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**The Clean Power Plan:
Testing the Limits of Administrative Law and the Electric Grid**

-- GEO. WASH. J. ENERGY & ENVTL. L. – (forthcoming 2016)

Emily Hammond* & Richard J. Pierce, Jr.**

The Environmental Protection Agency's ("EPA") Clean Power Plan ("CPP") is one of the most controversial and highest-stake rule ever issued by any agency.¹ Released in final form on August 4, 2015,² the rule is aimed at existing electric power plants and establishes carbon dioxide emission reduction requirements for states. EPA projects that if each state meets its target, emissions would be about twenty percent less than 2012 levels by 2030.³ Proponents of the rule maintain that it is essential to mitigating the potentially devastating effects of climate change.⁴ Opponents, by contrast, argue that it is unlikely to be effective for its intended purpose and that it jeopardizes the reliability of the electricity grid and the wellbeing of the U.S.

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¹ There are arguably several metrics along which the CPP might qualify: impact on utilities (compliance costs from \$1.4 to 8.4 billion annually); climate benefits (\$20 billion by 2030); or expansive interpretation of statutory authority. See EPA, Regulatory Impact Analysis for the Clean Power Plan Final Rule, ES-9-10, ES-20 (Aug. 2015) (presenting these figures, additional data, and assumptions). A coal-industry funded study, by contrast, puts the annual energy sector costs at \$29-39 billion and estimates costs to the U.S. economy ranging from \$64-79 billion from 2022-2033. NERA ECON. CONSULTING, ENERGY AND CONSUMER IMPACTS OF EPA'S CLEAN POWER PLAN 5 (Nov. 7, 2015). On the final point regarding statutory authority, see *infra* for our argument that EPA has jurisdictional authority to issue the CPP.

² Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,661–65,120 (Oct. 23, 2015) [hereinafter CPP] (to be codified at 40 C.F.R. pt. 60).

³ This is a projection, not a requirement. Further, the widely reported "requirement" of a 32% reduction below 2005 levels is based on the same projection but extrapolated to 2005 because 2005 is the year of reference for many of the United States's international commitments. See Nathan Richardson, *2005 v. 2012 in EPA's Proposal*, RESOURCES FOR THE FUTURE, June 4, 2014, <http://common-resources.org/blog/2014/2005-vs-2012-epas-proposal> (explaining common misperceptions regarding the requirements and dates).

⁴ Remarks by the President in Announcing the Clean Power Plan, Aug. 3, 2015, at <https://www.whitehouse.gov/the-press-office/2015/08/03/remarks-president-announcing-clean-power-plan> (calling CPP "single most important step America has ever taken in the fight against global climate change").

economy.⁵ We are in the awkward position of agreeing with both the proponents and the opponents of the CPP. We want the rule to succeed in accomplishing its intended purpose but we fear it may have serious unintended adverse effects on the performance of the U.S. electricity grid and the economics of the power sector. Further, we have serious concerns about the ability of administrative law doctrine to manage the litigation that is to come.⁶

To frame our discussion, we here offer a few observations on the scope of the Agency action at issue.⁷ The CPP has been the subject of intense study and controversy since its proposal in 2014. After eliciting 4.3 million comments, EPA published the final rule along with a statement of basis and purpose that is over 1500 pages long.⁸ The Agency's accompanying regulatory impact analysis, technical support, and legal documents span nearly 1000 more.⁹ The many controversial substantive decisions and policy decisions embodied in the CPP are matched only by the intense debate whether the supporting legal bases are lawful. For example, the CPP unapologetically picks winners and losers among electricity fuels; most prominently, it favors natural gas and renewables over coal.¹⁰ This choice—which targets the largest source of

⁵ Nicolas Loris, *Four Big Problems with the Obama Administration's Climate Change Regulations*, HERITAGE.ORG, Aug. 14, 2015 (“The climate impact of the Clean Power Plan will be meaningless.”); Scott Segal, *Lots of Pain with Questionable Benefits*, U.S. NEWS DEBATE CLUB, Aug. 5, 2015 (“We can expect significant potential threat to the electric reliability upon which our modern way of life depends.”).

⁶ Cf. *In re W.V., Emergency Pet'n for Extraordinary Writ*, No. 15-1277 (D.C. Cir. filed Aug. 13, 2015) (seeking emergency stay of CPP prior to rule's publication in Federal Register); cf. *In re Murray Energy*, 788 F.3d 330 (D.C. Cir. 2015) (denying petition for writ of prohibition to stop EPA from issuing final rule).

⁷ See also *infra* Part I (describing major attributes of CPP).

⁸ See Clean Air Act Amendments of 1977, 42 U.S.C. § 7607(d)(3)(A)-(C) (mandating that statement of basis and purpose include factual data, methodology, and legal interpretations and policy considerations underlying rules). This elaboration is distinct from that of the APA, 5 U.S.C. § 553(c) (“concise statement of basis and purpose”), but it tracks the courts' interpretation of the APA. Cf. Emily Hammond Meazell, *Deference and Dialogue in Administrative Law*, 111 COLUM. L. REV. 1722, 1732 (2011); Richard J. Pierce, Jr., *Waiting for Vermont Yankee III, IV, and V? A Response to Beerman and Lawson*, 75 GEO. WASH. L. REV. 902, 920 (2007) (“the most important factor that explains the length of informal rulemakings is hard-look review”).

⁹ EPA, CLEAN POWER PLAN FOR EXISTING POWER PLANTS, <http://www2.epa.gov/cleanpowerplan/clean-power-plan-existing-power-plants> (last visited Sept. 2, 2015) (providing links and page information).

¹⁰ See CPP, *supra* note 2, at 64,667 (listing building block 2 as “[s]ubstituting increased generation from lower-emitting existing natural gas combined cycle units for reduced generation from higher-emitting affected steam generating units”).

baseload power in the United States¹¹—has attracted fierce opposition from the coal industry and legislators from coal states such as West Virginia, Kentucky, Wyoming, and North Dakota.¹² On the other hand, states that have already taken significant steps toward reducing coal-fired power and increasing the use of natural gas and renewables—like California,¹³—are on on-track for compliance without needing to make any major changes.

From a legal standpoint, most of the arguments center on whether EPA has jurisdiction to promulgate the CPP. The agency's basis is section 111(d) of the Clean Air Act ("CAA"). As we briefly discuss below, two competing versions of that section are published in the Statutes At Large, and they point in opposite jurisdictional directions.¹⁴ Moreover, whether EPA may regulate "beyond the fence line" of individual power plants and focus on the electricity system as a whole is a hotly contested matter of statutory interpretation.¹⁵ Other issues include whether the many interstitial interpretive and policymaking decisions within the CPP would survive judicial scrutiny. And the legality of EPA's simultaneously issued regulations for new and modified power plants, which are a legal predicate to the CPP itself, are also a matter of debate.¹⁶

The purpose of this article is not simply to repeat the already well-developed, rigorous debate that adheres to each policy and legal choice embodied in the CPP.¹⁷ Rather, we discuss four issues that are raised by the CPP but that have not yet attracted the attention and analysis

¹¹ EIA, ANNUAL ENERGY OUTLOOK 2015, ELECTRICITY GENERATION, Fig. 31 (Apr. 14, 2015).

¹² *In re W.V.*, No. 15-1277.

¹³ Press Release, Governor Edmund G. Brown, Jr., Statement on President Obama's Clean Power Plan (Aug. 3, 2015).

¹⁴ Compare Pub. L. No. 101-549, § 302(a), 104 Stat. 2399, 2574 (1990) (Senate amendment), with Pub. L. No. 101-549, § 108(g), 104 Stat. 2399, 2467 (1990) (House amendment). See also CPP, *supra* note 2, at 64,711–12 (noting differences); *infra* Part ___ (discussing this issue).

¹⁵ See CPP, *supra* note 2, at 64,760 (discussing interpretation of "system of emissions reduction" and beyond-the-fence line comments); *infra* Part II.C. (discussing this issue).

¹⁶ Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units, -- Fed. Reg. --, at 16 (Aug. 3, 2015) [hereinafter NSPS].

¹⁷ Compare, e.g., William W. Buzbee et al., CTR. FOR PROGRESSIVE REFORM, THE CLEAN POWER PLAN: ISSUES TO WATCH, Issue Alert No. 1506 (Aug. 2015) (largely arguing for upholding CPP on each policy and legal issue), with Nicolas D. Loris, THE HERITAGE FOUND., THE MANY PROBLEMS OF EPA'S CLEAN POWER PLAN AND REGULATIONS: A PRIMER, No. 3025 (July 15, 2015) (largely arguing for vacating the CPP on each policy and legal issue).

they deserve. After summarizing the main elements of the CPP, we consider: (1) the administrative law issues related to whether and to what extent reviewing courts should defer to the EPA's two statutory interpretations that provide the jurisdictional basis for the CPP; (2) what remedy a court should provide at various procedural postures if it detects or believes likely a fatal error in the CPP or the process through which it was issued; (3) the implementation challenges associated with the intermittent nature of the electricity supplies that EPA expects utilities to substitute for the fossil fuels that now provide most of the nation's electricity; and (4) the implementation challenges associated with the risk that some of the most promising approaches for state compliance may be preempted by the Federal Power Act ("FPA"). The first two issues are not unique to the CPP. These issues create serious problems whenever a court is called upon to review a major agency rule, but they are particularly pronounced with respect to the CPP. The third and fourth issues are among the most serious obstacles to successfully implementing the CPP.

I. A Brief Overview of the Clean Power Plan

It is now broadly accepted that the world is experiencing major changes in climate, the causes of these changes are anthropogenic greenhouse gas ("GHG") emissions, and, unmitigated, these changes will be catastrophic for billions of people, human health, and the environment.¹⁸ Indeed, climate effects are already observable and inevitable, but mitigating these effects by reducing GHG emissions is a critical component of both domestic and international climate policy.¹⁹ Greenhouse gases include several compounds;²⁰ carbon dioxide ("CO₂") is the focus of

¹⁸ See generally Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,523 (Dec. 15, 2009) (determining that greenhouse gas emissions endanger public health and welfare).

¹⁹ As is adaptation. Some of the considerations we raise in Part III.A., *infra*, are also relevant to adaptation to the extent they relate to grid resiliency.

²⁰ *Id.* at 66,497 (including carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride in endangerment finding).

the CPP.²¹ Any electricity source that burns fossil fuels emits CO₂; the amount of emissions is a function of the efficiency of the combustion process and the amount of carbon in the fuel source.²² Further, there is not at present any economically viable technology-based method (such as a scrubber for example) of reducing emissions of CO₂ from combustion of any carbon-based fuel at existing sources.²³ Thus, the only currently viable way to reduce GHG emissions from fossil-fueled power—which accounts for over thirty-eight percent of U.S. GHG emissions²⁴—is to improve efficiency or switch fuels to lower- or zero-carbon sources.²⁵ This point is critical for understanding the CPP's approach, as shown below.

Though complicated in its details, we can summarize easily the features of the CPP that are important for our purposes. The rule relies on the cooperative federalism structure familiar to major federal environmental statutes.²⁶ Once EPA sets new source performance standards for a given pollutant found to endanger public health or welfare under section 111(b) of the CAA, the states are required to develop implementation plans to reduce emissions of that pollutant from existing sources under section 111(d).²⁷ The CPP fits into this scheme by providing the emission guidelines and “best system of emissions reduction” (“BSER”) that states must meet in their

²¹ EPA explains that CO₂ accounts for 82% of U.S. GHG emissions. CPP, *supra* note 2, at 64,677.

²² Because our focus is on regulation of fossil-fueled power under the CPP, we do not engage the literature on lifecycle carbon emissions for each electricity source. *E.g.*, Nat'l Renewable Energy Lab., Fact Sheet, *Life-Cycle Greenhouse Gas Emissions from Electricity Generation*, at <http://www.nrel.gov/docs/fy13osti/57187.pdf> (last visited Oct. 9, 2015) (summarizing methodology and results of Life Cycle Assessment Harmonization Project).

²³ See CPP, *supra* note 2, at 64,690 (“CO₂'s huge quantities and lack of reactivity make it challenging to remove from a smokestack.”).

²⁴ *Id.* at 134.

²⁵ In its new source performance standards for new electricity generating units, EPA contemplates that new coal-fired plants will incorporate high-efficiency super-critical pulverized coal utility boilers with partial carbon capture and sequestration (CCS). NSPS, *supra* note 16, at 16. As an alternative, the agency will permit co-firing with natural gas. *Id.* at 17. Further, EPA suggests that market conditions are such that coal-fired plants are unlikely to be built in the future, but if they are, the NSPS will encourage research and development of CCS. *Id.* at 17-19. Overall, the agency appears to go out of its way to provide alternatives to CCS in light of its limited current use, its expense, the geological needs of the technology, and its potential water-use and water-quality implications. *E.g.*, *id.* at 150, 159, 252-56.

²⁶ See Emily Hammond & David L. Markell, *Administrative Proxies for Judicial Review: Building Legitimacy from the Inside-Out*, 37 HARV. ENVTL. L. REV. 313, 330-31 (2013) (providing overview of cooperative federalism structure and collecting sources).

²⁷ We discuss the legal issues surrounding this scheme *infra* Part II.B.

plans.²⁸ EPA gives states considerable flexibility with respect to their methods of implementation. Thus, they may adopt source-specific requirements, engage in coordinated efforts with other states, develop mass-based trading programs, and/or incorporate other state policy measures, like conservation and efficiency, into their approaches.²⁹

EPA's methodology and assumptions in setting the state goals and BSER are of particular interest for purposes of our analysis below. BSER consists of three building blocks. The first block assumes heat efficiency improvements at coal-fired electric generating units ("EGUs") in the 2.1 to 4.3 percent range.³⁰ The second block relies on fuel switching by EGUs from coal to natural gas combined cycle ("NGCC") units, which are the most efficient of natural gas units and emit slightly more than one-third of the CO₂ of conventional coal-fired units on a mass-per-MWh basis.³¹ The third building block relies on fuel-switching by EGUs from fossil fuels to new zero-emitting renewable generation—primarily wind and solar.³² After calculating BSER reductions on a regional basis, EPA applied those expectations to each state's electricity fuel mix to develop state-specific goals. EPA emphasized that the building blocks "are available to all affected EGUs, either through direct investment or operational shifts" or through emissions trading.³³ States need not require EGUs to apply the building blocks; they may take other actions toward meeting state emission reduction plans, which can include credit trading, new nuclear construction, and demand-side and efficiency programs.³⁴ However, even if states do not precisely adopt BSER, the general concepts of substituting natural gas for coal, and renewables

²⁸ See CPP, *supra* note 2, at 64,669–74. We discuss the issues surrounding BSER *infra* Part II.C.

²⁹ *E.g.*, CPP, *supra* note 2, at 64,672–74.

³⁰ *Id.* at 64,789.

³¹ See EPA, CO₂ Emission Performance Rate and Goal Computation Technical Support Document for CPP Final Rule 11 Tbl. 4 (Aug. 2015) (showing emission rates for sources in Eastern Interconnection).

³² CPP, *supra* note 2, at 64,807 (also listing geothermal and hydropower).

³³ CPP, *supra* note 2, at 64,667.

³⁴ *Id.*

for fossil fuels, are expected to play key roles in CPP compliance.³⁵ In the next sections, we first consider EPA's authority to issue the CPP at all; the three issues we consider thereafter relate to the second and third building blocks.

II. Administrative Law and the Clean Power Plan

Even prior to EPA's issuance of the final CPP—and its publication in the Federal Register—various opponents of the CPP have sought stays from the D.C. Circuit.³⁶ And although that court has not as of this writing considered the merits of the CPP, the dispute is so important that the Supreme Court is virtually certain to play a role in the review process. Of course, judicial review is an ordinary feature of major rulemakings.³⁷ A typology of potential defects is set out in the CAA itself³⁸ and parallels the scope-of-review provisions in section 706 of the APA.³⁹ We expect the petitioners to make the two most frequent objections to the legality of any rule: (1) that it is in excess of statutory jurisdiction,⁴⁰ and that it is (2) arbitrary and capricious⁴¹ because the Agency did not explain adequately (a) its critical policy choices underlying the rule; and/or (b) its responses to comments that raised well-supported questions about the practicality and wisdom of the rule.⁴² In Part A below, we offer our observations only with respect to the largest issues involving statutory jurisdiction. In Part B below, we consider the matter of remedies as the issue relates to both statutory authority and the arbitrary and capricious standard.

³⁵ For projections of the future electricity fuel mix under various scenarios, see EIA, *Under proposed Clean Power Plan, natural gas, then renewables, gain generation share*, May 27, 2015, at <http://www.eia.gov/todayinenergy/detail.cfm?id=21392>.

³⁶ See discussion *supra* at Part II.C.1

³⁷ See 5 U.S.C. § 706 (providing grounds for judicial review). As discussed *infra* Part II.B., would-be petitioners must satisfy a variety of reviewability requirements.

³⁸ 42 U.S.C. § 7607(d)(9).

³⁹ The parallel APA and CAA provisions are interpreted as having the same meaning. *Ethyl Corp. v. EPA*, 51 F.3d 1053, 1064 (D.C. Cir. 1995).

⁴⁰ 5 U.S.C. § 706(2)(C); see generally RICHARD J. PIERCE, JR., I ADMINISTRATIVE LAW TREATISE, ch. 3 (5th ed. 2010).

⁴¹ 5 U.S.C. § 706(2)(A).

⁴² See generally PIERCE, *supra* note 40, at 593-94.

First, however, we note that the wisdom of the administrative law doctrine surrounding these grounds for judicial reversal is the subject of enduring debates. There is evidence that agencies have so internalized the court-imposed requirements of administrative law doctrine⁴³ that—depending on whom one asks—agencies are either hopelessly ossified⁴⁴ or demonstrably democratic.⁴⁵ Layered over these concerns is a broader challenge of administrative law—managing the reliance interests of regulated parties and statutory beneficiaries while accommodating separation-of-powers concerns. Any time an agency issues a rule that requires major changes of the regulated community, that community is faced with potentially enormous expenditures. If regulated entities undertake those expenditures while a rule is being challenged, what are they to do if the rule is ultimately vacated? And if they do not undertake those expenditures, what of the public benefits that were not realized before the rule was ultimately upheld? Whether or not (or whenever) a court intervenes, it will also be mindful of its place in the constitutional structure—both ensuring the agency stays within its jurisdictional boundaries and deferring to the agency's expertise and place within the executive branch.

Second, we emphasize that we do not attempt here to set forth all the legal arguments that will surely be briefed, nor is our focus on the debate regarding the wisdom of administrative law doctrine. Instead, we argue that the CPP strains the limits of administrative law itself. This concern is best illustrated by two issues: judicial review of EPA's interpretation of the CAA; and the relationship between procedural postures, remedies, and reliance.

A. Statutory Authority for the CPP

⁴³ See generally Christopher J. Walker, *Inside Agency Statutory Interpretation*, 67 STAN. L. REV. 999 (2015) (describing results of empirical study of agency drafters' perceptions of administrative law doctrine).

⁴⁴ Richard J. Pierce, Jr., *Seven Ways to Deossify Agency Rulemaking*, 47 ADMIN. L. REV. 59, 65 (1995).

⁴⁵ Emily Hammond & David L. Markell, *Administrative Proxies for Judicial Review: Building Legitimacy from the Inside-Out*, 37 HARV. ENVTL. L. REV. 313, 355 (2013).

There are two critical interpretive issues related to EPA's statutory authority to promulgate the CPP. The first—commonly called the section 112 exemption issue—relates to EPA's authority to regulate GHGs from EGUs at all. The second—commonly called the beyond-the-fence-line issue—relates to how EPA determines what constitutes BSER (which is the premise upon which the entire CPP is based). This section briefly reviews the issues before considering the applicable administrative law.

First, EPA's authority for the CPP comes from section 111(d) of the CAA. This provision contemplates emission standards for existing sources, and cross-references section 112. Section 112 governs air toxics, and the cross-reference creates an exclusion from regulation under section 111(d).⁴⁶ What exactly constitutes the exclusion is unclear because when Congress amended section 111 in 1990, it made a serious error. It enacted two different versions of the exclusion. The House version of the amendment seems to preclude *any* regulation of a source category under section 111(d) if EPA already regulates that source category under section 112.⁴⁷ The Senate version, by contrast, appears to exclude from section 111(d)'s reach only *pollutants* already regulated under section 112.⁴⁸ In 1995, when EPA first had occasion to consider this discrepancy, it concluded that it was required to give effect to the House version and could not regulate *sources* already regulated under section 112.⁴⁹ In the statement of the basis and purpose

⁴⁶ 41 U.S.C. § 7411(d).

⁴⁷ Pub. L. No. 101-549, § 108(g), 104 Stat. 2399, 2467 (1990). At the time the CPP was promulgated, EPA regulated EGUs' toxic air emissions under §112 (the "MATS rule"). Although the Supreme Court held unreasonable EPA's interpretation of § 112 as precluding cost considerations in deciding whether to regulate, *Michigan v. EPA*, 135 S. Ct. 2699 (2015), the rule had not been stayed pending litigation. The D.C. Circuit has not yet determined whether to remand with vacatur, but *Chenery v. SEC* (Chenery I) ought to require any analysis to be based on the agency's reasoning at the time it made its decision; here, the CPP was predicated on the MATS rule's presence. *See also* Michigan, 135 S. Ct. at 2710 (insisting on adhering to *Chenery* notwithstanding presence of other cost-benefit information in the record). Thus, even if the D.C. Circuit vacates the MATS rule, that decision ought not moot the § 112 exclusion issue here. *See also* CPP, *supra* note [1], at 64,697 ("[T]he MATS rule remains in place at this time.").

⁴⁸ Pub. L. No. 101-549, § 302(a), 104 Stat. 2399, 2574 (1990).

⁴⁹ EPA, Air Emissions from Municipal Solid Waste Landfills—Background Information for Final Standards and Guidelines, Pub. No. EPA-453/R-94-021, at 5-6, *available at* www.epa.gov/ttn/atw/landfill/bidfl.pdf; *see also*

of the CPP, however, EPA decided that its prior interpretation of the section 112 exclusion was wrong.⁵⁰ The Agency concluded that the House version is ambiguous, and the best resolution of the two versions is “the [s]ection 112 Exclusion does not bar the regulation under [section 111(d)] of non-HAP [hazardous air pollutants] from a source category, regardless of whether that source category is subject to standards for HAP under CAA section 112.”⁵¹ Parties that challenge the validity of the CPP will argue EPA’s initial interpretation of section 112 was correct and that its new interpretation is erroneous.

The next statutory argument petitioners will make is that the second and third building blocks of the CPP are beyond EPA’s power to implement section 111(d). As mentioned above, section 111(d) provides that EPA must issue regulations under which states establish “standards of performance.”⁵² That phrase is defined as:

[A] standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the *best system of emission reduction* which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.⁵³

The key legal argument here is that the massive fuel switching envisioned by the CPP does not qualify as a “standard.”⁵⁴ Traditionally, EPA has established technology-based standards that require emission reductions at individual sources. EPA’s new source performance standards for CO₂ illustrate that approach.⁵⁵ The Agency set an emission rate for CO₂ at new coal-fired power

Revision of December 2000 Regulatory Finding on the Emissions of Hazardous Air Pollutants from Electric Utility Steam Generating Units and the Removal of Coal- and Oil-Fired Electric Utility Steam Generating Units from the Section 112(c) List, 70 Fed. Reg. 15,994, 16,031 (Mar. 29, 2005) (reaching same interpretation), *held arbitrary and capricious on other grounds*, *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008).

⁵⁰ CPP, *supra* note 2, at 64,710–11.

⁵¹ CPP, *supra* note 2, at 64,711.

⁵² 41 U.S.C. § 7411(d).

⁵³ *Id.* § 7411(a)(1) (emphasis added).

⁵⁴ Petitioners might also contend that EPA failed to adequately consider the factors listed in the definition’s parenthetical, perhaps for some of the reasons we discuss in Part III, *infra*.

⁵⁵ *See generally* NSPS, *supra* note 25.

plants, and then it attempted to support the standard by referencing technologies and operational changes that could be used to achieve those standards.⁵⁶ The first building block of the CPP is a variant of this type of traditional standard—it requires coal-fired EGUs to improve their efficiency to achieve fewer emissions. But the much larger second and third blocks of the CPP go “beyond the fence-line” of a single plant and therefore arguably are not “standards” within the meaning of the CAA. In other words, petitioners will argue that EPA lacks the statutory authority to use building blocks 2 and 3 as BSER.

B. Judicial Review of EPA's Jurisdictional Interpretations

When courts review agencies' interpretations of statutes they administer, the typical analytical framework is that set forth in *Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*⁵⁷ *Chevron*, of course, traditionally involves a two-step analysis that asks first whether Congress has directly spoken; if not, the statute is ambiguous and courts should defer to an agency's permissible interpretation.⁵⁸ Notably, *Chevron* extends to an agency's interpretation of the scope of its own jurisdiction; it is not limited to smaller interpretive questions involving how the agency applies its authority.⁵⁹ Under the holding of *Nat'l Cable & Telecommunications Ass'n v. Brand X Internet Services*, if a court reviewing an agency's interpretation determines that the statute has a clear meaning, the agency is not free on remand to depart from that determination.⁶⁰ But if a court determines that the statute is ambiguous, the agency is free to

⁵⁶ We do not here elaborate our concerns that the NSPS are arbitrary and capricious.

⁵⁷ 467 U.S. 837 (1984). The two-step framework provides that courts must ask first whether Congress has directly spoken; if not, the statute is ambiguous and courts should defer to an agency's permissible interpretation.

⁵⁸ *Id.* at 842-43.

⁵⁹ *City of Arlington v. FCC*, 133 S. Ct. 1863, 1869-71 (2013).

⁶⁰ 545 U.S. 967, 982 (2005).

later adopt a different interpretation provided that interpretation is permissible.⁶¹ Moreover, there is no heightened standard of review when an agency makes such a change.⁶²

In explaining its rationale for how it reconciled the competing versions of section 111(d), EPA did not explicitly walk through a *Chevron* analysis,⁶³ relying instead on traditional means of statutory interpretation such as considering the language of the provisions, the legislative history, the purpose of the statute, and the like.⁶⁴ EPA's discussion of BSER similarly does not explicitly reference *Chevron*, but it follows *Chevron*'s logic. For example, it notes that BSER is undefined, "broad and capacious," and it emphasizes that Congress gave EPA interpretive authority to determine BSER⁶⁵—considerations familiar to *Chevron* step one. The Agency next argues the interpretation is reasonable and consistent with the purpose and legislative history of the CAA as well as with the "structure and economics of the utility power sector."⁶⁶

Notwithstanding the *Chevron* paradigm that features so strongly in this and other administrative law discussions, we highlight here what neither side has explicitly engaged, but what we expect is a driving concern: the bigger-picture issue of regulatory stability lurking behind *Chevron*. To demonstrate, we will briefly sketch how *Chevron* might apply to each issue and what the long-term ramifications might be.

⁶¹ *Id.* at

⁶² *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 514-15 (2009).

⁶³ It cited the doctrine in a footnote. *CPP*, *supra* note 1, at 64,719 n.301.

⁶⁴ Some courts include these considerations in step one, others in step two. See Emily Hammond et al., *Judicial Review of Statutory Issues Under the Chevron Doctrine*, in *A GUIDE TO JUDICIAL AND POLITICAL REVIEW OF FEDERAL AGENCIES 65-100* (collecting examples). We think the best characterization of EPA's approach is to place its analysis in step two.

⁶⁵ *E.g.*, *CPP*, *supra* note 1, at 64,761.

⁶⁶ *Id.*

Turning first to the section 112 exclusion issue, it seems unlikely that EPA would succeed at step one by arguing that the statute is clear, given its prior opposite interpretation of the exclusion.⁶⁷ Given the inconsistency of the two versions of section 112 and EPA's inconsistent interpretations of that section, it would be hard for a court to support a conclusion that Congress "directly spoke to the issue." Thus, *if* a court applies *Chevron*, it should hold that Congress did not resolve the issue and, hence, it must uphold the EPA interpretation if it is reasonable.⁶⁸

Second, whether Congress directly spoke to the beyond-the-fence-line issue, is a question that could be answered intellectually honestly in support of *either* clear language *or* ambiguity. That outcome likely depends on a reviewing court's choice of the many approaches to step one, the variety and merits of which we do not endeavor to survey here.⁶⁹ But by way of example, dictionary definitions have figured prominently in judicial analyses at step one,⁷⁰ and definitions here point in opposing directions. One definition of "standard," for example, supports a plain meaning akin to what EPA has done in the past: "a level of quality achievement, etc. that is considered acceptable or desirable," e.g., "something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality."⁷¹ These concepts do not seem to fit with massive fuel switching, and EPA has never before understood its statutory mandate in

⁶⁷ This likely explains EPA's avoidance of the step one issue in the relevant portion of the CPP.

⁶⁸ As this analysis and that regarding the beyond-the-fence-line issue demonstrate, we do not attempt an exhaustive briefing of *Chevron* as applied to the CPP.

⁶⁹ We have done so elsewhere. *Cf.* PIERCE, *supra* note [40], §§ 3.5-.6; Hammond, *supra* note ____, at 77-93 (documenting and discussing the many approaches to step one).

⁷⁰ *Id.* at 82-83 (collecting sources).

⁷¹ Merriam Webster Dictionary, <http://www.merriam-webster.com/dictionary/standard> (last visited Oct. 18, 2015). Note that EPA avoided an analogous issue with respect to CO₂ emission standards for new motor vehicles, following *Massachusetts v. EPA*, 549 U.S. 597 (2007), by conducting a joint rulemaking with the National Highway Transportation Safety Administration, which has clear authority to require reductions in fossil fuel use. *See* Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, Final Rule, 75 Fed. Reg. 25,324, 25,324 (2010) (explaining that rule is joint rulemaking).

that way.⁷² On the other hand, “system” might permit the fuel-switching approach. “System” means “a group of related parts that move or work together,” e.g., “a regularly interacting or interdependent group of items forming a unified system.”⁷³ EPA reasons that “system” works well for the U.S. electricity grid, which it accurately describes as an interdependent and interconnected group of EGUs that must function as a whole.⁷⁴ EPA also argues persuasively that it must rely primarily on mandatory fuel-switching by the interdependent group of EGUs that comprise the grid to achieve significant emissions reductions because CO₂ is unique as a pollutant; it cannot be reduced significantly with traditional pollution-control devices.⁷⁵ Thus, if EPA cannot require fuel-switching it has no means of mitigating climate change caused by EGUs—notwithstanding its prior determination that GHG emissions endanger public health.⁷⁶ These latter arguments help demonstrate that EPA’s interpretation of BSER is permissible and not foreclosed by the clear language of the statute.⁷⁷

But for either of these statutory issues—whether the section 112 exemption or the beyond-the-fence-line argument—a court’s reaching step two would create a strange situation. A new EPA Administrator appointed by a President who does not share President Obama’s enthusiasm for the CPP’s approach could adopt the opposite interpretations, and a reviewing court would be required to uphold those interpretations as long as they are permissible under the reasoning adopted in *Brand X*.⁷⁸ Indeed, the Supreme Court has emphasized that an agency can adopt an interpretation of a statute it implements that is inconsistent with its prior interpretation

⁷² Other portions of the statute support the concept of discrete standards applied on a smokestack- or plant-wide-basis. *E.g.*, 42 U.S.C. § 7411(d)(1)(B) (“in applying a standard of performance to *any particular source*, . . .”

⁷³ Merriam Webster, *supra* note 71.

⁷⁴ CPP, *supra* note 1, at 64,677–78.

⁷⁵ *Id.* at 64,690.

⁷⁶ *See* Coal. for Responsible Reg. v. EPA, 684 F.3d 102 (D.C. Cir. 2014), *rev’d in part on other grounds*, 134 S. Ct. 2427 (2014) (upholding endangerment finding)

⁷⁷ Once again, this brief discussion provides only a small summary of the analysis supporting a determination that EPA’s interpretation is permissible. *Cf.* CPP, *supra* note 2, at Pt. V.A.1, p. 64,718 (presenting EPA’s full analysis).

⁷⁸ *Nat’l Cable & Telecomms. Ass’n v. Brand X Internet Servs.*, 545 U.S. 967, 982-83 (2005).

without providing any heightened explanation that the new interpretation is better than the old interpretation.⁷⁹ An agency needs only to establish that the new interpretation is permissible.⁸⁰ In other words, the ordinary step two analysis applies—and we would expect agencies' win rates at step two to be quite high.⁸¹

Yet it does not seem sensible to have a legal regime in which EPA's view of its jurisdictional authority (the section 112 exemption issue) and the fundamental predicate of the CPP (the beyond-the-fence-line issue) can change dramatically every four to eight years. Implementing the CPP requires owners of EGUs to make massive investments in long-lived assets, the value of which will depend critically on the legal regime in which they operate for decades. It would be difficult to persuade investors to put billions of dollars at risk by making those investments knowing that the legal regime could easily change in ways that would reduce significantly the value of those investments. At a minimum, that legal uncertainty would increase significantly the cost of implementing the CPP by increasing the cost of the capital required to implement the CPP.

This is a way in which the CPP strains administrative law. The *Brand X* decision has been criticized primarily on separation-of-powers grounds; Justice Scalia's dissenting opinion, for example, states: "Article III courts do not sit to render decisions that can be reversed or

⁷⁹ FCC v. Fox Television Stations, Inc., 556 U.S. 502, 514-15 (2009).

⁸⁰ *Id.* at 515.

⁸¹ Studies of affirmance rates under the *Chevron* doctrine show agency win rates ranging from about 64 to about 81%. Richard J. Pierce, Jr., *What Do Studies of Judicial Review of Agency Actions Mean?*, 63 ADMIN L. REV. 77, 84 (2011) (collecting studies and noting slight decrease in win rates over time); cf. William N. Eskridge, Jr. & Lauren E. Baer, *The Continuum of Deference: Supreme Court Treatment of Agency Statutory Interpretations from Chevron to Hamdan*, 96 GEO. L.J. 1083, 1129 (2008) (finding *Chevron* win rate at over 76%, but win rate regardless of deference regime at about 68%). These studies do not necessarily disaggregate steps one and two. Note that earlier studies suggest EPA has a lower than average win rate. See Jonathan H. Adler, *No Intelligible Principles: The EPA's Record in Federal Court*, RPPI POL'Y STUDY NO. 269, at 10 (reporting 41% *Chevron* win rate for EPA in D.C. Circuit between 1993 and 2000); Christopher H. Schroeder & Robert L. Glicksman, *Chevron, State Farm, and EPA in the Courts of Appeals During the 1990s*, 31 ENVTL. L. REP. 10,371, 10,374 (2001) (reporting 53% *Chevron* win rate for EPA between 1991 and 1999).

ignored by executive officers.”⁸² But the CPP shows its impact pragmatically: the reliance interests of the regulated industry as well as the public are staggering. Indeed, the Justices have become uncomfortable with this particular effect of the many deference doctrines.⁸³ Those doctrines often create a situation in which the law has dramatically different meanings and effects depending on the political philosophy of the incumbent President. Thus, for instance, the meaning of many statutes that apply to labor relations varies from pro-union in a Democratic administration to pro-management in a Republican administration.⁸⁴ Recent experience with EPA’s regulatory approach to interstate air pollution has illustrated this flip-flopping, as has the Agency’s approach to regulating air toxics and GHGs from EGUs under the CAA.⁸⁵ This is a disquieting effect of the deference doctrines in every context,⁸⁶ but it has the potential to create severe problems if it is applied in circumstances like these, where the authority of the agency to act at all is under question.⁸⁷

⁸² *Brand X*, 545 U.S. at 1017 (Scalia, J., dissenting).

⁸³ See also Richard J. Pierce, Jr., *The Future of Deference*, -- GEO. WASH. U. L. REV. – (forthcoming) (criticizing *Brand X* for creating regulatory uncertainty).

⁸⁴ E.g., *Perez v. Mortgage Bankers Ass’n*, 135 S. Ct. 1199, 1205 (2015).

⁸⁵ See, e.g., *EPA v. EME Homer City Generation, Inc.*, 134 S. Ct. 1584 (2014) (upholding Obama-era Cross State Air Pollution Rule); *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008) (invalidating Bush-era Clean Air Interstate Rule); see also Emily Hammond, *Deference and Dialogue in Administrative Law*, 111 COLUM. L. REV. 1722 (2011) (collecting other examples of agencies’ changed policies over courses of repeated judicial review). On the air toxics issue, some of the history is recounted in *White Stallion Energy Ctr., LLC v. EPA*, 748 F.3d 1222, 1229-33 (D.C. Cir. 2014), *rev’d sub nom. Michigan v. EPA*, 135 S. Ct. 2699 (2015).

⁸⁶ The presidential control model of administrative law presumably would view executive direction as a legitimizing force to counteract our arguments here. E.g., Elena Kagan, *Presidential Administration*, 114 HARV. L. REV. 2245 (2001); Kathryn A. Watts, *Proposing a Place for Politics in Arbitrary and Capricious Review*, 119 YALE L.J. 2 (2009). Cf. Emily Hammond Meazell, *Presidential Control, Expertise, and the Deference Dilemma*, 61 DUKE L.J. 1763, 1807 (2012) (criticizing presidential control in favor of statutory primacy).

⁸⁷ Where to draw the line between types of interpretive issues is a challenging question. We ourselves have somewhat differing views. Compare Pierce, *supra* note **Error! Bookmark not defined.** (arguing against *Brand X* generally); with Emily Hammond, *Chevron’s Generality Principles*, 83 FORD. L. REV. 655, 657 (2014) (arguing there is “nothing inherently illegitimate in an agency’s revising its interpretation”). Merely describing some issues as jurisdictional and others as interstitial is unsatisfying because, as Justice Scalia explained in *City of Arlington*, ultimately any interpretive question relates to the agency’s statutory authority. See 133 S. Ct. at 1868 (“No matter how it is framed, the question a court faces when confronted with an agency’s interpretation of a statute it administers is always, simply, whether the agency has stayed within the bounds of its statutory authority.”).

For the CPP, therefore, a reviewing court might take a cue from the Supreme Court's recent opinion in *King v. Burwell*.⁸⁸ The Court had to decide whether a critical provision of the Affordable Care Act ("ACA") had a meaning that was consistent with the purposes of the ACA or had a meaning that would make it virtually impossible to continue to implement the ACA.⁸⁹ The provision was so poorly crafted that it is easy to understand why the three dissenting Justices concluded that it clearly required a course of action that would erode political support for the ACA by depriving the citizens of thirty-one states from access to one of the most valuable benefits provided by the Act.⁹⁰

A six-Justice majority believed that the provision at issue was ambiguous.⁹¹ Yet—after acknowledging that normally such a situation would point to *Chevron* deference to the IRS's interpretation—the majority declined to apply that approach.⁹² Why? The Court explained that *Chevron* is premised on an implicit delegation of interpretive authority to the relevant agency, but "[i]n extraordinary cases, . . . there may be reason to hesitate before concluding that Congress has intended such an implicit delegation."⁹³ The Court reasoned that the "deep economic and political significance" of the issue was so important that it was not willing to attribute to Congress an intent to allow the Agency to adopt its own interpretation of the provision.⁹⁴ This was particularly true because the IRS did not have expertise in health care policy.⁹⁵

⁸⁸ 135 S. Ct. 2480 (2015).

⁸⁹ *See id.* at 2492-93 (describing interpretations).

⁹⁰ *See id.* at 2497 (Scalia, J., dissenting).

⁹¹ *Id.* at 2492 (majority op'n). Among other things, it considered other provisions of the ACA that were obviously inconsistent with the language of the provision at issue and evidence of congressional purpose in reaching this determination. *Id.* at 2489-92.

⁹² *Id.* at 2488-89.

⁹³ *Id.* (citing *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 159 (2000)).

⁹⁴ *Id.* at 2489 (citing *Util. Air Reg. Grp. v. EPA*, 134 S. Ct. 2427, 2444 (2014)). The majority then relied primarily on the policies underlying the ACA to support its own interpretation of the provision, which fit well with the purpose of the statute. *Id.* at 2491-98.

⁹⁵ *Id.* at 2489.

King was an excellent candidate for the Court's refusal to accord deference to an agency's interpretation of an ambiguous statutory term. The ACA is controversial and has been the subject of partisan acrimony. Whether you like or dislike the ACA, it is hard to believe anyone would favor the chaotic situation that would exist if one of the core provisions of the ACA was effective only half of the time, depending on the results of each presidential election. And for those ascribing to the implicit delegation rationale of *Chevron*,⁹⁶ the IRS's interpretive role seems far removed from typical *Chevron* cases in which there is no doubt about the interpreting agency's expertise.⁹⁷

The pending litigation to review the legality of the CPP is at least as strong a candidate for that treatment. To see why, it is important to note that the Courts has identified several types of cases in which *Chevron* will not apply. *King* illustrated two: both the significance of the ACA⁹⁸ and the IRS's lack of expertise⁹⁹ supported the Court's approach. Other examples include situations where more than one agency administers the statute in question,¹⁰⁰ and where the agency used procedures that were less democratic than those in notice-and-comment rulemaking or the APA's formal methods.¹⁰¹ Ultimately, these categories are born of analyses that ask whether Congress intended to delegate the interpretive authority to the agency.¹⁰² With

⁹⁶ The Court itself frequently uses such language, e.g., *id.* at 2488 (citing *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 159 (2000)); *United States v. Mead Corp.*, 533 U.S. 218, 227 (2001). A variety of scholars also espouse this view. E.g. Kent Barnett, *Codifying Chevmore*, 90 N.Y.U. L. REV. 1, 6-7, 35 (2015) (arguing in support of delegation theory). The numerous potential rationales for *Chevron* are collected in numerous places; at least one of us does not necessarily think the delegation rationale is particularly compelling. Cf. Mark Seidenfeld, *Chevron's Foundation*, 86 NOTRE DAME L. REV. 273, 277-88 (2011) (criticizing intent-based rationales).

⁹⁷ See Hammond, *supra* note [86 (Duke piece)], at 1771-74, 1803-04 (describing relevance of expertise in determining whether deference is appropriate).

⁹⁸ See also *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000) (“we must be guided to a degree by common sense as to the manner in which Congress is likely to delegate a policy decision of such economic and political magnitude to an administrative agency”).

⁹⁹ See also *Gonzales v. Oregon*, 546 U.S. 243, 266 (2006) (noting congressional “unwillingness to cede medical judgments to an executive official [U.S. Attorney General] who lacks medical expertise”).

¹⁰⁰ E.g., *Metro. Stevedore Co. v. Rambo*, 521 U.S. 121, 137 n.9 (1997) (APA).

¹⁰¹ *United States v. Mead Corp.*, 533 U.S. 218, 226-27, 230 (2001).

¹⁰² E.g., *King v. Burwell*, 135 S. Ct. 2480, 2488-89 (2015).

respect to the section 112 exemption issue, it seems very difficult to attribute an intent to delegate by a Congress that did not reach agreement on the language it passed. Because of this unique set of facts, moreover, it is not a material point of distinction that EPA here has expertise with respect to the CAA (unlike the IRS in *King*). Furthermore, the significance of the the CPP is enormous, both politically and economically.¹⁰³ No one would gain from a situation in which firms are strongly encouraged to make investments in long-lived assets and then see the value of those investments dissipate dramatically a few years later due to political flip-flopping.

A difficulty with this approach is its indeterminacy: how ought a court decide whether an interpretive issue is sufficiently “important” to take it out of the *Chevron* framework? Granting the problematic nature of such an inquiry, we think that the scope of the CPP is such that it is not a case on the margins. Perhaps because of such indeterminacy difficulties, we also note that the Court frequently ducks the *Chevron* issue altogether, applying its own statutory interpretation rather than *Chevron* even when an issue fits the *Chevron* prerequisites.¹⁰⁴ We think the better approach is the direct one: the Court should explain why *Chevron* is not applicable and use EPA’s well-reasoned analysis to reach a favorable jurisdictional decision that cannot be disturbed by shifting political whims.¹⁰⁵

This discussion raises the question whether a *King* approach should be used for both the section 112 exemption and the beyond-the-fence-line issues. On one hand, the former issue is a

¹⁰³ See *supra* note 1 and accompanying text.

¹⁰⁴ *E.g.*, *Massachusetts v. EPA*, 549 U.S. 497, 527-528 (2007) (citing *Chevron* for generalized agency discretion but failing to apply that framework and concluding that statutory text forecloses agency’s interpretation); *id.* at 553 (Scalia, J., dissenting) (“The court nowhere explains why this interpretation is incorrect, let alone why it is not entitled to deference under *Chevron*”); see also Eskridge & Baer, *supra* note [81], at 1117-18 (describing large number of cases in which Court applied no deference regime at all)..

¹⁰⁵ That is, section 111(d) is meant to ensure there are no regulatory gaps for particular pollutants; while BSER, as interpreted by EPA, is perhaps the *only* way to address GHG emissions from EGUs, making it the best interpretation consistent with the CAA’s mandate to regulate pollutants found to endanger the public health and welfare. GHGs, of course, already fit the endangerment criterion. Admittedly, it is plausible that a court might adopt either of the competing interpretations for each issue discussed above. Leaving our own views aside, it must be emphasized that this approach would at least promote regulatory certainty.

better candidate for *King* treatment from a delegation perspective because of the perplexing matter of two different statutory amendments in addition to its importance politically and economically. Moreover, it is aimed at EPA's authority to regulate GHGs from existing EGU's *at all*, such that shifting interpretations over time would most disturb regulatory stability. The latter issue might not be so compelling because it does not share the unusual statutory background and is of second-order jurisdictional importance. On the other hand, the latter issue is certainly jurisdictional—it provides the predicate to EPA's approach to the CPP—and the Supreme Court has instructed that it does not matter for deference regimes what type of jurisdictional question is at issue.¹⁰⁶ Furthermore, EPA's interpretation of BSER here provides the entire foundation of the CPP (thus carrying the same political and economic significance); a new interpretation in 2017 would certainly disturb regulatory stability.¹⁰⁷

But even if *King* were not applied to the fence-line issue, we argue that two other recent decisions—both involving EPA—point to what might be called “*Brand X* avoidance” and may have particular applicability. As noted above, Justice Scalia has been a strong critic of *Brand X*, and his approach to *Chevron* has set clear boundaries on *Brand X*'s applicability. In the face of ambiguous statutory terms, he has sometimes concluded that EPA's interpretation is clearly foreclosed. The impact of that approach is best illustrated by two cases. First, in *Michigan v. EPA*,¹⁰⁸ Justice Scalia (writing for the majority) reasoned that EPA's interpretation of another provision of the CAA to preclude cost considerations was clearly beyond the bounds of the statute.¹⁰⁹ This unusually strong version of step two makes it a practical impossibility for EPA

¹⁰⁶ *City of Arlington v. FCC*, 133 S. Ct. 1863, 1874 (2013).

¹⁰⁷ One of us would be reluctant to extend this rationale even further to other non-predicate interpretations within the CPP; the other more willing. *See Pierce*, *supra* note 83.

¹⁰⁸ 135 S. Ct. 2699 (2015).

¹⁰⁹ *Id.* at 2707. In fact, all nine Justices appear to agree on this point. *See id.* at 2714 (Kagan, J., dissenting).

ever to adopt an interpretation that does not consider cost—notwithstanding the usual *Brand X* norm that would permit flexibility in interpreting ambiguous statutory terms.

Second, in *Utility Air Regulatory Group v. EPA*,¹¹⁰ Justice Scalia (again writing for the majority) reasoned that EPA's interpretation of yet another provision of the CAA was foreclosed by the statute. There, EPA interpreted the provision "any air pollutant" to include GHG emissions for purposes of the prevention of significant deterioration ("PSD") program.¹¹¹ The Court reasoned that this language was not unambiguous, but rather context-specific;¹¹² and in this particular context EPA's interpretation was foreclosed because it would "overthrow" the statutory design.¹¹³ Because GHGs are emitted at levels far greater than traditional pollutants, PSD regulation would swamp EPA, overwhelm state regulators, and impose billions of dollars in costs on both regulated sources and agencies.¹¹⁴ This result would be contrary to the statutory design, because Congress clearly intended the PSD provisions to apply only to "major" sources.¹¹⁵ Perhaps even more salient to the CPP, the Court emphasized that EPA's interpretation was unreasonable because the Agency was "laying claim to extravagant statutory power over the national economy" without clear congressional authorization.¹¹⁶

It is easy to imagine Justice Scalia writing a similar opinion in reviewing the CPP that uses a similar approach to support a holding that no interpretation of section 111(d) that

¹¹⁰ 134 S. Ct. 2427 (2014).

¹¹¹ *Id.* at 2439. The following analysis relates to the Court's consideration of sources that are not otherwise regulated under the PSD program. *See id.* at 2447 (describing distinction from "anyway" sources).

¹¹² *Id.* at 2442.

¹¹³ *Id.*

¹¹⁴ *Id.* at 2442-43.

¹¹⁵ *Id.* at 2443.

¹¹⁶ *Id.* at 2444. Nor did EPA's Tailoring rule save its construction, because that rule departed from the clear statutory text. *Id.* at 2445. The nondelegation overtones are not lost on us. *Cf.* *Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 475 (2001) (noting Congress "must provide substantial guidance on setting air standards that affect the entire national economy").

authorizes EPA to regulate “beyond the fence line” can be reasonable.¹¹⁷ However, it would be difficult for a court to resolve the interpretative issues raised by the section 112 exclusion through use of that method. The court would have to conclude either that no interpretation of any ambiguous statutory language could reasonably allow EPA to regulate GHG emissions from EGUs or that no interpretation of any ambiguous statutory language could reasonably prohibit EPA from regulating GHG emissions from EGUs. Any opinion that attempted to support either of those extreme propositions would seem disingenuous and, thus, probably motivated by the personal beliefs of the judges or Justices.

C. Remedies

Any challenge to the CPP will include a request to stay the rule pending the outcome of litigation. If a court ultimately decides the rule is flawed in some way, it will also need to determine the best remedial option—a remand either with or without vacatur. Two different standards are therefore at play, those for: (1) granting a stay; and (2) determining whether to remand with vacatur. We show how these issues have already been framed before considering their relevance to the remedial options and accompanying standards.

1. Early Issue Development

EPA, would-be-petitioners, and (in part) the D.C. Circuit itself have already put forth their positions regarding the interests at stake. After EPA announced the proposed rule in 2014, a coal company and various other parties benefited by coal mining or use, sought an extraordinary writ enjoining the CPP, arguing that the need to take substantial and costly steps toward compliance were already creating significant hardship.¹¹⁸ Acknowledging that “prudent organizations and individuals may alter their behavior (and thereby incur costs) based on what

¹¹⁷ Here is where we hesitate, because as a policy matter, we favor efforts to reduce GHG emissions.

¹¹⁸ *In re Murray Energy Corp.*, 788 F.3d 330, 335 (D.C. Cir. 2015).

they think is likely to come,” the court rejected an invitation to become involved prior to the rule’s finalization.¹¹⁹ This outcome is typical. Extraordinary writs, which are to be issued sparingly,¹²⁰ require: (1) no other adequate means of relief; (2) a clear and indisputable entitlement to relief; and (3) the court’s satisfaction that the writ is appropriate.¹²¹ Even though the final condition enables consideration of equitable factors, courts have resisted requests to issue writs founded on hardship in complying with the law.¹²²

Similarly, shortly after the final rule’s announcement—but before its publication—another coalition of states sought another extraordinary writ, seeking a stay of the rule’s deadlines until litigation is complete.¹²³ The CAA, however, specifies that petitions must be filed within sixty days of publication in the Federal Register.¹²⁴ And in a terse two-paragraph order, the D.C. Circuit rejected the petition.¹²⁵ Once again, when a regular appeals process is available, a court’s interest in proceeding according to the statutory scheme rather than granting an extraordinary writ will trump a petitioner’s cry of hardship.¹²⁶

Though premature, this early activity provides a preview of some of the fairness and reliance issues that will take center stage in the next challenge. The state petitioners contended that relief was justified because the CPP gives states thirteen months from its announcement to submit their initial plans, rather than keying the deadline to the date of publication in the Federal

¹¹⁹ *Id.*

¹²⁰ *In re Murray Energy Corp.*, 788 F.3d 330, 339 (D.C. Cir. 2015) (Henderson, J., diss.).

¹²¹ *In re Kellogg Brown & Roots, Inc.*, 756 F.3d 754, 760 (D.C. Cir. 2014).

¹²² *Murray Energy*, 788 F.3d at 335.

¹²³ *In re W. Va.*, No. 15-1277 (D.C. Cir. filed Aug. 13, 2015) [hereinafter “Emer. Pet’n”]. On August 5, 2015, several states also filed an application with EPA, pursuant to 5 U.S.C. § 705, requesting the agency itself to stay the rule’s effective date of action. *Id.* at 4 n.2. EPA denied the request. *Id.*

¹²⁴ 5 U.S.C. § 7607(b)(1).

¹²⁵ Order, No. 15-1284, Doc. No. 1572185 (D.C. Cir. Sept. 9, 2015).

¹²⁶ *See U.S. ex rel. Denholm & McKary Co. v. U.S. Bd. of Tax Appeals*, 125 F.2d 557, 558 (D.C. Cir. 1942) (“the use of special writs to review . . . the action of . . . administrative bodies had its origins in the days of the stone age of administrative law” when regularized forms of appeal were lacking).

Register.¹²⁷ If petitioners were required to wait until the rules' publication in the "normal course," they were likely correct that any relief may not come until halfway through the states' preparation time.¹²⁸ The coal company petitioner put its irreparable injury argument simply: "The Final Rule is aimed squarely at coal."¹²⁹ After all, the petitioner argued, EPA's own modeling suggests significant plant retirements in 2016.¹³⁰ Because electricity companies must plan several years in advance, the petitioner argued that irrevocable closure decisions would be made years before litigation is complete.¹³¹

In response, EPA emphasized that the rule's actual deadlines are 2018 and beyond; the initial state submittal in September 2016 is only a general statement of approaches under consideration, progress to date, and a description of opportunities for public input.¹³² Further, as described above, a state can even forgo developing a plan altogether.¹³³ To the coal company's argument of irreparable harm, EPA responded that—with emissions reductions not even slated to become effective until 2022—litigation would be complete well before that deadline.¹³⁴ And EPA also underplayed its modeling, noting that while its final rule showed eleven gigawatts of coal-fired power ceasing by 2016, the model was meant to be illustrative rather than predictive.¹³⁵

That last point underscores what is different about the CPP: both the *type* and *degree* of regulatory uncertainty during the litigation period are unprecedented. Regarding type, consider the discussion above, which emphasized that typical CAA regulations involve technology

¹²⁷ Emer. Pet'n at 1-2.

¹²⁸ See Emer. Pet'n at 3.

¹²⁹ Emer. Renewed Pet'n for Extraordinary Writ by Intervenor Peabody Energy Corp., No. 15-1277, Doc. No. 1567796, at 23 (D.C. Cir. filed Aug. 13, 2015).

¹³⁰ *Id.* at 24.

¹³¹ *Id.*

¹³² EPA Resp. in Opp'n, No. 15-1277, Doc. No. 1570665, at 25-26 (D.C. Cir. filed Aug. 31, 2015).

¹³³ *Id.* at 26.

¹³⁴ *Id.* at 28-29.

¹³⁵ *Id.* at 29.

mandates.¹³⁶ A regulated entity is likely to know years before such a mandate is finalized that it is under consideration; after all, many of the technology-based standards require some basis in existing technology.¹³⁷ Prudent investors—who likely had a hand in developing the applicable standards—are likely to begin complying even during the pendency of litigation (notwithstanding their predictable cost-based resistance in the courts).¹³⁸ Here, however, the building blocks and flexibility of the CPP do not mandate any particular technology.¹³⁹ The scope of possibilities is so broad as to be overwhelming, and the only message of certainty is that EPA has taken aim at coal. It is perfectly logical, then, that new coal plants are unlikely to be built.¹⁴⁰ And if—as building block 1 suggests—coal-fired generation is to be replaced with natural gas, at least some plant closures appear unavoidable.¹⁴¹ This observation points to the difference in degree of the CPP's impact. Although typical environmental controls have indirect

¹³⁶ We are focused here on compliance standards, rather than, for example, listing criteria or national air quality standards. *Cf.* *Massachusetts v. EPA*, 549 U.S. 497, 533-35 (2006) (describing need to consider whether to make endangerment finding; *Whitman v. American Trucking*, 531 U.S. 457, 464-471 (2001) (holding CAA forbids EPA from considering cost in setting national ambient air quality standards)).

¹³⁷ *E.g.*, best achievable etc. *see also* Wendy E. Wagner et al., *Rulemaking in the Shade: An Empirical Study of EPA's Air Toxic Emission Standards*, 63 ADMIN. L. REV. 99, 111 (2011) (“Industry enjoys a particularly privileged position in the development of rules like the air toxic emission standards because industry possesses a great deal of in-house information on industrial processes that EPA needs to write the rules.”).

¹³⁸ This is what happened in the example of the MATS standards for coal-fired EGUs. *See White Stallion Energy Ctr. v. EPA*, No. 12-1100 (Oral Arg. Recording at 36:12 – 36:58) (D.C. Cir. Dec. 4, 2015) (counsel for coal-fired EGUs arguing D.C. Circuit should not vacate MATS rule on remand, in part because industry has already complied and would face stranded costs if there were a vacatur).

¹³⁹ This line of reasoning links closely to the “beyond-the-fence line” issue described *supra* Part II.A.

¹⁴⁰ Perhaps illustrating the broader point about industry responding to the regulatory climate, note that new coal plants have not been built for several years. *See* EIA, ANNUAL ENERGY OUTLOOK 2015, *Electricity Generation*, Fig. 35 (2015) (“As a result of the uncertainty surrounding future greenhouse gas legislation and regulations and given its high capital costs, very little unplanned coal-fired capacity is added across all the AEO2015 cases.”) [hereinafter AEO2015].

¹⁴¹ Of course, industry may be overstating the point. The Energy Information Administration, for example, has noted that reduced use of coal is strongly related to low natural gas prices. *Id.* at Fig. 35 (showing mix of capacity varies primarily according to natural gas prices); *cf.* STEVE ISSER, ELECTRICITY RESTRUCTURING IN THE UNITED STATES: MARKETS AND POLICY FROM THE 1978 ENERGY ACT TO THE PRESENT 87-91 (2015) (describing periods of inverse relationship between natural gas prices and coal-fired capacity, aided by technological advances in gas-fired generation).

impacts on the electrical fuel mix by influencing the relative market price of power,¹⁴² the scope of the CPP is such that it will alter the design of the markets themselves.¹⁴³

2. Preliminary Injunctive Relief

The standard on a motion for preliminary injunction is equitable and requires a court to consider: (1) the petitioner's likelihood of success on the merits; (2) the threat of irreparably injury absent the injunction; (3) the possibility of harm to others if the injunction is issued; and (4) the public interest.¹⁴⁴ The discussion above anticipates the parties' arguments: the petitioners will contend that EPA lacks authority to issue the CPP (and to do so in the way it has), meaning there is a likelihood of success on the merits; the petitioners will also focus on the burden of complying with a rule of unprecedented scope; EPA will emphasize the sheer magnitude of the climate change problem and the role of the rule in furthering the public interest as embodied in the CAA.

Short of a quick ruling that the petitioners will likely succeed on the merits—which would all but end the litigation¹⁴⁵—the real stake at this procedural stage is the rule's momentum at the end of a presidential term. No doubt EPA would prefer to keep the rule in force so that compliance may begin while President Obama is in office. Even an injunction for a year forces

¹⁴² See Emily Hammond & David B. Spence, *The Regulatory Contract in the Marketplace*, --VAND. L. REV. -- (forthcoming 2016).

¹⁴³ For example, a compliance approach might involve altering least-cost dispatch to account for electricity fuel preferences. This would require a number of steps, including for example approval of new market tariffs by FERC.

¹⁴⁴ *Nat'l Wildlife Fed. v. Burford*, 835 F.2d 305, 319 (D.C. Cir. 1987). EPA could have stayed the rule's effect on its own, 5 U.S.C. § 705, but it did not do so. Note that administrative law doctrine accounts for these interests in additional ways. For example, the availability of pre-enforcement review is predicated on a concern for hardship to the regulated industry; the CAA permits even more lenient standards for such review. See *Whitman v. Am. Trucking Assn's*, 531 U.S. 457, 479–80 (2000).

¹⁴⁵ Cases usually settle at this point. There is another important context in which the decision to issue a preliminary injunction has devastating effects. The Federal Trade Commission can obtain a preliminary injunction to stop a merger through use of a standard that is easier to meet than the standard applicable to the actions of other agencies. The issuance of the preliminary injunction is outcome-determinative because the proceeding to resolve the case on the merits take so long that the parties to the merger have no choice but to capitulate. See Richard Pierce, *The Rocky Relationship Between the Federal Trade Commission and Administrative Law*, ----GEO. WASH. U. L. REV. ---- (forthcoming 2016).

the burden of inertia back to the status quo and buys time for the next administration to change its approach.¹⁴⁶ This, of course, is the very risk with which we are concerned in the preceding section; administrative law doctrine contemplates that agencies will change their approaches. When so much is at stake, that aspect of administrative law seems normatively flawed.

3. Remanding With or Without Vacatur

As we have noted, the variety of ways in which a court might find flaws in the CPP is staggering. For any of these defects, the APA provides that the reviewing court “shall” “set aside” the defective “agency action, findings, and conclusions.”¹⁴⁷ Despite the mandatory wording, courts have never followed this language strictly; sometimes they vacate an agency’s decision,¹⁴⁸ while other times they simply remand.¹⁴⁹ Further, courts have applied both approaches to remedy the various types of defects we have identified.¹⁵⁰ Doctrinal guidance on selecting the approach is sparse,¹⁵¹ but the D.C. Circuit has articulated a balancing test that favors remands without vacatur by considering the “seriousness of the . . . deficiencies (and thus

¹⁴⁶ See Thomas O. McGarity, *Administrative Law as Bloodsport: Policy Erosion in a Highly Partisan Age*, 61 DUKE L.J. 1671, 1677-78 (2012) (describing fierce political climate and pressure of constant opposition from regulated entities that promote statutory goals to erode over time).

¹⁴⁷ 5 U.S.C. § 706(2); see also 42 U.S.C. § 7607(b) (“the court may reverse”).

¹⁴⁸ See, e.g., *Motor Vehicles Mfrs. Ass’n of the U.S. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 57 (1983) (concluding agency failed to supply reasoned analysis and vacating and remanding); *Camp v. Pitts*, 411 U.S. 138, 143 (1973) (vacating and remanding Comptroller of Currency’s denial of bank charter for failure to explain basis of denial).

¹⁴⁹ *Pub. Citizen Health Research Grp. v. U.S. Dep’t of Labor*, 557 F.3d 165, 191 (9th Cir. 2009) (remanding worker safety standard but declining to vacate where “the only identified defect in a standard is the lack of an adequate statement of reasons”); *Appalachian Power Co. v. EPA*, 251 F.3d 1026, 1039 (D.C. Cir. 2001) (remanding without vacating technical amendments to NOx SIP Call; defect involved adopting new definition of electricity generating unit without providing notice and opportunity for comment). For a discussion of how the remedy interacts with multiple remands of the same agency action, see generally Emily Hammond Meazell, *Deference and Dialogue in Administrative Law*, 111 COLUM. L. REV. 1722 (2011).

¹⁵⁰ To be sure, the appropriateness of vacating or not depends on the grounds for a court’s holding that the agency acted unlawfully. If the court holds EPA lacks jurisdiction under § 111(d) to regulate GHGs at all, for example, the rule would be ultra vires and the vacation issue moot. E.g., *Coal. for Responsible Reg. v. EPA*, 606 Fed. Appx. 6, 7 (D.C. Cir. 2015) (vacating GHG rules for major stationary sources not already subject to PSD requirements in accordance with holding in *Utility Air Reg. Grp. v. EPA*, 134 S. Ct. 2427 (2014), which held that EPA lacked authority to regulate such sources).

¹⁵¹ It is also inconsistently applied. Kristina Daugirdas, Note, *Evaluating Remand Without Vacatur: A New Judicial Remedy for Defective Agency Rulemaking*, 80 N.Y.U. L. REV. 278, 293-94 (2005).

the extent of doubt whether the [A]gency chose correctly), the likelihood that the [A]gency will be able to correct the deficiencies on remand and the disruptive consequences of an interim change that may itself be changed.”¹⁵²

This standard reflects the reality that the practical import of the choice matters deeply: if the CPP is vacated, it is extinguished—as if the rule had never been promulgated.¹⁵³ Not only does this result forestall the massive changes that might be embodied in state implementation plans, but it could eliminate that possibility altogether if the next administration chooses not to pursue a revision.¹⁵⁴ If the CPP is remanded without vacatur, the rule remains in force—meaning regulated parties must comply.¹⁵⁵ Of course, as discussed above, a new administration might direct EPA to change its policy under this scenario as well.¹⁵⁶ But the inertia of compliance could be difficult to undo—particularly if the CPP was not stayed pending litigation.

Part of the lesson here is that the battles of the CPP—its statutory legitimacy and reasonableness in particular—will be won or lost not so much on the substance but on the remedial choices during and following litigation. We have described the balancing of interests relevant to whether a stay pending litigation should be granted,¹⁵⁷ but it is critical to see that the impacts of that decision stand to be amplified in a court’s ultimate choice of remedy. Consider these scenarios, all of which would entail a flaw in reasoned decisionmaking (rather than a

¹⁵² *Allied-Signal, Inc. v. NRC*, 988 F.2d 146, 150-51 (D.C. Cir. 1993); see Richard J. Pierce, Jr., *Seven Ways to Deossify Rulemaking*, 47 ADMIN. L. REV. 59, 75-76 (1995) (noting test favors remand without vacatur for reasoned decisionmaking flaws because of likelihood that agencies can substantiate their decisions on remand).

¹⁵³ *Checkosky v. SEC*, 23 F.3d 452, 465 (D.C. Cir. 1994) (separate op’n of Silberman, J.) (agency must “initiate another rulemaking proceeding as if it would seek to confront the problem anew”).

¹⁵⁴ Major rules promulgated under the CAA are notorious for EPA flip-flopping according to presidential policy. *E.g.*, *Chevron*; *NOx SIP Call*, *Homer City* (cross-state), *MACTs*.

¹⁵⁵ *Id.* Moreover, subsequent judicial review will be confined to the matters addressed on remand. See generally *Hammond*, *supra* note 1495, at 1738 (discussing these distinctions).

¹⁵⁶ See *supra* text accompanying notes ____.

¹⁵⁷ See *supra* text accompanying notes ____.

holding that EPA acted *ultra vires*).¹⁵⁸ First, a court might grant a stay pending litigation, and remand with vacatur. This combination effectively kills compliance and returns the parties to the pre-CPP status quo. Second, a court might grant a stay pending litigation, but remand without vacatur. This combination provides a minor setback in compliance, but permits substantial steps toward compliance thereafter (at the risk of a change in administration). Third, a court might decline to grant a stay pending litigation, but remand with vacatur. This approach would be wasteful in hindsight because states will have begun developing their compliance plans during the pendency of litigation, only to be relieved of the obligation to comply on remand.¹⁵⁹ If the coal companies and coal-fired utilities are right about investors' decisions, moreover, some of the coal fleet may be lost during this time. Finally, a court might decline to grant a stay pending litigation and remand without vacatur. This approach most fully moves compliance forward—which may result in changes that are irreversible as a practical matter, notwithstanding a change in administration.

Thus, the normative aspects of the ultimate choice of remedy bear consideration. The practice of remanding without vacatur has been criticized on statutory interpretation grounds;¹⁶⁰ others have raised the normative concern that remands without vacatur are used inappropriately to soften the impact of hard-look review.¹⁶¹ Other possible objections are that remanding without vacatur can undermine the constitutional underpinnings of the *Chenery* doctrine by

¹⁵⁸ For purposes of this discussion, we adopt the premise that *some* aspect of the CPP will fail the reasoned decision making test. See *Pierce*, *supra* note [7 Ways], at 69 (with respect to searches for flaws in agency's reasoned decisionmaking, "[t]hat search will always bear fruit."). Of course, if a court holds EPA lacks statutory authority under the § 112 exemption or beyond-the-fence-line reasoning we have set forth *supra* Part II.C, the discussion here is moot.

¹⁵⁹ Of course, this is the crux of the hardship prong of the preliminary injunction standard.

¹⁶⁰ *E.g.*, *Checkosky v. SEC*, 23 F.3d 452, 491 (D.C. Cir. 1994) (Randolph, J., dissenting) ("Setting aside means vacating; no other meaning is apparent.").

¹⁶¹ The premise here is that searching scrutiny is harmful. Daniel B. Rodriguez, *Of Gift Horses and Great Expectations: Remands Without Vacatur in Administrative Law*, 36 ARIZ. ST. L.J. 599, 601 (2004).

leaving in place a rule that cannot stand on an agency's original reasoning.¹⁶² Still, many see the flexibility in determining a remedy as solidly grounded in Article III,¹⁶³ pragmatic in promoting court-agency dialogue,¹⁶⁴ and useful as a guard against ossification.¹⁶⁵

How does the CPP itself interact with these considerations? First, we expect judicial review in this case to fall on the rigorous end of the spectrum.¹⁶⁶ Provided the flaws a court finds are remediable, remand without vacatur offers a counter-balance to searching review, albeit imperfectly. Further, the separation-of-powers concerns raised by both the CPP itself and judicial review of the Plan are heightened. As many have recognized, the CPP is a significant example of agency activity filling the vacuum left by a gridlocked Congress.¹⁶⁷ This fact helps justify the extensive need for reason-giving that is embodied in the CAA as well as administrative law doctrine, and perhaps offers a reason to weigh our ossification concerns less heavily for this particular analysis. On the other hand, if the need for statutory and democratic legitimacy is at its highest when an agency's action has such sweeping ramifications,¹⁶⁸ then a flaw in reason-giving admittedly may justify vacatur as a check on agency behavior. Overall, we take a pragmatic view: vacating a remediable rule only reinforces instability and exacerbates the problems already noted with a *Chevron* approach to the interpretive issues. The reliability of our

¹⁶² Hammond, *supra* note 126, at 1784.

¹⁶³ Ronald M. Levin, "Vacation" at Sea: *Judicial Remedies and Equitable Discretion in Administrative Law*, 53 DUKE L.J. 291, 361 (referencing "judicial humility").

¹⁶⁴ Harry T. Edwards, *Collegiality and Decision Making on the D.C. Circuit*, 84 VA. L. REV. 1335, 1346 (1998).

¹⁶⁵ Richard J. Pierce, Jr., *Seven Ways to Deossify Rulemaking*, 47 ADMIN. L. REV. 59, 77-78 (1995); *see also* William S. Jordan, *Ossification Revisited: Does Arbitrary and Capricious Review Significantly Interfere with Agency Ability to Achieve Regulatory Goals Through Informal Rulemaking?*, 94 NW. U. L. REV. 393, 414 (2000).

¹⁶⁶ Sidney A. Shapiro & Richard E. Levy, *Heightened Scrutiny of the Fourth Branch: Separation of Powers and the Requirement of Adequate Reasons for Agency Decisions*, 1987 DUKE L.J. 387, 411 (noting vacillation between levels of scrutiny). The D.C. Circuit has ratcheted up its hard-look review in recent years, though the exact approach seems highly dependent on which panel the litigants get. *Compare, e.g.,* Bus. Roundtable v. SEC, with *EME Homer Generation, rev'd*, Michigan v. EPA (upholding EPA's determination that it did not need to consider costs in determining whether to regulate air toxics from EGUs).

¹⁶⁷ *E.g.,* Jody Freeman & David B. Spence, *Old Statutes, New Problems*, 163 U. PA. L. REV. 1, 20-42 (2014).

¹⁶⁸ *Cf. Utility Air Regulatory Group v. EPA*, 134 S. Ct. 2427, 2444 (2014) (invoking constitutional concerns when agency would regulate enormous scope of activity).

electricity system, and the impacts of climate change, are issues too serious to bear an on-again, off-again approach.

III. Implementation Issues

Putting aside for now the doctrinal challenges for the CPP, we turn to two major implementation issues: (a) the challenges created by fuel-switching to intermittent sources; and (b) the limitations states may encounter as a result of retail or wholesale restructuring status. It seems possible that opponents of the CPP might argue that these issues render the CPP arbitrary and capricious, but our purpose is not to make those arguments. Rather, we raise our concerns as they relate to our views of energy policy and law more generally.

A. Challenges Created by Intermittent Sources

The largest reductions in GHG emissions expected as a result of implementation of the CPP are in building blocks 2 and 3. As described in Part I above, block 2 contemplates EGUs will switch first from coal to natural gas, which would achieve at least some reduction in GHG emissions. To achieve even further reductions, block 3 contemplates that EGUs will switch from fossil fuels to wind and solar.¹⁶⁹ The good news is that the unit cost of producing electricity through use of some forms of wind and solar in some locations has declined significantly in recent years.¹⁷⁰ The bad news is that both wind and solar are intermittent sources of electricity.

As Paul Joskow has explained in detail, intermittent sources of electricity are much less valuable than dispatchable sources—those that can be called upon to generate electricity at any time.¹⁷¹ Almost all EGUs that use fossil fuels are dispatchable, while no EGU that uses wind or

¹⁶⁹ This is the expectation for the CPP's compliance period. As the CPP discusses, other low-carbon sources such as nuclear count toward compliance, but were not included in block 3 because of their longer construction times. CPP *supra* note 1, at 64,803.

¹⁷⁰ INT'L RENEWABLE ENERGY AGENCY, RENEWABLE POWER GENERATION COSTS IN 2014 12 – 13 (2015); Tara Patel, Bloomberg Business, *Fossil Fuels Losing Cost Advantage Over Solar, Wind, IEA Says*, Aug. 31, 2015.

¹⁷¹ Paul Joskow, *Comparing the Costs of Intermittent and Dispatchable Generating Technologies*, 101 AM. ECON. REV. 238 (2012).

solar is dispatchable. That distinction is important because of two basic characteristics of the electricity market. First, demand for electricity varies greatly every minute. Second, because electricity cannot be stored economically, it must be consumed at exactly the same time that it is generated.¹⁷² Those two characteristics underlie a market in which there must always be enough supply to meet current demand and in which electricity is much more valuable at times of peak demand than at times of low demand.¹⁷³ By definition, dispatchable sources, including most EGUs that use fossil fuels, are available at times of peak demand. By contrast, the availability of electricity from the sun depends on whether the sun is shining and the availability of electricity from wind depends on whether the wind is blowing at a velocity that allows a particular wind turbine to turn at a particular speed.¹⁷⁴

The usefulness of an intermittent source depends on several variables. First, the availability factor of the source is important. “Availability factor” refers to the amount of time a source is able to produce electricity, divided by the amount of time in a given period.¹⁷⁵ Fossil-fueled EGUs typically have much higher availability factors than wind and solar, due again to intermittency. Because intermittent sources may not be available when they are needed, their “load-serving capacity” is lower than that of fossil-fueled sources; that is, their nameplate capacities are derated to account for unavailability.¹⁷⁶ Under this metric, wind’s load-serving capacity may be as low as ten percent of its nameplate capacity.¹⁷⁷ Second, the correlation

¹⁷² For an overview, see Hammond & Spence, *supra* note 119, at 110.

¹⁷³ Paul Joskow & Catherine Wolfram, *Dynamic Pricing of Electricity*, 102 AM. ECON. REV. 381, 381 (2012).

¹⁷⁴ Hammond & Spence, *supra* note 119, at 125.

¹⁷⁵ See JACK CASAZZA & FRANK DELEA, UNDERSTANDING ELECTRIC POWER SYSTEMS 88-90 (2010) (discussing availability).

¹⁷⁶ *Id.* at 90.

¹⁷⁷ *Id.* By contrast, the capacity factor reflects the amount of actual generation of a source over time divided by a source’s nameplate capacity. Data from the past several years show that capacity factors for fossil-fueled sources are higher than wind and much higher than solar, once again reflecting in part the ability of the source to generate over time. EIA, *Monthly Capacity Factors for Select Fuels and Technologies*, Jan. 15, 2014, at <http://www.eia.gov/todayinenergy/detail.cfm?id=14611>. Capacity factors are also influenced by the type of load

between the periods of time in which an intermittent source is available and the periods of time in which demand for electricity is high is an important determinant of the value of a source. The higher the correlation the more valuable the source. As would be expected, the correlation for dispatchable resources is much higher than that for non-dispatchable resources.

Third, the usefulness of any source depends on its location. A source that is close to major markets can be used more readily than a source that is farther from major markets, referred to as load centers in the electricity industry. There are two ways to measure the distance between a source and a load center. The first is to calculate the miles between a source and a load center. Using this measure a near source is slightly more valuable than a far source because transmission of electricity is not costless. Most of the variable cost of transmission is attributable to line loss—electricity lost during the transmission process. That cost is modest, however, because of the extraordinary efficiency of modern ultra-high-voltage transmission lines.¹⁷⁸ The far more important way of measuring the distance between a source and a load factor is by identifying and measuring the effects of the transmission constraints that lie between the source and load centers. A source that is five miles from the nearest load center has no value if there is no way to transmit it from the source to a load center.¹⁷⁹

It is difficult to identify and measure the effects of transmission constraints because electricity is transmitted on one of three complicated and fully integrated transmission grids.¹⁸⁰ Electricity flows in accordance with Kirchhoff's law—the amount transmitted over any segment

that the source serves (among many other things). Base load sources, like nuclear for example, have much higher capacity factors because they are nearly always running. *See id.*

¹⁷⁸ INST. FOR ENERGY RESEARCH, ELECTRICITY TRANSMISSION, at <http://instituteeforenergyresearch.org/electricity-transmission/> (Sept. 2, 2014). For general discussion, *see* CASAZZA & DELEA, *supra* note 152, at 165.

¹⁷⁹ *See* ISSER, *supra* note 118, at 107-08 (describing security-constrained economic dispatch).

¹⁸⁰ Hammond & Spence, *supra* note 119, at 110.

of a grid is inversely proportional to the impedance on that segment.¹⁸¹ Since the quantity of electricity from each of thousands of sources varies every second and the quantity demanded at each of hundreds of load centers varies every second, there are hundreds of transmission constraints on each grid with widely varying effects. If a constraint exists only five percent of the time and it usually exists only at times of low demand, it is not important. Conversely, a constraint that exists seventy-five percent of the time or that usually exists at times of high demand is very important. A transmission constraint almost always increases the cost of electricity by requiring substitution of a more expensive source for a less expensive source.¹⁸² Some of the increased cost is reflected in higher prices for electricity; some is reflected in increased emissions of pollutants, including increased emissions of GHGs. Sometimes a transmission constraint produces a local or regional brownout or blackout because the sources that are accessible to a load center are not capable of generating enough electricity to accommodate the demand at the load center.¹⁸³

Each of these determinants of the usefulness and value of a source of electricity is important. Thus, for instance, if a source has no transmission access to any load center at any time, it is worthless. If it has access seventy-five percent of the time, but it has no access during periods of high demand, it has little value. If a source has a twenty-five percent availability factor and a correlation of five percent between the period of time in which it is available and the periods of high demand, it is nearly worthless.

These complicated characteristics of electricity transmission and markets combine to create a situation in which it is difficult to integrate intermittent sources like solar and wind into

¹⁸¹ See CASAZZA & DELEA, *supra* note [152], at 203 (describing transmission simulation programs that solve for Kirchhoff's equation); DOUGLAS C. GIANCOLI, PHYSICS FOR SCIENTISTS AND ENGINEERS 609 – 11 (2d ed. 1989) (setting forth Kirchhoff's rules).

¹⁸² See Hammond & Spence, *supra* note 119, at 115 (discussing these considerations).

¹⁸³ For a list of major blackouts, see CASAZZA & DELEA, *supra* note 175, at 162.

a transmission grid at a reasonable cost and with tolerable adverse effects on the reliability of electricity service. The higher the proportion of supply from intermittent sources the greater the challenge of integration. The CPP is ambitious. It envisions a large increase in the proportion of the total electricity supply on each grid that will be provided by intermittent sources.

There are five predominant ways in which intermittent sources can be (or are) added to a grid at tolerable cost: storage, demand response, providing efficient backup supplies, increased access of intermittent sources to load centers, and geographic diversification of the intermittent sources that are accessible to each load center. Everyone agrees that electricity storage at reasonable cost is the ideal way to integrate intermittent sources.¹⁸⁴ The massive research and development efforts that firms have devoted to attempts to further that goal have produced encouraging results, but making storage economical remains a challenge.¹⁸⁵ For now, research and development efforts should continue to be prioritized.¹⁸⁶

Demand response is also a promising way to ameliorate intermittency and has already been used to this effect with some success,¹⁸⁷ but its regulatory status is currently uncertain. The validity of FERC's Order 745, which set a uniform pricing scheme for demand response in the wholesale markets, is the subject of a pending Supreme Court decision.¹⁸⁸ If the Court holds that FERC lacks jurisdiction to set such a scheme, it will call into question the viability of demand

¹⁸⁴ See e.g., Amy Stein, *Reconsidering Regulatory Uncertainty: Making a Case for Energy Storage*, University of Florida Levin College of Law Legal Studies Research Paper Series Paper No. 15-15 (2015).

¹⁸⁵ See Dhruv Bhatnagar et al., SANDIA NAT'L LABS., MARKET AND POLICY BARRIERS TO ENERGY STORAGE DEPLOYMENT 9–10 (2013).

¹⁸⁶ Other barriers include regulatory issues, market issues in non-RTO/ISO markets, business model issues, and technology issues. *Id.* at 9.

¹⁸⁷ For an explanation of how demand response assists with integrating distributed generation, see Joel B. Eisen, *Distributed Energy Resources, "Virtual Power Plants," and the Smart Grid*, 7 ENVTL. & ENERGY L. & POL'Y J. 191 (2012).

¹⁸⁸ Along with our co-authors, we have argued that FERC has jurisdiction to take this action. See Amicus Curiae Br. of Energy Law Scholars in Supp. of Pet'rs, FERC v. Elec. Power Supply Ass'n, Nos. 14-840, 14-841 (S. Ct. filed July 16, 2015).

response in the capacity markets,¹⁸⁹ which is where demand response aggregators earn most of their revenue.¹⁹⁰ If the prevailing business model must shift to state-level programs, significant state regulatory changes may be necessary and will at the very least cause delay in widespread implantation of demand response programs.¹⁹¹

Providing additional backup supplies is an additional means of integrating renewables. A useful low-carbon backup source for solar and wind is hydropower, if it is operated in storage mode—which emphasizes its value as a source of electricity and deemphasizes its value for competing purposes like irrigation, recreation, water quality maintenance, and support of aquatic species.¹⁹² If operated in this way, hydro is rampable; it can be turned on and off quickly just by opening and closing control gates.¹⁹³ Indeed, many European planners have already recognized this contribution of hydro, and contemplate that hydro will become increasingly important as renewables penetration increases.¹⁹⁴ When the sun stops shining or the wind stops blowing, Norway, for example, can make up for the sometimes large deficit in electricity supply that would otherwise exist in Germany or Denmark by sending large flows of electricity from hydropower to replace the electricity that was coming from solar and wind sources.¹⁹⁵

Hydropower is unlikely to provide much of a solution to the integration problem in the United States for several reasons. First, the United States has access to only modest economically viable hydro supplies that are not already in full use for other purposes.¹⁹⁶ Second,

¹⁸⁹ See Am. Compl. of FirstEnergy Serv. Co., No. EL14-55-001, at 3 (FERC filed Sept. 22, 2014) (arguing *EPSA* applies to PJM's capacity markets).

¹⁹⁰ Remarks of Greg Poulos, Manager, Regulatory Affairs, EnerNOC, Nov. 5, 2015 (notes on file with authors).

¹⁹¹ *Id.*

¹⁹² This is not the policy approach of the United States, as described *infra*.

¹⁹³ Hammond & Spence, *supra* note 119, at 18 n.107.

¹⁹⁴ Eurelectric, *Hydro in Europe: Powering Renewables* 34-39 (2011), at http://www.eurelectric.org/media/26690/hydro_report_final-2011-160-0011-01-e.pdf.

¹⁹⁵ *Id.*

¹⁹⁶ Cf. EIA, EIA Projections show hydro growth limited by economics not resources, July 10, 2014 (distinguishing studies suggesting greater technical capacity and noting “Because hydropower is a mature technology, most of the

the supply of hydropower is more likely to decline rather than to increase in the United States because dams are unpopular with the public.¹⁹⁷ Third, the United States takes seriously the competing uses of dams for other purposes,¹⁹⁸ so they are not nearly as reliable a source of backup power domestically as they are in northern Europe. Finally, hydropower's availability is inversely proportional to drought conditions. California's drought, for example, is responsible for a 9.7% decrease in hydropower generation for 2015, contributing to a nationwide decrease in renewables generation of 2.7%.¹⁹⁹ Some firms and government officials have recently shown interest in building more dams in western Canada to provide the United States with access to greatly increased supplies of hydro.²⁰⁰ This is a promising development, but it is far too early to count on the success of such efforts in devising a plan to integrate intermittent sources in the U.S. grids.²⁰¹

The CPP is predicated on the assumption that natural gas-fired EGUs will provide adequate backup power at times when demand is high but intermittent sources are not available. Indeed, natural gas is often touted as a fuel that can complement renewables' intermittency.²⁰² This is because natural gas-fired EGUs can ramp quickly compared to other sources, so they are

technically and economically superior sites have already been developed.”), at

<http://www.eia.gov/todayinenergy/detail.cfm?id=17051>

¹⁹⁷ See AMERICAN RIVERS, DAMS AND HYDROPOWER, <http://www.americanrivers.org/initiatives/dams/> (last visited Oct. 15, 2015) (describing efforts at dam removal).

¹⁹⁸ See *Scenic Hudson Preservation Conf. v. FPC*, 354 F.2d 608, 614 (D.C. Cir. 1965) (holding Federal Power Act's “recreational purposes” language requires agency consideration of environmental impacts); EISEN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT 367 (4th ed. 2015) (“The *Scenic Hudson* case provided a template for the National Environmental Policy Act”); see also *PUD No. 1 of Jefferson Cnty. v. Wash. Dep’t of Ecology*, 511 U.S. 700, 723 (1994) (holding minimum streamflows developed through state water quality certification process were acceptable for inclusion in FERC-issued hydro permit).

¹⁹⁹ EIA, SHORT-TERM ENERGY AND WINTER FUELS OUTLOOK 14, Oct. 2015, at http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf.

²⁰⁰ Emily Holden, Climatewire, *How Can Canadian Hydropower Help Meet U.S. Climate Goals?*, Aug. 27, 2015.

²⁰¹ One can imagine an approval process as heated as that involving the Keystone XL Pipeline; the relevant regulatory requirements and procedures are the same. See Exec. Order 12,038 (Feb. 3, 1978) (transferring to DOE authority to grant presidential permits for transmission lines and pipelines crossing international borders).

²⁰² E.g., David Spence & Ross Baldick, *Why America's power grid needs natural gas now more than ever*, FORTUNE.COM, Sept. 27, 2015.

particularly useful for meeting demand when solar or wind cannot.²⁰³ Natural gas-fired EGUs also have other characteristics that make them good candidates to provide backup power. The price of natural gas is low at present and is predicted to remain low for the foreseeable future. The capital cost of a natural gas-fired EGU is relatively low and the time required to obtain a construction permit is relatively short.²⁰⁴

Most important for purposes of furthering the goals of the CPP, the most efficient NGCC plants emit far less CO₂ than coal, as detailed in Part I. For that reason, the CPP is predicated on the assumption that natural gas-fired EGUs can be used both as a backup to the new solar and wind supplies that are expected to reduce emissions in block 3 of the CPP and, by replacing coal-fired EGUs, as the entire basis for the emissions reductions expected in block 2 of the CPP. Thus, the success of the CPP is critically dependent on maintaining and increasing the number and quantity of electricity generated by natural gas-fired EGUs at a tolerable cost.²⁰⁵

The assumption that natural gas-fired EGUs can perform both of those functions at tolerable cost is not well-supported. There are two obstacles to fulfilling that assumption. First, the cost per unit of electricity generated by natural gas-fired EGUs is likely to increase—perhaps significantly—as a result of the major changes in the use of natural gas-fired EGUs that are contemplated by the CPP. Traditionally, the most efficient natural gas-fired EGUs have been used primarily as baseload supply, i.e., they generate electricity at all times except when undergoing maintenance. The CPP is based on the assumption that over time the primary use of

²⁰³ BLACK & VEATCH, COST AND PERFORMANCE DATA FOR POWER GENERATION TECHNOLOGIES 9-48 (Feb. 2012), <http://bv.com/docs/reports-studies/nrel-cost-report.pdf> (listing ramp rates and “quick start” rates for various generation technologies).

²⁰⁴ U.S. ENERGY INFO. ADMIN., LEVELIZED COST AND LEVELIZED AVOIDED COST OF NEW GENERATION RESOURCES IN THE ANNUAL ENERGY OUTLOOK 2015 1 (June 2015), http://www.eia.gov/forecasts/aeo/pdf/electricity_generation.pdf [hereinafter EIA LCOE Estimates].

²⁰⁵ EPA contemplates that in the short-term at least, combustion-turbine natural gas generation will be used as renewable support. CPP, *supra* note 1, at 64,716–17. These represent one-fifth of natural-gas-fired capacity, *id.* at 61,716, and in any event, are just as reliant on natural gas prices as NGCC.

natural gas-fired EGUs will be as backup supplies. As electricity generated by solar and wind increases, therefore, the quantity of electricity generated by natural gas-fired EGUs will decrease.²⁰⁶ In other words, natural gas will compete with renewables for baseload market share. That, in turn, will increase the cost of electricity per unit generated because the fixed costs of the EGUs will have to be recovered in the prices charged for a lower quantity of electricity generated.²⁰⁷

The second obstacle to fulfilling the assumptions underlying the CPP is related to the first, but it is a much more serious obstacle. EPA assumes that the large increase in the amount of electricity generated through use of natural gas-fired EGUs can be met without constructing any new units.²⁰⁸ We are skeptical of that assumption. As EPA has stated in analogous contexts, its models should not be used as an indication of what is likely to happen but only as illustrations of what might happen.²⁰⁹ Under the CPP, many new natural gas-fired EGUs will have to be built to meet the increased need for electricity generated through use of natural gas that is part of the basis of both blocks 2 and 3 of the CPP. It will be challenging to finance those new natural gas generators in the dramatically different circumstances in which natural gas-fired EGUs will be used after the CPP is implemented.

Potential investors base their decisions on the flow of revenue expected as a result of an investment. In the case of a long-lived asset like an EGU, the relevant expected flow is over the

²⁰⁶ At least, this is what the CPP seems to contemplate. Predictions of the future fuel mix are difficult to make even without the regulatory uncertainty imposed by the CPP. Attempts at modeling the proposed rule's impacts to the generation mix resulted in projections that varied considerably. *See, e.g.*, ENERGY INFO. AGENCY, ANALYSIS OF THE IMPACTS OF THE CLEAN POWER PLAN 14–27 (2015) (providing a summary of the results from projects of the new rule), <http://www.eia.gov/analysis/requests/powerplants/cleanplan/pdf/powerplant.pdf> [<http://perma.cc/NM5E-49DK>]; Michael Wara et al., *Peak Electricity and the Clean Power Plan*, 28 ELECTRICITY J. 18, 24–25 (2015) (providing several predictions for electricity).

²⁰⁷ This potentially creates a situation similar to that currently being experienced by merchant nuclear power plants operating in wholesale markets; their short-run marginal costs are quite low, but their long-run-average costs are not compensated by the market because of various distortions. *See generally* Hammond & Spence, *supra* note 119 (providing this diagnosis).

²⁰⁸ CPP, *supra* note 1, at 64,802.

²⁰⁹ EPA Resp. in Opp'n, No. 15-1277, Doc. No. 1570665, at 29 (D.C. Cir. filed Aug. 31, 2015).

expected life of the asset—thirty to forty years in the case of an EGU.²¹⁰ The revenue flow expected from an investment in a natural gas-fired EGU in the conditions created by the CPP will be much lower than the flow expected from an investment in a natural gas-fired EGU that is used as a baseload source.²¹¹ Once natural gas-fired EGUs are used primarily as backups for wind and power, the expected revenue flow will be lower, and it will decline over time as the quantity of electricity expected to be generated from solar and wind increases.²¹²

Moreover, the CPP may cause prospective investors to view investments in new natural gas-fired EGUs as high-risk. Since the purpose of the CPP is to reduce emissions of GHGs, and natural gas-fired EGUs emit large quantities of GHGs, prospective investors will be concerned that the CPP is only step one in the effort to reduce emissions of GHGs. Indeed, others have identified this issue as a policy imperative.²¹³ The most logical step two would be a program to replace natural gas-fired EGUs with carbon-free sources. Thus, prospective investors will attach a high degree of uncertainty to the revenue flows they expect from an investment in a new EGU over the expected life of the EGU.

Low, declining, and uncertain expected revenue flows discourage investors. It is not at all clear that the conditions created by the CPP will be consistent with the investments in new natural gas-fired EGUs that we believe to be critical to the success of the CPP. If the market conditions do not produce enough investment, it is far from certain that the government will be willing to subsidize investments in new natural gas-fired EGUs, knowing that they are a significant source of GHG emissions. If enough new natural gas-fired EGUs can be financed in

²¹⁰ See generally EIA LCOE ESTIMATES (describing these considerations).

²¹¹ A commentator to the proposed CPP argued that redirecting natural gas to supporting renewables calls into question EPA's anticipated 75% utilization rate of existing NGCC. CPP, *supra* note 1, at 64,803.

²¹² See *id.*

²¹³ See MIT, *The Future of Natural Gas* 9 (2010) (arguing higher GHG emission targets could “require the complete de-carbonization of the power sector”).

the conditions created by the CPP, the cost of the capital required to make those investments will be high, given the low, declining, and risky expected flow of revenues. That, coupled with the increased unit cost caused by the reductions in output of natural gas-fired EGUs, will make the critical gas components of the CPP costly.

The third way in which intermittent sources can be integrated at tolerable cost and with tolerable decreases in the reliability of electricity service is by maximizing the access of wind and power sources to major load centers. Many of the most desirable locations for wind farms and solar EGUs are remote from major load centers. Thus, for instance, the plains states have the kind of relatively high and constant wind velocity that make them particularly attractive locations for wind farms, while the deserts in the southwestern states have conditions that make them particularly attractive locations for solar EGUs.²¹⁴ Both are far from major load centers, however.

The most desirable locations for wind and solar can be exploited only if they are connected to major load centers with new ultra-high voltage transmission lines. Professors Alexandra Klass and Elizabeth Wilson have explained in detail why that outcome is unlikely to happen in a timely manner without a major change in law.²¹⁵ Most other important parts of the energy infrastructure, like gas pipelines and liquefied natural gas (“LNG”) plants, can begin construction as soon as they receive authorization from a federal agency.²¹⁶ The process of obtaining that authorization takes an average of less than two years.²¹⁷

²¹⁴ Alexandra B. Klass & Elizabeth J. Wilson, *Interstate Transmission Challenges for Renewable Energy: A Federalism Mismatch*, 65 VAND. L. REV. 1801, 1832-47 (2012).

²¹⁵ *Id.* at 1858-73.

²¹⁶ See Alexandra Klass, *Future-proofing Energy Transport Law*, at 20 (2015) (describing relative ease of authorizing this infrastructure) (draft on file with authors).

²¹⁷ *Id.* at 35.

But transmission lines can be constructed only if they are authorized by state, and sometimes even local, governments.²¹⁸ The process of obtaining that authorization routinely takes a decade, often takes far longer, and sometimes proves to be impossible.²¹⁹ The source of this problem is a mismatch between the geographic scope of the costs and benefits of transmission lines. A new transmission line usually produces some aesthetic harm and few benefits in the state that must authorize it. That state may come to the conclusion that the costs of the line to the state's residents exceed its benefits to the residents. It may then decide not to authorize construction of the line or, at least not to expedite the process of deciding whether to authorize the line.

Viewed from a national perspective, however, the benefits of the line may be much greater than its costs. If a federal agency had the power to decide whether to authorize the line, it could make a quick affirmative decision. Given the importance to the success of the CPP of providing access to markets for solar EGUs and wind farms, a federal agency with the power to authorize construction of a transmission line would be able to match the two-year average time it now takes Federal Energy Regulatory Commission (“FERC”) to authorize construction of a gas pipeline or LNG plant.²²⁰

The final way in which intermittent sources can be integrated at tolerable cost and with a tolerable decrease in the reliability of electricity service is through geographic diversification of sources. A respected consulting firm has issued a report in which it concluded that the problem

²¹⁸ Klass & Wilson, *supra* note 185, at 1830.

²¹⁹ Klass, *supra* note 185, at ___.

²²⁰ Courts have significantly limited FERC’s ability to carry out national transmission siting, notwithstanding that the Energy Policy Act of 2005 appeared to give FERC at least somewhat greater authority than it has traditionally had. *See, e.g.*, Cal. Wilderness Coal. v. DOE, 631 F.3d 1072 (9th Cir. 2011) (rejecting DOE’s designation of National Interest Electric Transmission Corridor); Piedmont Env’tl. Council v. FERC, 558 F.3d 304 (4th Cir. 2009) (limiting FERC’s federal siting authority to circumstances in which states have failed to act, rather than denied, transmission construction certificates).

of integrating intermittent sources can be solved through geographic diversification of sources.²²¹ That conclusion seems plausible. If a large number of wind and solar generators are connected in different locations, grid operators can maximize the probability that power will be available from some combination of intermittent sources at all times. When the wind decreases in one area, it is likely to increase in other areas, and a cloudy day in the location of some solar sources is likely to be offset by sunshine in the location of other sources or by healthy wind velocity in locations with wind farms. Denmark has made good use of this strategy: the key to its success has been the existence of a robust transmission grid.²²²

The United States is severely limited in its ability to use geographic diversification of sources as a means of integrating intermittent sources. In most locations, the regional grids lack the capacity to transmit significant quantities of electricity generated from locations with differing weather conditions to load centers.²²³ To engage in effective geographic diversification of sources, the United States would have to strengthen the grids substantially by constructing many new transmission lines in a timely manner. That is impossible with our current allocation of permitting authority to state governments.

Absent some unexpected dramatic improvement in the ability to store electricity at tolerable cost or rapidly construct major transmission lines, integrating substantial intermittent sources as contemplated by the CPP will be difficult and expensive. It will be difficult, if not impossible, to accomplish that task successfully without a change in the allocation of power to

²²¹ Patrick Luckow, Tommy Vitolo & Joseph Daniel, Synapse Energy Economics, *A Solved Problem: Existing Measures Provide Low-Cost Wind and Solar Integration* 8-9 (Aug. 25, 2015).

²²² Store, *Overview of the Danish Transmission System and RES Integration* 8-11 (2013); *see also* Amelia Reiver Schlusser, *Renewable, Reliable, Resilient: Policy Approaches for Maintaining Reliability in the Western Grid Under the Clean Power Plan* 20 (Oct. 2015) (emphasizing benefits of geographic diversification but identifying transmission hurdle).

²²³ Am. Wind Energy Ass'n & Solar Energy Indus. Ass'n, *Green Power Superhighways* (2009), *available at*, <https://www.awea.org/files/FileDownloads/pdfs/GreenPowerSuperhighways.pdf>.

authorize construction of transmission lines. If states retain that power, it is hard to imagine how the CPP can succeed. It follows that the two most important steps the United States must take to implement the CPP are continued aggressive research and development efforts to identify less expensive ways of storing electricity, and switching the power to authorize construction of a transmission line from state governments to the federal government.

B. The Interaction of Preemption Doctrine and State Electricity Regulation

As states consider how to implement the section 111(d) standards, they must also confront the many barriers stemming from our constitutional structure. For example, the dormant Commerce Clause limits their options in designing renewable-portfolio or low-carbon fuel standards.²²⁴ The Supremacy Clause also limits state options, particularly with respect to the preemptive reach of the CAA,²²⁵ FPA,²²⁶ and Atomic Energy Act.²²⁷ An issue that has attracted little attention,²²⁸ however, concerns the interplay between a state's restructuring status and preemption doctrine. Recent preemption litigation involving the FPA suggests that a state's status matters for how it can comply with the CPP.

²²⁴ *E.g.*, *N.D. v. Heydinger*, 15 F. Supp. 3d 891 (D. Minn. 2014), *appeal filed*, No. 14-2156 (8th Cir. filed May 19, 2014) (holding Minnesota's Next Generation Energy Act invalid as per se violation of dormant Commerce Clause); *see* Kirsten H. Engel, *The Dormant Commerce Clause Threat to Market-Based Environmental Regulation: The Case of Electricity Deregulation*, 26 *ECOL. L.Q.* 243, 250 (1999) (arguing trade barriers should be permissible under certain conditions); Daniel K. Lee & Timothy P. Duane, *Putting the Dormant Commerce Clause Back to Sleep: Adapting the Doctrine to Support State Renewable Portfolio Standards*, 43 *ENVTL. L.* 295, 355-56 (2013) (arguing, among other things, for intermediate rather than strict scrutiny of state RPSs); Steven Ferrey, *Solving the Multimillion Dollar Constitutional Puzzle Surrounding State "Sustainable" Energy Policy*, 49 *WAKE FOREST L. REV.* 121, 133-40 (2014) (describing state RPSs and dormant Commerce Clause doctrine).

²²⁵ *Cf.* *Bell v. Cheswick Generating Sta.*, 734 F.3d 188 (3d Cir. 2013) (holding CAA does not preempt state-tort putative class action involving coal-fired power plant's ash and contaminants settling on landowners' property).

²²⁶ *E.g.*, *Miss. Power & Light Co. v. Miss. ex rel. Moore*, 487 U.S. 354 (1988) (holding Supremacy Clause compelled Mississippi to permit utility to recover through its state rates, wholesale costs that FERC had determined were just and reasonable); *cf.* *ONEOK, Inc. v. Learjet, Inc.*, 135 S. Ct. 1591 (2015) (holding Natural Gas Act provisions that are read *in pari materia* with FPA do not preempt state anti-trust claims against natural gas traders).

²²⁷ *E.g.*, *Entergy Nuclear Vt. Yankee, LLC v. Shumlin*, 733 F.3d 393, 428 (2d Cir. 2013) (holding that AEA preempted various Vermont attempts to close nuclear power plant).

²²⁸ *Cf.* *Hammond & Spence*, *supra* note 119, at Part III.B (considering the issue as it relates to states' abilities to incentivize particular electricity fuel sources).

The relevant cases involve Maryland and New Jersey, which are restructured states operating in the PJM Interconnection. Both determined in the early 2000s that the PJM capacity market was not incentivizing sufficient investment in new electricity generation.²²⁹ New Jersey's legislature, for example, expressly found that the capacity market had “not resulted in large additions of peaking facilities or any additions of intermediate or base load resources available to the region and the State.”²³⁰ The two states passed statutes that would subsidize new natural gas construction within their borders. Both accomplished this goal by assuring new generation a fixed revenue stream for supplying electrical capacity that cleared the PJM capacity market.²³¹ Several existing electricity generators challenged the statutes, arguing they were preempted by the FPA.

Both the Third and Fourth Circuits held that field preemption forbade the statutes because the wholesale markets are within FERC's exclusive jurisdiction. The Fourth Circuit decision in particular emphasized that by restructuring, Maryland had “throw[n] in its lot with the federal interstate markets” and thereby compelled electricity generators within its borders to sell electricity in the wholesale market.²³² Having done so, the state could not then regulate how its generators interacted with that market—notwithstanding the states' traditional authority over electricity siting and construction.²³³ The subsidy, reasoned the court, attempted to directly regulate capacity market prices by setting the price that generators would receive for capacity.²³⁴ This the state could not do.

²²⁹ PPL Energyplus, LLC v. Solomon, 766 F.3d 241 (3d Cir. 2014), *pet'n for cert. filed* (U.S. Dec. 12, 2014); PPL Energyplus, LLC v. Nazarian, 753 F.3d 467 (4th Cir. 2014), *pet'n for cert. filed* (U.S. Nov. 26, 2014).

²³⁰ N.J. STAT. § 48:3-98.2(b).

²³¹ *Solomon*, 766 F.3d at 246; *Nazarian*, 753 F.3d at 473.

²³² 753 F.3d at 473; *see also* 766 F.3d at 248 (emphasizing that in restructuring, “New Jersey divorced the entities that generate electricity from those that supply it.”).

²³³ 753 F.3d at 473.

²³⁴ 753 F.3d at 476-77.

These holdings are notable for two interrelated reasons. First, the markets themselves are frequently criticized for failing to incentivize new construction because they are based on short-run marginal costs but often include price caps.²³⁵ Capacity markets are one response; ERCOT's very high price caps are another.²³⁶ Despite these modifications to the wholesale markets, commentators continue to express concern that there are inadequate incentives for investors.²³⁷ As described above, moreover, the CPP may heighten these concerns for natural gas.²³⁸

But to the extent states would step in to incentivize new capacity as part of their CPP compliance, the capacity cases show the options are limited. Indeed, the second reason to pay attention to these cases is that they show how restructured states may have less flexibility than their traditionally regulated counterparts. Compare, for example, Georgia and South Carolina, which are traditionally regulated states with vertically integrated utilities whose wholesale sales do not take place on spot markets. These states have incentivized new nuclear construction—which will count toward CPP compliance—by guaranteeing that the utilities can recover the carrying costs of construction through their rates.²³⁹ The capacity market issue is irrelevant in this context because these states have not disaggregated electricity generation from supply. Instead, the states are free to determine that new capacity is needed and to incentivize new construction through the rates they authorize.

²³⁵ See Hammond & Spence, *supra* note 119, at 130 (describing concerns); Pierce, *Completing the Process of Restructuring the Electricity Market*, 40 WAKE FOREST L. REV. 451, 469 (2006) (criticizing price caps).

²³⁶ See Hammond & Spence, *supra* note 119, at 173-74 (describing these approaches).

²³⁷ Sources cited *supra* note 74.

²³⁸ *Supra/infra* text accompanying notes ____. The CPP says almost nothing about capacity markets. The only reference in the preamble is in a description of how RTO/ISOs work to ensure reliability. CPP, *supra* note 1, at 64,667. The CPP obliquely references power pools only to provide historical context. CPP at 64,796 (“Prior to electricity restructuring, this dispatch was typically operated by major vertically-integrated utilities or by public power entities.” Over the last 15 years, large portions of the power grid are now independently operated by ISOs or RTOs.”).

²³⁹ For a full description, see Hammond & Spence, *supra* note 119, at Part II.C.1.

And what of traditionally regulated states whose generators operate in a Regional Transmission Organization (“RTO”) or Independent System Operator (“ISO”) market?²⁴⁰ The logic of the capacity cases suggests that these states too are foreclosed from approaches like those Maryland and New Jersey took. And states that are traditionally regulated but in which generation resources operate in any RTO/ISOs or power pool²⁴¹ face additional complexity. To be sure, the capacity cases noted that options like direct subsidies and tax rebates²⁴² might avoid preemption concerns; these may be available under state law irrespective of restructuring status. Our point is not that states are left with no options. It is that those options are both variable and dependent on restructuring status. EPA glosses over state complexity by falling back on flexibility and the grid’s resiliency, but in doing so it fails to anticipate the ramifications of states’ restructuring decisions for CPP compliance.

IV. Conclusion

We end where we began. We support the CPP but we are concerned about the effects of some of the difficult legal issues it presents and some of the difficult implementation issues it presents. We cannot resist making one more point. It would be easy to accomplish all of the goals of the CPP more efficiently and effectively, with much lower transactions costs and much lower potential unintended adverse effects by taking just two steps. If the United States were to enact a carbon tax²⁴³ and switch to real-time pricing of electricity,²⁴⁴ then the United States could realistically expect that market forces would do the rest of the job.

²⁴⁰ An interactive map may be found at FERC, *Electric Power Markets: National Overview*, <http://www.ferc.gov/market-oversight/mkt-electric/overview.asp>.

²⁴¹ Kentucky is one such state, though it has a law forbidding mandated fuel switching or renewable additions for CPP compliance. See Jean Chemnick, E&E NEWS, *Kentucky regulators walk tightrope on Clean Power Plan*, Mar. 4, 2015, <http://www.eenews.net/stories/1060014457>.

²⁴² 753 F.3d at 478; 766 F.3d at 253 n.4.

²⁴³ The tax would need to be set at an optimal level; some authors have suggested about forty dollars per ton. See, e.g., Warwick McKibbin, Adele Morris & Peter Wilcoxon, *Controlling Carbon Emissions From U.S. Power Plants: How a Tradable Performance Standard Compares to a Carbon Tax* (Aug. 3, 2015). Admittedly, tax policies suffer from

regulatory fluctuation—an ill we have identified herein with respect to administrative law doctrine. *E.g.*, EISEN ET AL., *supra* note [199], at 784-85 (“The [production tax credit’s] record is a sad story of ‘Same Time, Next Year.’”).²⁴⁴ Paul Joskow & Catherine Wolfram, Dynamic Pricing of Electricity, 102 *American Economic Review* 381 (2012).