it predicts a large number of additional coal plant closures, and concerns about undue costs, job losses, threats to reliability and other economic impacts will be sharply debated.

E. Assigning Emission Targets to the States

A critical component of EPA's rulemaking will be assigning emission reduction goals to the states which will cumulatively achieve

mean a total decline from 2005 levels of around twenty-two percent by 2020. MORGAN STANLEY, COAL, GAS & POWER: POTENTIAL CARBON REGULATION SHOULD HAVE MODEST IMPACT, LESS THAN EXPECTED (January 27, 2014) (copy in possession of author).

⁸⁷ A rough calculation shows that, if non-power sector emissions decline by ten percent from 2005 levels, power plant emissions would need to be reduced by thirty-one percent to achieve an economy-wide reduction of seventeen percent.

⁸⁸ NRDC recently proposed power sector reductions of thirty-six to forty-six percent from 2005 levels (twenty-one to thirty-one percent off of a 2012 baseline). See DANIEL LASHOF ET AL., NATURAL RES. DEF. COUNCIL, CLEANER AND CHEAPER: USING THE CLEAN AIR ACT TO SHARPLY REDUCE CARBON POLLUTION FROM EXISTING POWER PLANTS, DELIVERING HEALTH, ENVIRONMENTAL AND ECONOMIC BENEFITS 4 (2014). NRDC originally proposed lower reductions but revised its proposal as a result of additional modeling that took into account projections of lower business-as-usual emissions in the EIA Annual Energy Outlook for 2013. *Id.* at 8.

⁸⁹ However, the strength of EPA's BSER analysis could be weakened if, as in its NSPS re-proposal, EPA conducts separate analyses for coal-fired units and gas-fired units. Whatever its merits for NSPS purposes, dividing fossil fuel generation into two categories would seem illogical under a systems approach to ESPS development since both forms of generation contribute power to the energy supply system and impact its overall level of emissions.

its national reduction target. This may be the most difficult issue EPA will face because of its far-reaching political and economic repercussions and the potential to pit states and regions against each other.

States are differently situated in many respects that will affect their ability and willingness to meet GHG reduction goals for the power sector. For example, the level of GHG reductions achieved since 2005 varies significantly, with states participating in the Northeast Regional Greenhouse Gas Initiative (“RGGI”) states claiming reductions of nearly fifty percent while others report more modest progress.⁹⁰ The mix of generation fuels also varies significantly among states. Coal power plants are virtually non-existent in the Northeast and West Coast states, but they remain dominant in power markets in the South and Midwest.⁹¹ Some states have restructured their power markets to deregulate wholesale electricity rates, with power producers and distributors becoming separate entities, presenting compliance difficulties for an ESPS using a systems-based approach. Others continue to have integrated, regulated utilities, with electricity generation and distribution under common ownership, likely simplifying ESPS implementation. Renewables have scaled-up at a rapid pace in states with extensive solar and wind resources (Oregon, California and Minnesota, for example), but they have barely established a foothold in states lacking either renewable resources or the political will to develop them (Georgia and South Carolina).⁹² Similarly, energy efficiency/demand reduction programs have been aggressively implemented in some states (California and Massachusetts), but they lack a significant presence in others.⁹³ And perhaps most importantly, some states have political leaders strongly committed to addressing climate change, while politicians in other states are deeply skeptical of the need for action.

EPA must go the distance to accommodate these differences among states. Otherwise, perceptions of unfairness or political favoritism will

⁹⁰ RGGI, *supra* note 74, at 2; RGGI, CO₂ EMISSIONS FROM ELECTRICITY GENERATION AND IMPORTS IN THE REGIONAL GREENHOUSE GAS INITIATIVE: 2011 MONITORING REPORT (2013), available at http://rggi.org/docs/Documents/Elec_monitoring_report_2011_13_06_27.pdf.

⁹¹ *Existing Coal Map*, SIERRA CLUB, <http://www.sierraclub.org/coal/map/> (last visited Apr. 11, 2014).

⁹² See *Renewable Energy Production, by State*, WALL ST. J. (Mar. 31, 2011), <http://online.wsj.com/news/articles/SB10001424052748703806304576233133026845622>.

⁹³ See *State and Local Energy Efficiency Programs*, U.S. Small Bus. Admin., <http://www.sba.gov/content/state-and-local-energy-efficiency-programs> (last visited Apr. 11, 2014).

weaken support for its rulemaking and provide fodder for Congressional attacks.

There are several possible methodologies EPA could use to assign emission reduction targets to states, each of which has a markedly different impact on the allocation of burdens among the states:⁹⁴

Equal pro rata reduction percent off fossil-fuel emissions in baseline year. The reduction percent could be applied to either the state's mass emissions or the average emission rate of its fossil-fueled fleet. By requiring each state to reduce emissions by the same percentage, this approach would arguably require the same level of effort by all states. However, depending on the baseline year, states with lower baseline emissions (because of higher renewables, greater efficiency, lower coal generation) might feel penalized.

Carbon intensity target. The goal would be to achieve the same level of carbon intensity in each state, defined in terms of emissions per capita, state GDP or unit of electricity output (MWhr). This approach would arguably achieve the greatest degree of equivalence among states since they would have the same carbon footprints. However, states with higher preexisting intensity (because of more coal generation, lower energy efficiency, higher demand for power or less reliance on non-emitting generation) would argue that they are bearing a disproportionate burden.

Uniform emission rate target. Under this approach, the state's reduction goal would be based on an average emission rate target for the national fossil-fueled power plant fleet. This target would be determined by calculating the average emission rate required to accomplish the overall emission reduction target resulting from application of BSER. The power plant fleets in each state would have to reduce emissions to achieve the national rate target on an average basis. This rate target would likely be significantly lower than the emission rate of best performing coal plants but in the range of better performing natural gas plants. Thus, states with minimal coal fired generation and ready access to offset credits from energy efficiency or other sources would fare well. However, States with large coal fleets would have substantial compliance costs because they would need to close or reduce operation of coal plants and bring cleaner generation on-line unless they could offset the emissions of coal plants with credits from lower-emitting

⁹⁴ Although a number of these methodologies use emission rates as a key metric, the end-result could be to assign a mass-based emission limit to each state so that it would not need to use an emission rate approach in developing its implementation plan.

generation or energy efficiency programs.⁹⁵ Thus, large coal-dependent states would feel unfairly disadvantaged.

Weighted emission rate target based on mix of coal and gas generation. Under this approach, EPA would convert its national emission rate target into two average emission rates—one for coal and the other for gas—that, when applied to the nation’s power plant fleet, would yield emission reductions of the required magnitude. Each state would then develop a “weighted” composite emission rate target reflecting application of the national rates to the proportion of coal and natural gas plants in the state’s energy mix. States with few or no coal units would thus need to meet more stringent fleet-wide limits than states with a higher representation of coal plants. This approach might be perceived as equalizing compliance burdens on states with different fuel mixes, assuming EPA’s targets for coal and natural gas reflect an equal level of reduction from the current average emission rates of these forms of generation.⁹⁶ Nonetheless, states with fewer coal plants might argue that they are being penalized because their historical efforts to reduce emissions and electricity demand are being under-recognized.

Single Emission Rate Target with Phased Compliance Date. Under this approach, proposed by the RGGI and West Coast states,⁹⁷ all states would need to achieve the same emission rate goal regardless of the current composition of their fleets, but those with higher-emitting fleets would receive more time to comply. Thus, states with large coal generation would still need to achieve deeper reductions but could mitigate costs and other impacts by transitioning their fleets over a longer period of time. This approach has some appeal, but its effectiveness in reducing burdens on coal states will depend on the length of the compliance extension that EPA provides and the interim targets it sets before full compliance is required. States facing the deepest reductions will argue for a long extension (perhaps up to ten years), but this could compromise timely achievement of the national

⁹⁵ A key issue in applying this approach is whether the average emission rate would only apply to fossil-fuel units or whether non-emitting generation would be included in determining a state’s average emission rate, which could offset some of the emissions from coal plants.

⁹⁶ The recent NRDC proposal is based on weighted emission rate targets reflecting different rate limits for coal and gas plants, but the coal rate requires a steep reduction from current levels whereas the gas limit is similar to the average performance of existing limits. LASHOF ET. AL., *supra* note 88, at 5. Thus, states with larger coal fleets would need to achieve larger percentage emission reductions than states where gas-fired generation predominates.

¹⁰⁰ RGGI, *supra* note 74; *ARB Aims to Prove Multi-State Equivalency with EPA Utility GHG Rule*, INSIDEEPA.COM (Nov. 15, 2013).

emission reduction goal and the Copenhagen seventeen percent reduction commitment.

In choosing among these approaches, EPA will feel pressure from both high-emitting and low-emitting states. On balance, however, calculating state reduction goals on the basis of a *pro rata* percent reduction applicable to all states or a weighted emission rate target reflecting each state's generation mix stands the greatest chance of being perceived as equitable. As many states with historically large coal generation are politically conservative and skeptical of federal environmental regulation, accommodating their needs may reduce the risk that they boycott the state implementation process, a tactic that could easily spread to other states that are unenthusiastic about the ESPS process and would jeopardize successful implementation.

F. Selection of Baseline Year for Determining State Compliance Obligations

Also impacting perceived fairness to the states is selection of a baseline year for determining the level of reductions required to meet each state's target.⁹⁸ The two obvious choices are 2005 and 2014. The first would correspond to the president's Copenhagen commitment, which was pegged to a 2005 baseline. It would require a larger emission reduction target (perhaps thirty percent as discussed above) than a later baseline but would credit the sizable reductions achieved over the last decade against that target. A 2014 baseline, by contrast, would apply the reduction target to emission levels during the period immediately preceding the promulgation of EPA's ESPS (a more typical approach for EPA standard-setting).⁹⁹ This would necessarily result in a smaller required reduction (perhaps in the fifteen percent range). States that have already achieved substantial emission reductions as a result of climate change programs or significant changes in their generation mix will prefer an earlier baseline in order to lock in credit for earlier reductions and minimize the magnitude of further reductions.¹⁰⁰ States

⁹⁸ If EPA sets state emission reduction targets on the basis of a national carbon intensity goal or emission rate limit, there might be no need for a baseline. But other approaches, like a uniform percent reduction or a weighted emission rate limit reflecting a state's mix of coal and mix generation would require a baseline in order to determine the required level of emission reduction.

⁹⁹ This assumes that the ESPS is promulgated by the President's deadline of June 2015.

¹⁰⁰ While the RGGI states are the most obvious examples of early movers, a number of other states can point to substantial reductions since 2005 because of extensive fuel switching. See, e.g., Michael Obeiter et al., *Power Sector Opportunities for Reducing Carbon Dioxide Emissions: Pennsylvania*, WORLD RESOURCES INSTITUTE 5-6 (Oct. 2013), available at

with relatively modest reductions since 2005 will be partial to a later baseline in order to avoid being penalized for their earlier inaction. Ultimately, the case for the earlier baseline is probably more compelling, but some mechanism (perhaps compliance extensions) should be put in place to ease the burden on states facing larger reduction requirements because of the lack of substantial reductions during 2005-2014.¹⁰¹

G. Working Against the Clock—Realistic Dates for Implementation and Compliance

The president's timetable for promulgating and implementing the ESPS reflects an understandable desire to demonstrate significant progress on climate change before he leaves office and to achieve actual reductions as close as possible to 2020—the date envisioned by the U.S. commitment at Copenhagen. However, the challenges posed by this schedule are formidable, and the risk of slippage is high.

Assuming EPA adheres to the June 2014 target date for its ESPS proposal, completing rulemaking by June 2015 will be a daunting task given the complexity of the issues, the legal uncertainties, the detailed technical and economic analysis supporting the rulemaking, the ongoing engagement of several congressional committees, and the extensive and varied comments certain to be filed by states, industries and NGOs. Experienced observers of EPA rulemaking recognize that despite an “all hands on deck” approach by EPA management, the cumulative weight of these factors will make some delay unavoidable. Moreover, stakeholders concerned about the rulemaking outcome will maneuver to postpone a final rule as long as possible. Hopefully, EPA will blunt these efforts by doing everything possible to remove roadblocks elsewhere in the Executive Branch and enlisting high-level White House leadership to maintain momentum, but the many attacks EPA will face will inevitably slow down work on the final rule.

That the delay in issuing the final rule would extend beyond the 2016 election is unlikely, but a shorter delay is a distinct possibility. Such a

<http://www.wri.org/publication/power-sector-opportunities-reducing-carbon-dioxide-emissions-pennsylvania>.

¹⁰¹ Whether it selects 2005 or 2014, EPA might want states to determine their baseline emissions by averaging emissions over the three preceding years in order to even out year-by-year fluctuations in emissions. The same approach would probably be warranted to determine compliance in the target year for achieving reductions. EPA has used a similar approach in determining the attainment of NAAQS for traditional pollutants. *National Ambient Air Quality Standards (NAAQS)*, ENVTL. PROT. AGENCY, <http://www.epa.gov/air/criteria.html> (last updated Mar. 14, 2012).

delay would necessarily postpone the development and submission of state implementation plans, now scheduled to be completed by June 2016. Moreover, states may request longer than a year to develop these plans on the grounds that they need to adopt implementing legislation and/or conduct rulemaking and require time for consultation with utility regulators, industry, and other stakeholders. Further increasing the potential for delay would be litigation challenging the ESPS or the NSPS,¹⁰² the refusal or inability of some states to submit timely implementation plans, or Congressional intervention slowing down the state planning process. Congressional resolutions of disapproval of the NSPS, ESPS, or both are highly likely to be introduced and will complicate state planning and distract EPA.¹⁰³ All these considerations create a risk that submission of the bulk of state plans will be delayed until 2017 or later. This would make the new administration responsible for shepherding the state planning process to completion and, depending on the election outcome, could create openings for EPA opponents to seek reconsideration of the ESPS itself.

Delays in rulemaking or submission and approval of state plans would shorten the lead-time before emission reduction requirements take effect and create pressure to delay compliance beyond 2020. This could lead the current Administration (or a new one) to set a later compliance date and/or adopt a phase-in schedule which achieves partial reductions by an initial deadline and the balance a few years later.

VI. CONCLUSION: LOOKING AHEAD

EPA faces a myriad of challenges as it seeks to deliver on President Obama's mandate to reduce GHG emissions from new and existing fossil-fuel power plants under § 111 of the CAA. The Agency must resolve difficult legal and policy issues for which there is little precedent and put in place a comprehensive national framework for changing the carbon footprint of the power sector on an extraordinarily

¹⁰² If a court vacated the NSPS, the legal predicate for promulgating an ESPS under § 111(d) would be open to challenge, which could lead EPA to delay the ESPS while the NSPS is revised or provide a basis for a reviewing court to stay the effectiveness of the ESPS once promulgated.

¹⁰³ Under the Congressional Review Act, all agencies are required to submit final rules and reasons for promulgation to Congress. Within 60 days of continuous session after submission, any member of Congress can introduce a resolution of disapproval. If this passes both the House and Senate and is signed by the President, the rule is void. Congressional Review Act, 5 U.S.C. §§ 801–808 (1996); *see, e.g.*, A Joint Resolution to Disapprove a Rule of the Environmental Protection Agency Relating to Greenhouse Gas Emissions from Electric Utility Generating Units, S.J. Res. 30, 113th Cong. (2014).

ambitious schedule. Reactions to EPA's proposals across the political spectrum will be divided and polarized. The agency can count on the strong support of states with progressive climate policies but will face die-hard opposition from other states bitterly opposed to federal environmental mandates. These divisions are likely to be mirrored within Congress and the power industry.

The impact of EPA's proposals on future mining of coal and its combustion to generate power will be a driving force in the political and policy debate. With the coal industry on the defensive because of its declining share of power generation, fears of further reductions in demand for coal and related job losses will fuel vocal and often emotional denunciations of the agency and the White House. EPA will need to walk a tightrope between showing fairness and flexibility to coal-reliant states and pushing for substantial emission reductions that are only achievable by shifting the generation mix away from coal and toward natural gas and renewables. At the heart of this tradeoff will be the choice between a source-based and system-based definition of BSER, which will influence the level of reductions required by the ESPS and the strength of the drivers for lower-emitting power generation. If EPA bases its rule on a system-based approach, the likelihood of opposition from coal interests will increase. However, the agency may partially defuse that opposition by adjusting emission goals to the mix of fuel in specific states, allowing extensions of compliance deadlines, creating safe harbors for hardship cases, and permitting states to employ a broad mix of compliance tools which reduce costs and afford flexibility to individual plants. These measures may help win support in moderate states that are skeptical and apprehensive about EPA's rulemaking, but they will probably not sway the small bloc of hostile states and utilities that are virtually certain to pursue litigation, boycott the state planning process, and seek relief in Congress.

EPA will undoubtedly be under increasing pressure to reduce the scope and stringency of its rules to minimize legal risks and lessen controversy. But there will be strong counter-pressures within the agency and Administration arising from the recognition that no other viable near-term path to emission reduction is available, the threat of climate change is only becoming more dire, and U.S. international standing will suffer a fatal blow if the country fails to meet the president's Copenhagen reduction commitment.