THE UNCOMFORTABLE CONVERGENCE OF ENERGY AND ENVIRONMENTAL LAW

*Jody Freeman**

Environmental law and energy law, two historically disparate fields, seem to be converging. Energy regulation has begun to seriously address environmental concerns for the first time, and environmental law is increasingly becoming a driver of energy policy. This Article describes the legal mechanisms through which greater congruence has been achieved, while acknowledging the still significant and stubborn barriers to true integration, which likely will be difficult to overcome. It shows that federal agencies have taken steps toward greater policy alignment by repurposing existing statutory provisions and relying on previously under-utilized legal authorities for the first time, in a carefully calibrated process of legal innovation. Yet it also shows this process to be meaningfully constrained by the agencies' adherence to their own distinct missions, and by the constraints of their particular statutory authorities.

The Article builds on the work of scholars who have lamented the divide between energy and environmental law, and urged that it be dismantled. Most of the accounts to date suggest that environmental rules and energy sector regulation, which are so obviously interrelated, inevitably will be drawn closer together. The analysis here looks more closely at the drivers of convergence to date, and presents a more nuanced picture of events. The trend toward greater policy alignment, while real, is limited. Energy and environmental regulators have not embraced convergence as an independent goal, but rather have achieved it incrementally and indirectly, as a consequence of pursuing their traditional missions during a time of change. These agencies have reacted to numerous external forces—technological innovation, market shifts, scientific developments, federal and state regulatory measures—which have prompted them to respond with their own initiatives. Yet they remain constrained by the bounds of their governing statutes and the confines of their long established regulatory roles. Tellingly, these agencies have tended to justify their policy innovations as necessary to fulfill their own traditional mandates, not to help other agencies realize theirs.

The Article ultimately concludes that claims of convergence between the two fields should be tempered. However desirable greater policy congruence might be, it has not been mandated by Congress, explicitly commanded by the President, or centrally directed by anyone else. And it is not inevitable. The most that can be said is that convenient alignments may arise when the imperatives of these different regulators coincide. Thus, the story of "convergence" between energy and environmental goals is one of gradual steps rather than great leaps—of interest-based compatibility rather than love-struck merger.

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* Archibald Cox Professor of Law, Harvard Law School. Professor Freeman is the founding Director of Harvard Law School's Environmental Law and Policy Program and serves on the Board of ConocoPhillips as an independent director. Thanks are due to the Fordham and Vanderbilt faculties of law, for hosting very helpful workshops of the paper. I am indebted to Jim Rossi for his insightful comments on an early draft, and to Kate Konschnik and Ari Peskoe, for early feedback and encouragement. Other readers to whom I owe thanks for terrific comments include William Boyd, Ralph Cavanagh, Alexandra Klass, and David Spence. John Moore and Allison Clements of Sustainable FERC were generous with their time and knowledge. I am grateful to June Casey in the Harvard Law School Library for superb research support, Jordan Moran for thoughtful suggestions, and Cassie Mitchell for excellent research assistance. I am also grateful to several senior officials at the Environmental Protection Agency and the Federal Energy Regulatory Commission, including both political appointees and career staff, for agreeing to conduct anonymous interviews, in which they provided candid reactions to the claims in the Article and offered enormously helpful

Introduction

Environmental law and energy law, two historically disparate fields, have seemed, in recent years, to be converging. Environmental law increasingly has become a driver of energy policy, and energy regulation has begun to seriously address environmental concerns for the first time. The two fields remain structurally different in important respects. Yet they are influencing each other more directly than ever before, and their goals are slowly becoming more compatible.

This trend is a notable and consequential departure from a long tradition of separateness, which dates to the two fields' common law roots. As others

suggestions. Joseph Goffman saved me from making subtle errors. The Article remains my work alone, and I am responsible for all errors and omissions.

have observed, the core goals of energy and environmental law are different.[1] Energy regulation (limited here to mean electricity sector regulation) has roots in public utility and anti-trust law, and its focus historically has been on controlling the pathologies of natural monopolies.[2] Environmental law, by contrast, grew out of tort and property law, and has been concerned primarily with protecting public health and welfare.[3] Put simply, modern energy law has sought to keep energy prices low and supplies ample, while environmental regulation has dealt with the considerable adverse consequences.

The two lead federal agencies responsible for energy and environmental regulation, the Federal Energy Regulatory Commission ("FERC") and the Environmental Protection Agency ("EPA"), reflect this longstanding divide. FERC is an independent commission in the tradition of other Depression-era economic regulators, whereas EPA, established during a later wave of social regulation, is an executive branch agency empowered to protect public health and welfare. The statutes from which these agencies draw their legal authorities assign them very different core tasks and embody distinct approaches to federalism. In addition, FERC and EPA, at least historically, answer to largely different stakeholder groups, and answer to separate Senate oversight committees.[4] The split between the agencies runs deep and manifests itself in agency culture, too. Personnel in these agencies—political appointees and staff alike—understand their flexibility to be limited by their discrete and bounded missions, for which they believe they possess unique expertise. These officials are cognizant

1. Lincoln L. Davies, *Alternative Energy and the Energy-Environment Disconnect*, 46 IDAHO L. REV. 473, 475–76 (2010); Joseph P. Tomain, *The Dominant Model of United States Energy Policy*, 61 U. COLO. L. REV. 355, 391–92 (1990).
2. Davies, *supra* note 1, at 475; *see also* Tomain, *supra* note 1, at 391.
3. Davies, *supra* note 1, at 475–76. For a description of the environmental impacts of energy production, *see* Jonas J. Monast & Sarah K. Adair, *A Triple Bottom Line for Electric Utility Regulation: Aligning State-Level Energy, Environmental, and Consumer Protection Goals,* 38 COLUM. J. ENVTL. L. 1, 7 (2013). Mining, drilling, and other methods of energy production cause air pollution, water pollution, and hazardous wastes. Combustion is also highly polluting. Power plants produce about two-thirds of the SO_2 emissions and one-third of the NO_X emissions in the United States (which cause acid rain) and about one-third of U.S. emissions of carbon dioxide, the main contributor to global warming, along with significant amounts of particulate matter and mercury, a toxic pollutant. *See id.*
4. The Senate Committee on Energy and Natural Resources oversees FERC, *see Jurisdiction*, SENATE COMM. ON ENERGY & NAT. RES., https://perma.cc/GR7S-X7KL, while the Senate Committee on Environment and Public Works has jurisdiction over EPA, *see Committee Jurisdiction*, SENATE COMM. ON ENV'T & PUB. WORKS, https://perma.cc/F695-K4CC. In the House of Representatives, the Energy and Commerce Committee has jurisdiction over both. *See Energy*, HOUSE ENERGY & COMMERCE COMM., https://perma.cc/D43M-LML2; *Environment,* HOUSE ENERGY & COMMERCE COMM., https://perma.cc/A6AU-QRUE.

of the need to stay "in their lane" and not get out "over their skis" into matters beyond their jurisdiction.[5]

This Article builds on the work of scholars and practitioners who have identified and bemoaned the traditional divide between energy and environmental law.[6] These commentators have criticized the persistent separateness of the two fields as "increasingly artificial, if not entirely abstract,"[7] and urged that it be dismantled.[8] A common refrain among experts is that environmental agencies, both federal and state, fail to understand and consider adequately how their regulatory choices affect energy markets, energy costs, and electric system reliability. Likewise, it is thought, energy regulators do not fully account for how their choices might negatively impact public health and the environment, viewing such problems as exogenous to their primary mission.[9] Indeed, the relationship between the agencies has at times seemed untrusting and antagonis-

5. Telephone Interview with Anonymous FERC official (May 2016). The divide between energy and environmental law has long been evident in legal practice, teaching, and scholarship, too. As others have noted, until recently, law firm energy and environmental practices customarily operated independently. State bar associations maintained one section for environmental law and another for energy law. Law schools offered energy and environmental law as self-contained courses, taught with almost no overlap, often by different professors. The same disconnect exists traditionally in energy and environmental law casebooks and legal journals. But things appear to be changing. *See* Alexandra B. Klass, *Climate Change and the Convergence of Environmental and Energy Law*, 24 FORDHAM ENVTL. L. REV. 180, 186–87 (2013) (noting that "many law firms now have combined environmental and energy law departments" and "energy law and environmental law casebooks show more overlap than would have been evident 20 years ago").

6. Davies, *supra* note 1, at 475–76; Joseph P. Tomain, *Electricity and the Environment*, 126 PUB. UTIL. FORT. 34 (1990); Amy J. Wildermuth, *The Next Step: The Integration of Energy Law and Environmental Law*, 31 UTAH ENVTL. L. REV. 369 (2011). *See also* Todd S. Aagaard, *Energy-Environment Policy Alignments*, 90 WASH. L. REV. 1517 (2015) (arguing that energy and environmental law affect each other largely through "negative constraints," and suggesting that the agencies pursue policy alignments as an alternative approach); Klass, *supra* note 5 (arguing that climate change is forcing convergence and that addressing climate change requires energy law reform).

7. *See* Joseph T. Kelliher & Maria Farinella, *The Changing Landscape of Federal Energy Law,* 61 ADMIN. L. REV. 611, 621 (2009).

8. *See* JOSEPH P. TOMAIN, ENDING DIRTY ENERGY POLICY 52 (2011) ("A smart energy policy requires the elimination of the separation between energy and the environment.").

9. Certain statutory provisions require energy regulators to consider environmental impacts, and environmental regulators to consider energy impacts. But these mandates are limited in their capacity to force greater policy alignment, and have often been minimized or avoided altogether. *See* J.R. DeShazo & Jody Freeman, *Public Agencies as Lobbyists*, 105 COLUM. L. REV. 2217, 2222–23 (2005) (describing consultation requirements governing hydropower licensing in the Federal Power Act); Jody Freeman & Jim Rossi, *Agency Coordination in Shared Regulatory Space*, 125 HARV. L. REV. 1131, 1157–61 (2012) (describing a broad variety of inter-agency consultation and coordination requirements, but almost none that give one agency veto power over another's regulatory authority). This complaint is made about state-level policy too. *See* Monast & Adair, *supra* note 3, at 3–4, 52.

tic.[10] Scholars are increasingly and enthusiastically pointing to the possibility of integration, however, citing various fairly recent policy initiatives that seem to be driving convergence to an unprecedented extent.[11] While this field of inquiry is fast developing, there is room for a more in-depth analysis.

The argument here goes beyond prior work in describing the legal mechanisms through which greater congruence and coordination between the two fields have been achieved, while frankly acknowledging the still significant and stubborn barriers to true integration, which likely will be difficult to overcome. The analysis shows that federal agencies have gradually taken steps toward alignment by repurposing existing statutory provisions and relying on previously under-utilized legal authorities, in a carefully calibrated process of legal innovation, but reveals this process to be both inherently limited, and fragile. As a result, the argument is somewhat less sanguine about the prospects of true convergence than other scholarly work in this vein.

The Article's conceptual contribution is to frame these developments as a by-product of the agencies' pursuit of their traditional mission rather than as an

10. *See* EPA, Comment Letter on Proposed Rule Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities (Aug. 7, 1995) [hereinafter EPA Comments on FERC Order No. 888] (noting that "EPA is concerned that premature elimination of price regulation for power from existing plants may provide a perverse incentive to increase generation at the dirtiest plants"); *Hearing on FERC Perspective: Questions Concerning EPA's Proposed Clean Power Plan and Other Grid Reliability Challenges Before the Subcomm. on Energy and Power of the H. Comm. on Energy and Commerce* (2014), https://perma.cc/7KCP-J4CQ (statement of Philip D. Moeller, FERC Commissioner) (noting that he "would not expect EPA to have expertise on the intricacies of electric markets" and describing the proposed Clean Power Plan as "awkward at best, and potentially very inefficient and expensive").

11. *See* sources cited *supra* note 6. A similar process has unfolded in a number of states, where historically separate energy and environmental agencies have sought to better coordinate policy. *See* Monast & Adair *supra* note 3, at 3–4 (2013). In at least some states, this closer inter-agency coordination has been centrally commanded, a result of new legal requirements forcing energy and environmental regulators to consider each other's objectives. In states like California, New York, and Minnesota, for example, something closer to "convergence" may be underway. Energy agencies in these states are being directed to specifically take into account environmental concerns, as the states adopt and implement policies like renewable portfolio standards, limits on greenhouse gas emissions and the like. *See, e.g.*, CAL. ENERGY COMM'N, STRATEGIC PLAN 2 (2014), https://perma.cc/7EA6-YJFR (describing the California Energy Commission's purpose to include "assur[ing] statewide environmental" goals); *Mission Statement*, N.Y. STATE DEP'T OF PUB. SERV. (Sept. 22, 2014), https://perma.cc/8227-M43R (describing the New York Department of Public Service's mission to include "protecting the national environment"). In other states, alignment is evolving more organically, with the various state agencies using their legal and regulatory discretion to nudge existing law in new directions—a process that may be more akin to what has been occurring at the federal level. While there are some interesting parallels between the state and federal dynamics, and while they can reinforce each other, the state dynamic is sufficiently complex and varied to warrant its own separate inquiry. The focus in this Article will be on federal agencies.

independent goal. No one has commanded the agencies to work together—certainly not Congress, which has historically shown little interest in unifying energy and environmental policy; and not the President, who lacks the power to order convergence among the disparate agencies even if he wanted to do so. Nor have the agencies explicitly agreed, either formally or informally, to work in lockstep. Instead, the Article argues, these agencies have been reacting independently to numerous external forces, including technological innovation, new scientific knowledge, market developments, as well as interest group pressure, to solve pressing social and economic problems.[12]

It is important, too, to understand the limits of this trend. While energy and environmental regulators have taken a variety of complementary steps, they have done so mindfully, within the constraints of their respective statutory authorities, and in line with their traditional core missions. The agencies have justified policy initiatives as necessary to fulfill their *own* mandates first and foremost, not because they seek to help other agencies realize theirs. Indeed, federal energy and environmental regulators remain supremely vigilant about hewing closely to their respective statutory assignments. Not only do they assiduously defend their legal territory against encroachment, they also resist being drawn into battles they view as not their own. Wary of judicial review, the agencies have also been legally cautious: although they have adapted their statutes to changing conditions—in some instances boldly—they have gone only so far. And in large part because of this self-restraint, convergence in its literal sense remains elusive.

Some observers might wish the agencies would do still more to align policy. Yet even the carefully calibrated steps regulators have taken thus far have raised a non-trivial prospect of being rebuffed by the courts or blocked by Congress. Going much further would require the agencies to reach beyond their historical comfort zones, expand their traditional missions, and stretch their core competencies. Notwithstanding calls from some stakeholders urging them to do so, regulators have seemed unwilling to bear the associated legal and political risks without clearer congressional guidance. Strikingly, this reticence was evident even during the Obama Administration, which had made climate change a priority.[13] Thus, as this Article shows, bridging the traditional divide

12. This includes technological developments that have helped to transform local power markets into much larger regional ones; new resource extraction techniques (e.g., hydraulic fracturing, horizontal drilling), which have helped to unlock abundant domestic natural gas reserves, and have driven down the price of natural gas compared to coal; scientific data showing the serious public health consequences of air and water pollution caused by energy production and consumption, which has led to closer regulation of the power sector; and scientific findings about the causes, impacts, and risks of climate change.

13. *See e.g.*, Exec. Office of the President, The President's Climate Action Plan (2013), https://perma.cc/Q35Z-L4QV.

between the two fields is far from pre-ordained, and even when nurtured by a committed chief executive, not easy to achieve.

Part I puts the divide between energy and environmental law in historical context, showing it to be deeply entrenched—a product of bureaucratic structure, statutory design, and agency culture. Against this background, Part II explores the evolution of FERC's approach to regulating electricity markets, including several initiatives that appear to be driving alignment between the two fields. This discussion focuses on FERC's broader policy decisions in the energy sector, which it has made through a series of rulemakings.[14] Part III examines EPA's implementation of environmental regulation, focusing on its efforts to tackle persistent air quality problems, which likewise seem to be facilitating greater congruence. While the argument here is not primarily normative, the Article proceeds on the presumably uncontroversial assumption that pursuing greater policy coherence across these related fields is generally desirable, if we expect regulators not to work at cross-purposes.[15]

Together, Parts II and III make the case that the appearance of greater accommodation between FERC and EPA is best explained as largely a response to external drivers. Beneath the gloss of convergence, the argument claims, lies a more nuanced story in which shifting dynamics in both fields have yielded opportunities for fortuitous alignments, which the agencies have seized, but only when, and to the extent, it suits their interests. Moreover, there are real limits to how far the agencies will go, and ample evidence of ongoing mis-

14. FERC also makes policy through its individual licensing decisions for energy infrastructure, such as pipelines and energy export terminals, but it has shown less appetite for alignment in this role. *See infra* note 215 and accompanying text.

15. I have explored this question at length in other works. For example, I have suggested that, at a minimum, agencies undertaking related statutory responsibilities should share information, comment on each other's policy initiatives, and draw on each other's staff expertise. *See* Freeman & Rossi, *supra* note 9, at 1155–81. Where agencies work on the same problems, or analyze the same impacts, they should seek to use the same models and methodologies, or develop a means of translating between their different approaches, so that results can be compared and understood. *See* Jody Freeman, *The Obama Administration's National Auto Policy: Lessons from the "Car Deal*," 35 HARV. ENVTL. L. REV. 343 (2011) (referring to EPA and National Highway Traffic Safety Administration's different models for estimating costs of adding technology and the means by which these approaches were harmonized). I have also identified certain doctrinal shifts that could incentivize greater coordination among agencies—for example if courts were to consider, as part of arbitrary and capricious review under the Administrative Procedure Act, whether agencies have taken into account the extent to which their policy choices are consistent or inconsistent with the mandates of other agencies. *See* Freeman & Rossi, *supra* note 9, at 1209. The harder question, of course, is how to achieve the right balance between coordination and agency independence. As I have argued elsewhere, there are good reasons for preserving an agency's independence to implement its own statutes, even when that agency works on related or overlapping matters with other agencies. *See id.* at 1181–83. Striking the optimal balance between coordination and independence is, in the end, a deeply contextual and contingent inquiry, which this Article makes no claim to resolve.

alignment, too. There remain numerous obstacles to closer integration, including incompatible approaches to federalism embedded in the governing statutes, ongoing tension between competing statutory imperatives, and concern about legal risk in the face of judicial skepticism toward regulatory overreach. It bears noting, too, that the pace of policy congruence may be influenced by a change in executive branch leadership, especially in an era of relative congressional quiescence. While a President may not be able to command convergence because of the legal, structural, and cultural constraints discussed here, he or she may be in a position to intensify it. By the same token, and perhaps to an even greater extent, a determined President may be able, at least temporarily, to thwart it. For all of these reasons, while energy and environmental law may yet converge, the fields remain stubbornly separate, at least for now.

I. Two Separate Fields

Congress is not a perfect planner, and federal agencies are creatures of the political moment in which they take shape. But if one were designing an approach to federal energy and environmental regulation in the United States today, one would be hard-pressed to choose the structure we currently have, in which the adverse impacts of a regulated economic activity are hived off into a separate field. Yet that is precisely how things are structured in American law: energy law largely treats public health and environmental harms as externalities which environmental law is designed to address. This conceptual distinction, which has roots in the common law, is reflected not just in federal statutes, but in state law as well. It is a divide that runs deep, and makes policy coherence a persistent challenge. This Part describes the different structures and statutory missions of the lead federal regulators, FERC and EPA, and puts their roles in a larger, and highly fragmented, regulatory context.

A. FERC and EPA's Respective Roles

The energy system has obvious environmental impacts—from air and water pollution and ecosystem-level harms, to global climate change—and at the same time, environmental regulation has the potential to affect operational and economic decisions in the energy sector. Yet energy and environmental regulation are governed by different federal statutes, which are implemented by separate agencies structured specifically for their discrete missions. FERC is an independent agency within the Department of Energy ("DOE") headed by a bipartisan five-member board.[16] EPA is an executive branch agency headed by a

16. 16 U.S.C. § 792 (2012). FERC regulates hydroelectric dam licensing and safety under Part I of the Federal Power Act ("FPA"), 16 U.S.C. §§ 791a–823d; wholesale electricity rates and transmission services under Parts II and III of the FPA, 16 U.S.C. §§ 824–825u; natural gas pipeline transportation rates and services and liquefied natural gas terminals under the Natu-

single administrator.[17] These structural differences alone explain why the agencies do not operate in perfect harmony. Whereas FERC must maintain its independence from the President, the EPA Administrator answers directly to him. Among other things hindering policy coordination, FERC's major regulatory initiatives are not submitted to the Office of Management and Budget for inter-agency review, nor does FERC typically participate in the review of other agencies' rules.[18]

FERC acts as the market regulator for the electricity sector under the Federal Power Act ("FPA").[19] Congress has tasked FERC with ensuring that rates for wholesale electricity sales and interstate electricity transmission services are "just and reasonable" and non-discriminatory, to protect consumers from the monopoly power of investor-owned utilities that traditionally controlled every aspect of electricity, from generation to transmission and distribution.[20] FERC has other responsibilities as well, including the authority to approve energy infrastructure such as dams, natural gas pipelines, and liquefied natural gas terminals,[21] projects which themselves can have significant environmental impacts.[22] Indeed, FERC's roots are in infrastructure licensing—the agency grew out of the Federal Power Commission ("FPC"), which Congress created in 1920 to coordinate and license federal hydropower projects.[23] FERC's role as a market regulator came later, beginning in 1935, when Congress empowered the Commission to regulate the interstate market in electricity after the Supreme Court held that the states were precluded from doing so under the Commerce Clause.[24] In 1938, Congress tasked FERC with more rate regulation, this time

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ral Gas Act of 1938, 15 U.S.C. §§ 717–717z (2012); and oil pipeline transportation rates and services pursuant to the Interstate Commerce Act of 1887, 24 Stat. 379, codified as amended in scattered sections of 49 U.S.C.

17. *See* Reorganization Plan No. 3 of 1970, § 2, 84 Stat. 2086.
18. *See* Exec. Order 12866, 58 Fed. Reg. 51,735 (Sep. 30, 1993) (requiring only executive branch agencies to undergo regulatory review for "significant" rules).
19. 16 U.S.C. §§ 791a–828c. By contrast, there is no analogous central economic regulator overseeing wholesale prices for energy used in the transportation sector.
20. Over time, FERC has transitioned from setting rates based on cost-of-service principles to a more laissez faire strategy of overseeing competitive markets. *See infra* section II.A, text accompanying notes 101–10.
21. *What FERC Does*, FERC, https://perma.cc/T4YB-QKSD.
22. *See, e.g.*, *Electricity Delivery and Its Environmental Impacts*, EPA, https://perma.cc/3YJ3-TZVU.
23. *History of FERC*, FERC, https://perma.cc/YDN6-ZCGF.
24. *See* Pub. Utils. Comm'n of R.I. v. Attleboro Steam & Elec. Co., 273 U.S. 83, 90 (1927). States retain the authority to regulate rates for retail electricity and intra-state transmission. *See* Aagaard, *supra* note 6, at 1524–25; Monast & Adair, *supra* note 3, at 3–4. States also approve and license new electric power generation, oversee long term resource planning by utilities, and approve and site transmission lines. *See* Alexandra Klass, *Takings and Transmission*, 91 N.C. L. Rev. 1079, 1101–02 (2013). In states that have restructured their electricity markets, retail rates are competitive, and set by the market. *See also* Amicus Curiae Brief of

over the interstate sale and transportation of natural gas.[25] In 1977, Congress also gave the agency the power to set rates for transporting oil through interstate pipelines, transferring it from the defunct Interstate Commerce Commission.[26] It was then that the agency was renamed FERC and relocated within the DOE.[27] Thus, FERC is both an infrastructure licensing agency and a market regulator. Indeed, the modern FERC is internally organized precisely along these lines, with one program office focused on "markets" and the other focused on "projects."[28] In both of these capacities, FERC has the potential to frustrate or facilitate environmental objectives.

Federal environmental regulation falls primarily, by contrast, to EPA, which President Nixon created in 1970 from disparate executive departments, and to which Congress has since assigned the task of enforcing the nation's major pollution laws.[29] The major statutes were adopted in their modern form in the 1970s, which most commentators regard as the first decade of federal

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Energy Law Scholars in Support of the Petitioners at 4–9, FERC v. Elec. Power Supply Ass'n, 136 S. Ct. 760 (2016) (describing overlapping jurisdiction between FERC and the states as being consistent with the FPA).

25. Natural Gas Act of 1938, 15 U.S.C. §§ 717–717z (2012).

26. The Hepburn Act of 1906 brought pipelines under the jurisdiction of the Interstate Commerce Commission, authority that was transferred to FERC in 1977. *See* Department of Energy Organization Act, Pub. L. No. 95-91, § 306, 91 Stat. 581 (repealed 1994).

27. Today, FERC's authority includes licensing or re-licensing the nation's dams; setting rates for wholesale sales of natural gas and electricity, as well as for electricity transmission and transportation of natural gas and oil through pipelines. It also approves siting for natural gas pipelines. *What FERC Does*, FERC, https://perma.cc/T4YB-QKSD. FERC does not, however, regulate the *production* of energy for electricity. Oil and gas drilling is governed by state law, or, where on federal lands, by federal statutes administered by the land management agencies within the Department of the Interior ("DOI"). David B. Spence, *Federalism, Energy Lags, and the Political Economy of Energy Production*, 161 U. PA. L. REV. 431, 447, 450 (2013). Coal mining is regulated under the Surface Mining Control and Reclamation Act, 30 U.S.C. §§ 1201–1328 (2012), administered by the Office of Surface Mining in DOI. Onshore oil and gas extraction is governed by Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701–1787 (2012), which is administered by the Bureau of Land Management. Offshore oil and gas extraction is governed by the Outer Continental Shelf Lands Act, 43 U.S.C. §§ 1331–1356b (2012), which is administered by the Bureau of Ocean Energy Management. The Nuclear Regulatory Commission licenses nuclear power plants pursuant to the Energy Reorganization Act of 1974, 42 U.S.C. § 5801–5891 (2012).

28. *FERC Organization Chart*, FERC, https://perma.cc/JK3L-CAZM (showing both the Office of Energy Market Regulation and the Office of Energy Projects).

29. *See* Reorganization Plan No. 3 of 1970, § 2, 84 Stat. 2086. The major federal environmental statutes adopted from 1969 to 1976 include the National Environmental Policy Act ("NEPA"), Pub. L. No. 91-190, 83 Stat. 852 (1969); the Clean Air Act ("CAA"), Pub. L. No. 91-604, 84 Stat. 1676 (1970); the Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 898 (later amended as the Clean Water Act ("CWA") and codified at 33 U.S.C. §§ 1251–1387 (2000)); the Endangered Species Act ("ESA"), Pub. L. No. 93-205, 87 Stat. 884 (1973); the Safe Drinking Water Act ("SDWA"), Pub. L. No. 93-523, 88 Stat. 1660 (1974); the Resource Conservation and Recovery Act ("RCRA"),

environmental law.[30] EPA sets national air quality standards, which the states must meet, as well as performance standards that apply directly to individual sources of air pollution, in both the transportation and industrial sectors.[31] EPA also sets water quality standards for all "point sources" of water pollution, and shares authority with the Army Corps of Engineers over permits to dredge or fill jurisdictional waters, including wetlands.[32] In addition, among other tasks, the agency regulates hazardous waste throughout its life cycle from generation through disposal,[33] assigns liability for remediating hazardous waste sites,[34] sets drinking water quality standards,[35] controls underground injection of pollutants, and requires testing of certain toxic chemicals to meet safety standards.[36] EPA is structured accordingly, with program offices devoted to each medium or issue area, such as air, water, land and emergency management, chemical safety, and so on, with a separate enforcement office.[37] EPA thus operates chiefly as a standard setting, permitting, and enforcement agency.[38]

Pub. L. No. 94-580, 90 Stat. 2795 (1976); and the Toxic Substances Control Act ("TSCA"), Pub. L. No. 94-469, 90 Stat. 2003 (1976).

30. *See* Robert V. Percival, *Environmental Federalism: Historical Roots and Contemporary Models*, 54 MD. L. REV. 1141, 1160 (1995).
31. Beyond setting national concentration limits for pervasive pollutants (which states may meet in part by regulating utility emissions), EPA is empowered to regulate these sources directly to address persistent problems like interstate ozone transport, acid rain, toxic air pollution, and greenhouse gases, all of which are caused disproportionately—if not predominantly—by power plants. *See, e.g.*, National Primary and Secondary Ambient Air Quality Standards, 40 C.F.R. § 50 (2015); Standards for Performance for New Stationary Sources, 40 C.F.R. § 60 (2015); National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, 77 Fed. Reg. 9,304 (Feb. 16, 2012) [hereinafter Mercury and Air Toxics Rule] (codified at 40 C.F.R. pts. 60 & 63); Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of State Implementation Plans Approvals, 76 Fed. Reg. 48,208 (Aug. 8, 2011) [hereinafter Cross-State Air Pollution Rule].
32. *See* 33 U.S.C. § 1311 (2012) (prohibiting unpermitted discharges into the navigable waters of the United States); 33 U.S.C. § 1342 (establishing the national pollutant discharge elimination system); 33 U.S.C. § 1344 (requiring permits to dredge or fill jurisdictional waters).
33. *See* 42 U.S.C. §§ 6921–6926 (2012) (establishing standards for the generation, transportation, and storage of hazardous waste).
34. *See* Comprehensive Response Compensation and Liability Act ("CERCLA") § 107, 42 U.S.C. § 9607 (establishing liability for costs associated with cleanup of hazardous waste to potentially responsible parties).
35. *See generally* SDWA, 42 U.S.C. §§ 300f–300j.
36. *See generally* TSCA, 15 U.S.C. §§ 2601–2692 (2012).
37. *See EPA Organization Chart*, EPA, https://perma.cc/5PTT-3K3X.
38. EPA is also to some extent an infrastructure financing agency for pollution control systems: over the years, through a variety of federal grant and loan programs, the agency has spent billions of dollars funding wastewater treatment plants, and shoring up local drinking water quality systems. *See* 33 U.S.C. § 1383 (2012) (establishing the Clean Water State Revolving

While EPA rules do not directly regulate interstate energy markets, which remain FERC's province, they clearly affect electricity markets indirectly by establishing numerous standards that electric generators must meet. As an air pollution regulator, EPA has driven considerable change in the electricity sector. Coal-fired power plants are responsible for a disproportionate share of emissions of conventional air pollution, air toxics, interstate air pollution, and the precursor pollutants responsible for acid rain, and EPA has, over the years, tackled each of these problems.[39] As a result, there have been legendary battles between the utility industry and EPA over virtually every aspect of Clean Air Act ("CAA") implementation, and especially over the program known as "New Source Review," under which power plants that would otherwise be grandfathered under the Act may trigger regulation as if they were new sources.[40]

Another key difference between FERC and EPA is their different authority with respect to the states. When Congress passed the FPA, it deliberately preserved the bulk of the states' traditional jurisdiction over the electricity sector, including the power to regulate retail sales of electricity, as well as in-state distribution. And Congress did nothing to disturb the states' longstanding authority to incentivize, approve, and site new electricity infrastructure, including new generation sources and transmission lines. The FPA thus embodies an approach to the division of state and federal power known as "dual federalism," in which the federal and state governments each possess the exclusive power to exercise regulatory authority in their domains, even though the line between the two domains can be open to dispute.[41]

The environmental statutes, by contrast, adopt a different approach to the division of authority between the federal and state governments, known as "cooperative federalism," which affords relatively greater power to federal regulators. Environmental statutes are characterized by floor preemption, meaning that Congress has set minimum federal environmental standards that states may exceed but not fall below. The system is nominally cooperative in the sense

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Fund); *Learn About the Clean Water State Revolving Fund (CWSRF)*, EPA, https://perma.cc/2HLG-M3T5.

39. *See infra* notes 225–49 and accompanying text (discussing EPA regulation of the power sector under the CAA).

40. *See, e.g.*, Envtl. Def. Fund v. Duke Energy Corp., 540 U.S. 561 (2007); Wis. Elec. Power Co. v. Reilly, 893 F.2d 901 (7th Cir. 1990); Ala. Power Co. v. Costle, 636 F.2d 323 (D.C. Cir. 1979); *see also* Margaret Claiborne Campbell & Angela Jean Levin, *Ten Years of New Source Review Enforcement Litigation*, 24 NAT. RESOURCES & ENV'T 16 (2010) (discussing history of New Source Review enforcement).

41. *See, e.g.*, FERC v. Elec. Power Supply Ass'n, 136 S. Ct. 760, 784 (2016) (approving FERC's authority to regulate rates charged for demand response services, as part of wholesale electricity sales, despite incidental effects on retail markets); New York v. FERC, 535 U.S. 1, 23–24 (2002) (approving FERC's assertion of jurisdiction over rates for transmission services when bundled with wholesale sales of electricity).

that Congress deliberately gave the states primacy in devising and implementing compliance plans, which they can tailor to their economic and political needs. Congress also provided that the states could apply for and receive from EPA "program authority" to operate and enforce the Act's permitting programs.[42] In practice, the states do in fact perform much of the day-to-day work of environmental protection, but they do so subject to federal supervision, and pursuant to delegated authority, which can be withdrawn.[43] Moreover, while the states cannot be compelled to implement federal environmental standards—which would violate constitutional federalism principles—environmental statutes clearly authorize EPA itself directly to enforce these standards in the event that states decline to do so. Cooperative federalism thus empowers the federal government to play the senior partner role in environmental protection, subject only to constitutional constraints.[44] There is no equivalent in environmental law to the states' retention, under the FPA, of authority over retail electricity sales. Congress has enabled states to exceed federal environmental standards, but they may not fall below them. Congress has not carved out an exclusive domain for the states to control in environmental regulation, except by default—that is, by leaving certain sources or sectors unregulated.[45]

B. Fragmented Authority over Energy and Environment

Moreover, while FERC and EPA are the primary energy and environmental regulators, respectively, they are certainly not the only ones. For example, a variety of bureaus within the Department of the Interior ("DOI") play a significant role in either energy production for electricity or environmental protection, or both. As the manager of federal lands onshore, the Bureau of Land Management issues leases for resource extraction, including for coal mining, oil and gas drilling, and—more recently—renewable energy projects, such as wind and solar installations.[46] The Bureau also sets standards governing such activities, which are applicable on federal lands and in Indian Country. Offshore, the Bureau of Ocean Energy Management performs the same function, issuing leases, granting permits, and setting the terms of oil and gas drilling in federal

42. *See, e.g.*, CWA § 1342, 33 U.S.C. § 1342(b)–(c) (2012) (authorizing states to administer the National Pollution Discharge Elimination System program, subject to EPA approval).

43. *Id.*

44. That is, EPA's authority may be limited by the Commerce Clause, Takings Clause of the 5th Amendment, or 10th Amendment. *See* RICHARD J. LAZARUS, THE MAKING OF ENVIRONMENTAL LAW 35–39 (2004).

45. For example, Congress has exempted non-point sources from regulation under the CWA. *See* CWA § 502(14), 33 U.S.C. §1362(14) (defining "point source").

46. DOI contains the Bureau of Land Management and the Bureau of Ocean Energy Management, which manage the bulk of the federal lands, onshore and offshore, respectively. *See* U.S. DEP'T OF THE INTERIOR, STRATEGIC PLAN FOR FISCAL YEARS 2014–2018, at 10, https://perma.cc/8NLG-BPY7.

waters.[47] In addition, DOI houses the Bureau of Reclamation, which builds and maintains federal dams.[48] At the same time, other offices within DOI have environmental protection mandates: the Fish and Wildlife Service shares responsibility for protecting endangered species,[49] and DOI's Office of Surface Mining Reclamation and Enforcement regulates coal mining to ensure disturbed lands are appropriately restored.[50]

Numerous other agencies play more discrete roles in electricity sector regulation. For example, the Nuclear Regulatory Commission is responsible for licensing and ensuring the safety of nuclear energy, which continues to provide approximately one-fifth of the nation's electric power.[51] While DOE has limited authority over energy regulation—its chief regulatory role is setting efficiency standards for appliances[52]—the agency is a significant funder of energy research, including renewable, nuclear, and clean coal technologies, as well as advanced vehicle technology.[53] DOE also possesses limited authority to approve

47. *See id.* Federal land managers must integrate environmental considerations into their permitting and leasing decisions to some extent. Under the governing statutes, demand for extractive or productive uses must be balanced against competing claims for recreation, habitat protection, and wilderness preservation. *See, e.g.*, Federal Land Policy and Management Act of 1976, 43 U.S.C. § 1701(a)(7) (2012) (requiring that federal lands be managed "on the basis of multiple use and sustained yield unless otherwise specified by law"); Outer Continental Shelf Lands Act, 43 U.S.C. § 1332(5) (2012) (establishing development criteria and requiring consideration of potential environmental impacts of leasing).

48. The Bureau of Reclamation constructs and operates large federal water projects. *See About Us – Mission/Vision*, U.S. DEP'T OF THE INTERIOR, BUREAU OF RECLAMATION, https://perma.cc/G3XK-6JEQ. Power from these projects, along with those of the Army Corps of Engineers and the International Boundary and Water Commission, is marketed by the Power Marketing Administrations ("PMA") in the Department of Energy, and makes up forty-two percent of the nation's hydroelectric power. *See Federal Power Marketing Administrations Operate Across Much of the United States*, U.S. ENERGY INFO. ADMIN. (June 12, 2013), https://perma.cc/GTA3-33FJ. The four federal PMAs are the Bonneville Power Administration, the Southeastern Power Administration, the Southwestern Power Administration, and the Western Area Power Administration. *See id.* In addition, the Tennessee Valley Authority, a federal corporation, sells electricity to nine million customers in seven southeastern states. *See TVA at a Glance*, TENN. VALLEY AUTH., https://perma.cc/34NR-872R.

49. The Fish and Wildlife Service, together with the National Marine Fisheries Service in the Department of Commerce, implements the Endangered Species Act on both federal and private land. *See Endangered Species Act: Overview*, U.S. FISH & WILDLIFE SERV., https://perma.cc/FQU2-8U6R; *see also* 16 U.S.C. § 1538(a)(1)(B) (2012).

50. *See, e.g.*, Stream Protection Rule, 80 Fed. Reg. 44,436 (July 27, 2015) (proposing a rule to "improve the balance between environmental protection and the Nation's need for coal").

51. *See* U.S. NUCLEAR REGULATORY COMM'N, THE NRC: WHO WE ARE AND WHAT WE DO 7, 15, 20 (2016), https://perma.cc/3MSD-6ANQ.

52. DOE sets appliance efficiency standards pursuant to the National Energy Conservation Policy Act of 1978, Pub. L. No. 95-619, 92 Stat. 3206 (1978) (codified as amended in scattered sections of 42 U.S.C.) and subsequent legislation.

53. *See* Energy Policy Act of 2005, Pub. L. No. 109-58, § 1703, 119 Stat. 594, 1120–22 (codified as amended at 42 U.S.C. § 16513 (2012); Am. Ass'n for the Advancement of Sci.,

certain transmission lines.[54] Even the Internal Revenue Service plays a role in energy and environmental policy by administering a variety of subsidies, including the production and investment tax credits for renewable energy, and a variety of tax incentives for the oil and gas industry.[55]

This Article focuses on electricity sector regulation (commonly referred to simply as "energy" law) and its overlap with environmental regulation—hence the emphasis on FERC and EPA, which together with their state counterparts manage this sector. Yet it is important to understand that the field of what might fairly be called energy law is much broader. It encompasses not just the production and consumption of fuels used to generate electricity (such as coal, natural gas, and nuclear power, as well as renewable energy like hydro, wind and solar power) but also the production and consumption of the primary fuel used to power the transportation sector, which is, of course, oil. Compared to the federal government's authority over the electricity sector, its role in oil exploration and production is highly constrained. Oil prices are set in a competitive global market,[56] and the regulation of oil and gas drilling—on all but the federal and tribal lands administered by the Interior Department—remains the purview of the states.[57] Another reason why federal regulation of the oil industry is so limited is that the industry has successfully obtained a number of exemptions from federal environmental requirements, such as rules governing hazardous waste, underground fluid injection, and toxics disclosure.[58]

Historical Trends in Federal R&D, Dep't of Energy R&D 1997–2017 (2016), https://perma.cc/3DDD-47L5. "Section 1703 of Title XVII of the Energy Policy Act of 2005 authorizes [DOE] to support innovative clean energy technologies that are typically unable to obtain conventional private financing due to high technology risks. In addition, the technologies must avoid, reduce or sequester air pollutants or anthropogenic emissions of greenhouse gases." *Section 1703 Loan Program*, U.S. Dep't of Energy, https://perma.cc/S7RQ-GKW3. Technologies that are eligible for loans under this program include: "biomass, hydrogen, solar, wind/hydropower, nuclear, advanced fossil energy coal, carbon sequestration practices/technologies, electricity delivery and energy reliability, alternative fuel vehicles, industrial energy efficiency projects, and pollution control equipment." *Id.*

54. *See* Energy Policy Act of 2005 ("EPAct") § 1222, 42 U.S.C. § 16421 (authorizing DOE to allow federal power marketing agencies to partner with transmission line operators to meet regional transmission needs).

55. *See Renewable Electricity Production Tax Credit ("PTC")*, U.S. Dep't of Energy, https://perma.cc/YJ7P-SFCH; *Business Energy Investment Tax Credit*, U.S. Dep't of Energy, https://perma.cc/A3RT-S757; Molly F. Sherlock & Jeffrey M. Stupak, Cong. Research Serv., R43206, Energy Tax Policy: Issues in the 114th Congress 7 (2016) (summarizing tax incentives for the fossil fuel industry); *see also Tax Advantages*, Energy Exchange (2017), https://perma.cc/2CXD-92AR.

56. *Energy & Financial Markets: What Drives Crude Oil Prices?*, U.S. Energy Info. Admin. (2017), https://perma.cc/69SY-5YFW.

57. *See* Spence, *supra* note 27, at 447.

58. *See, e.g.*, *id.* at 449–52. The limited federal role in the transportation sector consists primarily of EPA's authority under the CAA to set emission standards, including greenhouse gas standards, for mobile sources, *see* 42 U.S.C. § 7521; the Department of Transportation's

Still, whether one limits the inquiry to the electric power sector as currently defined, or broadens it to include the transportation sector and beyond,[59] the key point is that regulatory authority over both energy and environmental regulation is highly fragmented across numerous agencies, at both the federal and state levels, and that these agencies still operate largely independently of each other.[60] Collectively, they produce a cacophony of rules, licenses, permits,

authority to set corporate average fuel economy standards for the car and truck fleets, *see* 49 U.S.C. § 32902 (2012); and EPA's implementation of the biofuels program in the CAA, which requires a growing percentage of the fuel supply for transportation to be comprised of certain biofuels, *see* 42 U.S.C. § 7545. The Department of Transportation has established fuel efficiency standards for cars and trucks since the passage of the Energy Policy and Conservation Act of 1975. *See* Pub. L. No. 94-163, 89 Stat. 871 (codified as amended at 42 U.S.C. §§ 6201–6422). The Department of Transportation now effectively shares this authority with EPA, which regulates mobile source emissions of greenhouse gases pursuant to *Massachusetts v. EPA*, 549 U.S. 497 (2007) (affirming that EPA possesses such regulatory authority under § 202 of the CAA). The safety of the federal pipeline infrastructure (for both oil and natural gas) is the responsibility of the Pipeline and Hazardous Material Safety Administration in the Department of Transportation. Various agencies, including those within DOE, Department of Transportation, and the Department of Agriculture play a role in developing biofuels and other alternative energy.

59. Traditionally, FERC's role as an "energy" regulator has been limited to the domain of electricity, but it could expand to cover transportation policy over time, to the extent there is a greater transition to electric vehicles, potentially bringing the fuel source for electric vehicles under FERC's purview, and the charging infrastructure under the authority of the state public utility commissions, which would approve and allow cost recovery for utilities to install charging infrastructure. *See* Michael Fitzgerald, *Electric Vehicles Sell Power Back to the Grid*, WALL ST. J. (Sept. 28, 2014), https://perma.cc/9XGL-V2WA; Stephen Edelstein, *California Approves PG&E Utility Plan for Electric-Car Charging Stations*, GREEN CAR REP. (Dec. 18, 2016), https://perma.cc/KW8C-7YXU. One could also describe much agricultural policy as energy or environmental policy. *See generally* J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 ECOLOGY L.Q. 263 (2000). Agricultural policy and environmental policy often overlap. For example, the Renewable Fuels Standard, which requires a minimum amount of "biofuels" to be blended into the nation's gasoline supply, has mostly benefited farmers and the ethanol industry. *See* RANDY SCHNEPF & BRENT D. YACOBUCCI, CONG. RESEARCH SERV., R40155, RENEWABLE FUEL STANDARD (RFS): OVERVIEW AND ISSUES (2013).

60. On occasion, Congress has provided that two agencies formally share authority over certain tasks. For example, EPA and the Army Corps of Engineers cooperate in administering the Section 404 program of the CWA, which provides for permits to dredge or fill U.S. waters. See 33 U.S.C. § 1344 (2012); *Section 404 Permit Program*, EPA (Apr. 11, 2016), https://perma.cc/3NKY-LBCK. Even when not mandated by statute to do so, agencies sometimes voluntarily cooperate on particular energy or environmental projects. For example, EPA and DOE share authority over the energy efficiency certification and labeling program known as Energy Star, which certifies the efficiency of commercial and residential buildings and consumer and business products. *See Summary of EPA-DOE Partnership* (Sept. 30, 2009), https://perma.cc/AXB4-5SFB (describing the Memorandum of Understanding between DOE and EPA to implement the Energy Star program). DOE, DOI, FERC, EPA, Department of Agriculture, Department of Defense, and other agencies agreed to cooperate on siting transmission facilities on federal lands. *See Memorandum of Understanding Regarding Coordination*

approvals, and direct and indirect subsidies which, in the aggregate, might be called "energy policy" or "environmental policy," but which is far from coherent or internally inconsistent, let alone integrated. Agencies can work at cross-purposes notwithstanding that their jurisdictions clearly intersect. Indeed, even when they are part of the same government department, agencies can be stovepiped, as is sometimes the case with the different bureaus and services within DOI, or as might be said of FERC's "market" and "project" offices.[61]

An additional feature of the electricity sector landscape that makes policy coherence so challenging is that the electric utilities themselves are so varied, consisting not only of private investor-owned utilities subject to both state and federal regulation, but also including some three thousand publicly-owned utilities and rural cooperatives, many of which are subject to little or no such regulation, and all of which are committed strongly to the notion of local control.[62]

At the federal level, there is no overarching legal requirement forcing reconciliation of the competing statutory mandates in the energy and environmental domains. While certain federal statutory provisions do require agencies to pause to consider a range of impacts before proceeding with their actions or approvals,[63] such "negative constraints"[64] on an agency's primary statutory mis-

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in Federal Agency Review of Electric Transmission Facilities on Federal Land, FERC (Oct. 23, 2009), https://perma.cc/5BY7-VNC8. And the Department of Transportation and EPA together regulate fuel consumption in the transportation sector through jointly set greenhouse gas and fuel efficiency standards for mobile sources. *See, e.g.,* 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,624 (Oct. 15, 2012) [hereinafter Light-Duty Vehicle Standards] (codified at 40 C.F.R. pts. 85, 85 & 600).

61. *See FERC Organization Chart*, FERC, https://perma.cc/JK3L-CAZM.

62. *See Hearing to Review Electricity Reliability in Rural America, Hearing Before the Subcomm. On Conservation, Credit, Energy, & Research of the H. Comm. on Agriculture*, 110th Cong. (2008) (statement of Cynthia A. Marlette, General Counsel, FERC) (conceding that FERC has little regulatory authority over rural cooperatives). For an overview of the utility industry and the differences among the various utilities in terms of regulation, see Electricity Regulation in the US: A Guide, Regulatory Assistance Project 9–10 (2011), https://perma.cc/W8UN-Y2VZ.

63. *See, e.g.*, NEPA, 42 U.S.C. § 4332(2)(C) (2012) (requiring environmental impact statements for major federal actions); CAA, 42 U.S.C. § 7506(c)(1) (2012) (requiring agencies to ensure conformity of activity to an implementation plan under the CAA); CWA, 33 U.S.C. § 1341 (requiring applicants for federal permits to also obtain state discharge permits); Coastal Zone Management Act, 16 U.S.C. § 1456(c) (2012) (requiring federal agencies to ensure that activities are consistent with state management programs). For a list of mandatory consultation provisions that require some interaction between agencies, see generally Freeman & Rossi, *supra* note 9. For a description of how such requirements can provide a foothold for external stakeholders and agencies to lobby an action agency to change its approach, see DeShazo & Freeman, *supra* note 9. Still, in the absence of these action-forcing provisions, there are few incentives, and a number of disincentives, to close inter-agency coordination. Agencies that work together without explicit statutory authority might be sued. *See generally* Nat'l Mining Ass'n v. McCarthy, 758 F.3d 243 (D.C. Cir. 2014) (re-

sion are limited in their potential to force reconciliation among disparate goals.[65] Agencies retain significant discretion to comply with such requirements only grudgingly, or avoid them altogether.[66] And many of these burdens are often only procedural hurdles in any event.[67]

Nevertheless, the President may try to unify and steer federal government policy in a consistent direction. This can be done to some extent through careful selection of political appointees, centralized regulatory review of agency rules, and the federal budgeting process. Even if powerful, these tools are only partially effective. To work at all, they require sustained focus from a busy White House. And the President only putatively controls the policy outputs of the executive branch, not the decisions of independent agencies like FERC, which means even in the best of circumstances, he or she has imperfect control over the domain of energy and environmental law. Presidents routinely try to harmonize federal policy through soft instruments, such as by publishing national plans, instituting multi-agency reviews, and issuing vision statements.[68]

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jecting an industry challenge to coordination between EPA and the Army Corps of Engineers over CWA permits); *see also* Daphna Renan, *Pooling Powers,* 115 COLUM. L. REV. 211, 217 (2015) (expressing concern about some types of agency coordination that could enable agencies to exceed their statutory authority). Moreover, agency budgets typically do not allocate funding for cross-agency coordination and consultation. *See* Freeman & Rossi, *supra* note 9, at 1195.

64. *See* Aagaard, *supra* note 6.

65. *See* Eric Biber, *Too Many Things to Do: How to Deal with the Dysfunctions of Multiple-Goal Agencies,* 33 HARV. ENVTL. L. REV. 1, 4 (2009) (describing "secondary" environmental mandates).

66. For example, FERC has determined that orders issued pursuant to its authority under the FPA Sections 205 and 206 to regulate wholesale electricity markets and ensure "just and reasonable" rates are categorically exempted from NEPA. *See* 18 C.F.R. § 308.4(a)(15) (2015).

67. NEPA, 42 U.S.C. § 4332(2)(c).

68. *See* TOMAIN, *supra* note 8, at 11–39. Since 1977, in the wake of the 1973 oil embargo against the United States, presidents have been required to submit a national energy policy plan to Congress on a biennial basis. *See* 42 U.S.C. § 7321. President Carter's national energy plan, which he called "the moral equivalent of war," The Energy Problem, Address to the Nation, 1 Pub. Papers 656 (Apr. 18, 1977), consisted of measures to reduce dependence on foreign oil imports, spur consumption of domestic coal for electricity, and promote energy conservation. *See* National Energy Program Fact Sheet on the President's Program, The American Presidency Project (Apr. 20, 1977), https://perma.cc/P9Z5-Y6B3. President Reagan rolled back the Carter program, eliminated remaining price controls, and instituted deregulation broadly across the energy sector, while weakening environmental enforcement. George H.W. Bush embraced historic environmental protections in the 1990 Clean Air Act Amendments, and signed the U.N. Framework Convention on Climate Change. President Clinton tried but failed to urge Congress to adopt a national energy tax, settling instead for a modest gas tax. He signed the 1992 Energy Policy Act, which contained a variety of provisions promoting energy efficiency and energy technology development, and signed the Kyoto Protocol to the U.N. Convention (though never submitted it to Congress for ratification). In 2001, George W. Bush announced a national energy policy, which proposed a variety of

Yet for energy and environmental regulation, these instruments have proved largely rhetorical, since they have no binding legal force. In sum, the sheer number of agencies involved in one or another aspect of federal energy and environmental policy makes coherence, let alone convergence, a daunting task.

State regulatory authority likewise is splintered, with energy and environmental regulators usually operating in a similarly independent fashion, separated by statutory mandate, bureaucratic structure, and tradition. State governments typically contain at least two, and often three, offices related to energy and environmental policy: public utility commissions, which in a majority of states still directly regulate the retail rates utilities charge customers for electricity based on "cost of service" principles and oversee the utilities' long term resource planning;[69] state environmental agencies, which implement federal and state environmental requirements; and state energy offices, which often promote energy efficiency and renewable energy, and energy-related economic development.[70] In some states there are multiple agencies in one or more of

initiatives to increase energy production, modernize energy infrastructure and remove regulatory bottlenecks, along with a handful of measures to enhance energy conservation and efficiency, and a recommendation to adopt "multi-pollutant" regulation for power plant emissions. *See* George W. Bush, Energy for America's Future, https://perma.cc/5X4T-33JJ. In his annual economic reports to Congress, President Obama included elements of a national energy plan, including a commitment to nuclear energy as part of an "all of the above" strategy for transitioning to lower carbon sources. *See* ECONOMIC REPORT OF THE PRESIDENT, FEBRUARY 2015, at 241–89 (2015). The White House also adopted a "Climate Action Plan" reflecting a commitment to pursue a variety of regulatory and programmatic activities across a number of agencies. *See* THE PRESIDENT'S CLIMATE ACTION PLAN (2013), https://perma.cc/Q35Z-L4QV. In 2014, President Obama established a Quadrennial Energy Review, to be conducted by an inter-agency task force, to better integrate the administration's approach to energy policy. *See* Memorandum of the President of the United States, Establishing a Quadrennial Energy Review, 79 Fed. Reg. 2577 (Jan. 9, 2014).

69. In the minority of states where the electricity market has been restructured, the market sets rates, but state commissions still oversee the markets and set rates for distribution via instate transmission. *See generally* David B. Spence, *Can Law Manage Competitive Markets?*, 93 CORNELL L. REV. 765 (2008) (comparing restructured and cost-of-service states).

70. *See* Monast & Adair, *supra* note 3, at 3 (describing these three kinds of agencies). For example, in Texas there is a Commission on Environmental Quality, a state Energy Conservation Office, a Public Utility Commission, and a Railroad Commission (the latter is responsible for oil and gas development). *See About the TCEQ*, TEX. COMM'N ON ENVTL. QUALITY, https://perma.cc/AX4X-XFFX; *About This Site*, STATE ENERGY CONSERVATION OFFICE, https://perma.cc/X8Y7-4B87; *Mission and History*, PUB. UTIL. COMM'N OF TEX., https://perma.cc/4DGF-AHYQ; *Mission Statement*, R.R. COMM'N OF TEX., https://perma.cc/J34Z-YS7S. Iowa has a Department of Natural Resources, Utilities Board, and Office of Independent Energy within the state's Economic Development Authority. *See Agencies, Divisions, and other Organizations*, STATE OF IOWA, https://perma.cc/KFY5-PD6L. Some states have sought to organize these different agencies into one larger department or as part of the Governor's office. For example, the Executive Office of Energy and Environmental Affairs in Massachusetts contains the Department of Environmental Protection, the Depart-

these categories.[71] Like their federal counterparts, state energy and environmental agencies emerged at different times to solve different problems, were accordingly charged by state legislatures with distinct missions, and have traditionally been subject to few if any formal requirements that they coordinate with their counterparts. While this is changing in some states with the adoption of renewable energy procurement mandates, carbon limits, and other policies,[72] fragmentation in the energy-environment domain at the state level remains entrenched.[73]

C. Interdependence Between Energy and Environmental Regulation

The disconnect described above is all the more striking given the myriad ways in which public health and environmental regulations can impact the energy sector. To name just a few examples, rules to limit water pollution and land use impacts from oil and gas drilling or coal mining can impose additional costs on production; air quality standards for power plants may require firms to install technology or, in market schemes, purchase allowances to cover their emissions; and federal listing of endangered species can constrain energy infrastructure development that might impact these species' critical habitats. The ensuing costs may be passed on to consumers, or borne by investors, but some-

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ment of Public Utilities, and the Department of Energy Resources. *See About EEA*, ENERGY & ENVTL. AFFAIRS, https://perma.cc/7TQU-PSG7.

71. For example, in California, the Public Utility Commission regulates retail electricity rates and ensures reliability of the electricity system, *see About the California Public Utilities Commission (CPUC)*, CAL. PUB. UTILS. COMM'N, https://perma.cc/727K-RC8A, the Energy Commission promotes energy policy, including energy efficiency and renewable energy, *see About the California Energy Commission*, CAL. ENERGY COMM'N, https://perma.cc/R7K5-6YS4, the Air Resources Board (nominally within the state environmental protection agency) regulates air quality and implements the state's Global Warming Solutions Act, *see ARB Mission and Goals*, CAL. ENVTL. PROT. AGENCY, AIR RESOURCES BD., https://perma.cc/53WB-NBRY, and a variety of other state agencies or boards are responsible for other environmental issues. The California Department of Justice, which is headed by an independently elected Attorney General, represents these agencies as clients, but is also separated into different divisions responsible for environmental enforcement and consumer protection. *See Environment & Public Health*, OFFICE OF THE ATTORNEY GEN., https://perma.cc/SW69-MYU4. Many state DOJs are similarly divided internally with different teams devoted to energy/consumer protection on the one hand and environmental enforcement on the other, which can make it challenging to align enforcement policy.

72. *See supra* note 11 (discussing state statutes adopting these policies).

73. *See, e.g.*, JOSEPH P. TOMAIN, ENDING DIRTY ENERGY POLICY 51–52 (2011) (describing how the two fields "developed independently of each other and developed their own vocabularies, languages, and goals regardless of their obvious interconnection"); *see also* Aagaard, *supra* note 6, at 1522 n.21.; Davies, *supra* note 1, at 492; Klass, *supra* note 5, at 185–86; Wildermuth, *supra* note 6, at 380–81.

how they must be internalized.[74] And although environmental rules are not the only, nor generally the most important, input into the price of energy (commodity prices exert a much stronger effect), they can of course, even on the margin, affect the economics of energy production, transportation, and consumption.[75]

Correspondingly, energy regulation has significant consequences for public health, and the environment. Consider FERC's authority to license infrastructure projects, such as hydroelectric dams and natural gas pipelines, which can be enormously harmful to fish, wildlife, and ecosystems; or FERC's duty to set "just and reasonable" rates for wholesale electricity and interstate transmission, which also has environmental impacts, if perhaps less directly. For example, FERC's "just and reasonable" rate-setting authority empowers the agency to oversee the market rules in competitive wholesale electricity markets. These rules determine the order in which different types of energy, such as coal, natural gas, and wind power, will be dispatched to satisfy demand, and they determine the price that will be paid to generators. It matters for environmental purposes how these market rules operate—whether they favor higher-polluting generation over lower-polluting alternatives with fewer adverse impacts, for example, or whether they inhibit or facilitate strategies to reduce consumption.[76]

D. First Energy, Then Environment

The separation of energy and environmental regulation into different fields overseen by separate regulatory agencies is, of course, an artifact. Under different circumstances, it could have been otherwise. An enlightened Congress with a comprehensive appreciation of the costs and benefits of society's energy

74. *See* Monast & Adair, *supra* note 3, at 22 (noting that both the Kentucky and South Carolina PUCs approved rate increases to pay for expenditures by utilities to install air pollution technology).

75. *See* Dallas Burtraw et al., *Secular Trends, Environmental Regulations, and Electricity Markets* 1–3 (Res. for the Future, Discussion Paper 12–15, Mar. 2012).

76. State-level energy regulation similarly has direct and indirect effects on public health and the environment. For example, in states where public utility commissions still directly set the retail rates that consumers pay for electricity, regulators also oversee the utility resource planning process, through which the regulated utilities project future demand in their service territories, and propose how to satisfy it through some combination of additional supply or demand-side management. *See* Spence, *supra* note 69, at 769. Regulators must decide whether to approve plans to build new power plants and transmission infrastructure, and allow utilities to recover the capital costs of these investments by passing them onto consumers. Because state-level regulation so strongly influences the energy mix for electricity, and the necessary ancillary services, it also has direct consequences for the environment and public health. That is, whether this infrastructure consists of higher- or lower-polluting generation, whether there is relatively more or less of it, and where it is sited, among other things, affect not only the price consumers ultimately pay for electricity but also its broader societal impacts.

needs might have created a single agency to manage all aspects of energy production and consumption, and tasked it with achieving a balance among multiple goals: promoting the development of energy infrastructure, fostering competitive markets, protecting consumers, ensuring the reliability of the nation's electric system—and at the same time minimizing adverse public health and environmental impacts. That Congress did not do so is largely a historical accident, but that accident has become entrenched over time.

To some extent, simple chronology explains the divergence between energy and environmental law: energy regulation came first. Recall that the modern FERC has two main functions. One is licensing energy infrastructure, such as dams and pipelines, a role that Congress assigned to the FPC in the 1920s. The other is ensuring that rates for wholesale electricity and interstate transmission services are "just and reasonable," a responsibility Congress delegated to the agency in the 1930s. Both of these roles predated the emergence of a robust environmental movement by several decades. And of the two functions, it is infrastructure licensing that attracted the earliest attention and opposition from interest groups wishing to protect the natural environment.

When Congress passed the Federal Water Power Act, creating the new FPC and conferring on it the sole authority to license dams for electricity production, the purpose was to harness the nation's resources to promote social progress and economic development.[77] During this period, early preservationists, like John Muir, led a nascent Sierra Club to oppose building dams in pristine wilderness areas, such as Yosemite National Park.[78] But the conservation movement was focused on setting aside unique areas as wilderness, leaving certain tracts of land undeveloped and protecting timber and other resources from harvest.[79] At the time, public awareness about the impacts of such projects on

77. The central debate at the time reflected the progressive era concern about the balance between public and private power: to what extent would the nation's natural resources be developed for private gain versus public benefit? *See* Charles K. McFarland, The Federal Government and Water Power, 1901–1913: A Legislative Study in the Nascence of Regulation, 42 LAND ECON. 441, 441 (1966). *See generally* STEPHEN R. FOX, THE AMERICAN CONSERVATION MOVEMENT: JOHN MUIR AND HIS LEGACY (1981).

78. Muir's young movement was no match for the corporate interests that sought to build large hydropower projects. Even conservation-minded presidents like Theodore Roosevelt agreed that natural resources should be developed for multiple uses, including commercial ones, rather than being left in their natural state, as long as the government charged fees and set time limits on private sector licenses. *See* FOX, *supra* note 77. Roosevelt was influenced strongly in adopting this view by his political ally and intimate Gifford Pinchot, whom he appointed the nation's first Chief Forester. *See id.* at 130 (quoting Pinchot as saying that the conservation movement "has development for its first principle"); *id.* at 141 (describing Pinchot's view that "multiple use" is the "highest, most efficient approach to resources").

79. For example, it was possible, under the national forest reserve system, which was created in 1891, for presidents to set aside certain tracts of land that might otherwise by logged by the lumber syndicates. *See id.* at 128–29 (1981) (quoting Teddy Roosevelt, explaining why, notwithstanding Congress's annoyance, he had doubled the forest area under protection).

fish, wildlife, and riparian ecosystems was limited, and state laws promoting natural resource conservation of fish and wildlife were in their infancy.[80]

Only in the 1960s, amidst much larger political and cultural shifts, did the conservation and environmental movements, which had grown more robust over time, begin to organize sufficiently to develop a legal reform agenda targeted at large infrastructure projects. With the help of liberalized standing laws granting them access to judicial review,[81] new and highly professional organizations such as the Environmental Defense Fund and the Natural Resources Defense Council embarked on vigorous litigation campaigns to pressure the FPC to take account of environmental considerations in their infrastructure licensing proceedings.[82] These lawsuits, which took the first steps toward better integrating energy and environmental law, were later reinforced by several new statutes imposing on agencies a variety of procedural and substantive mandates. The earliest of these statutes, the National Environmental Policy Act ("NEPA"),[83] signed by President Nixon in 1970, for the first time required all federal agencies to assess and consider the environmental impacts of their major proposals and actions. While the FPC resisted NEPA's charge initially, the courts eventually forced the agency to comply.[84] The obligation to analyze and consider environmental impacts did require FERC to bear the risk of its disclosures, and justify its decisions publicly, knowing that its reasoning would be subject to arbitrary or capricious review in federal court.[85] NEPA marked the

80. The Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661–667e (2012), was passed in 1934 to provide assistance to states seeking to protect these resources, but it was significantly strengthened only in the 1958 amendments, which required that "equal consideration" be given to fish and wildlife along with other values in water development projects. *Id*. at § 661.

81. *See* Camp v. Pitts, 411 U.S. 138 (1973); Sierra Club v. Morton, 405 U.S. 727 (1972); Ass'n of Data Processing Serv. Orgs. v. Camp, 397 U.S. 150 (1970).

82. *See, e.g.*, Scenic Hudson Pres. Conference v. Fed. Power Comm'n, 354 F.2d 608 (2d Cir. 1965).

83. National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–4347 (2012).

84. *See, e.g.*, Calvert Cliffs Coordinating Comm. v. U.S. Atomic Energy Comm'n., 449 F.2d 1109, 1129 (D.C. Cir. 1971). While FERC's compliance with NEPA's requirements was somewhat halting, it compelled the agency to integrate environmental values into its infrastructure permitting to a greater extent than in the past. *See generally* DeShazo & Freeman, *supra* note 9, at 2224–95. NEPA did not quite deliver on its potential, however. As interpreted by the courts, it did not enhance the agencies' substantive mandates, creating new authority to mitigate environmental damage associated with agency action. Adopting this more robust view would have provided additional leverage to environmental advocates. The Supreme Court dashed these hopes when it held that NEPA was merely "procedural." *See* Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 352–53 (1989); Stryker's Bay Neighborhood Council, Inc. v. Karlen, 444 U.S. 223, 227–28 (1980); Vt. Yankee Nuclear Power Corp. v. Nat. Res. Def. Council, 435 U.S. 519, 558 (1978).

85. Moreover, such statutes, even if merely procedural, have given other agencies and outside stakeholders a foothold to press their concerns in agency proceedings or through the White House inter-agency review process. *See* Exec. Order 12866 § 4(c)(3), 58 Fed. Reg. 51,735 (Sept. 30, 1993) (requiring circulation of each agency's annual Regulatory Plan to "affected"

start of an intensive period of federal environmental law production, spanning the 1970s and 80s, during which Congress passed several other major environmental statutes, including the Clean Water Act ("CWA") in 1972,[86] Endangered Species Act in 1973,[87] and the Electric Consumers Protection Act,[88] which imposed additional constraints on FERC's powers to license infrastructure projects.[89] Still, the chronology of "energy first, environment second" has had lasting effects—it is fair to say that environmental protection remains secondary to FERC's core pro-power mission.[90]

The story of FERC's role as an economic regulator follows a similar chronology, in that the assignment to FERC of its rate regulation authority under the agency's "just and reasonable" mandate predated the emergence of the modern environmental movement by several decades.[91] Yet in comparison to infrastructure licensing, this aspect of FERC's work has remained relatively more insulated from environmental challenge, largely because its environmental effects have been less obvious and direct. Indeed, unlike decisions to approve large hydropower projects, public utility regulation was not originally understood to implicate conservation, or environmental, values at all. As early as the 1900s, states had begun to pass legislation controlling the utility industry's monopoly power—guaranteeing the integrated investor-owned utilities an exclusive service area and a reasonable profit, in exchange for capping the rates they could charge consumers. But this effort was never imagined to have anything to do with what we would describe today as public health and environmental protection, which had not yet crystallized into a coherent regulatory field.[92] Like-

agencies); *id.* at § 6(b) (requiring the Office of Information and Regulatory Affairs ("OIRA") to review significant regulatory actions to ensure no conflict with other agencies).

86. *See* CWA § 401, 33 U.S.C. § 1341 (2012).

87. *See* ESA § 7, 16 U.S.C. § 1536 (2012).

88. *See* Electric Consumers Protection Act § 3, 16 U.S.C. § 797(e).

89. *See* DeShazo & Freeman, *supra* note 9, at 2222; *see also* Aagaard, *supra* note 6, at 1521 (describing these limitations on FERC decision-making). Some of the new environmental statutory requirements did provide at least the states with a fairly strong voice in the FERC process. For example, under the CWA, federally licensed energy infrastructure projects with potential impacts on state waters were required to obtain state certification. CWA § 401, 33 U.S.C. § 1341; *see also* PUD No. 1 of Jefferson Cty. v. Wash. Dep't of Ecology, 511 U.S. 700, 712–13 (1994).

90. *See* DeShazo & Freeman, *supra* note 9, at 2240–41; Eric Biber, *Too Many Things to Do: How to Deal with the Dysfunctions of Multiple-Goal Agencies,* 33 HARV. ENVTL. L. REV. 1, 2 (2009) (describing "secondary" environmental mandates).

91. The history of public utility regulation dates to the mid-nineteenth century, beginning with municipal efforts to control natural monopolies, and giving way to state regulation by the early 1900s. *See* Tomain, *supra* note 1, at 356–57. The constitutionality of public utility regulation was settled by the Supreme Court in *Munn v. Illinois*, 94 U.S. 113, 126 (1876) (upholding state regulation of private industries "affected with a public interest").

92. Prior to this time, environmental law consisted of a "patchwork of state laws, local ordinances and common law nuisance protections." Jonathan H. Adler, *When Is Two a Crowd?*

wise, when Congress expanded the FPC's authority in the 1930s to task the agency with rate regulation,[93] the aim was to ensure that the federal government could fill a glaring regulatory gap over interstate electricity created by the limits of state regulatory power. The Commission's new role as an economic regulator simply built on what local and state governments had already been doing for decades to protect consumers, which had nothing to do with environmental impacts.[94]

Yet over time, environmental requirements have also begun to affect FERC's role as an economic regulator, even if indirectly. To illustrate, consider how environmental rules aimed at limiting air and water pollution can affect the cost of energy in today's competitive wholesale markets, which FERC oversees. Complying with pollution rules typically requires generators to take one of several steps. For example, they may install pollution control technology, reduce the intensity of production, or, in pollution trading schemes, purchase allowances to cover their emissions. The cost of such strategies will affect the rates at which these generators bid their available supply into wholesale markets, which in turn can raise the floor price that purchasers must pay for energy. FERC must decide whether or not to approve such costs when exercising its authority to ensure that wholesale rates produced by these markets are "just and reasonable."[95]

Environmental requirements also indirectly affect FERC's third statutory duty, which is to oversee reliability standards for the grid.[96] For example, pollu-

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The Impact of Federal Action on State Environmental Regulation, 31 HARV. ENVTL. L. REV. 67, 67 (2007); *see also* Percival, *supra* note 30, at 1147–57; *supra* note 29 (listing the major federal environmental statutes adopted during this era).

93. *See* Pub. Utils. Comm'n of R.I. v. Attleboro Steam & Elec. Co., 273 U.S. 83, 90 (1927).

94. There was a growing conservation movement at the time (for example, the Wilderness Society was founded in 1935 and the National Wildlife Federation was created in 1936) but these organizations were focused on protecting fish and wildlife and setting aside unique landscapes that might otherwise be developed. *See* FOX, *supra* note 77, at 197, 210–11, 253; *see also supra* note 80.

95. *See* FPA §§ 205–206, 16 U.S.C. § 824d–824e (2012). Environmental rules might also help to *reduce* energy costs, by incentivizing energy efficiency and other strategies that reduce demand. The point is simply that environmental rules are one input into wholesale rates, the oversight of which falls to FERC.

96. Congress explicitly assigned FERC this role only in 2005, after the Northeast blackout in 2003. *See* Energy Policy Act of 2005, § 215, 16 U.S.C. § 824o (converting voluntary reliability standards into mandatory ones, and assigning FERC the task of overseeing their development by a certified "Electric Reliability Organization"). Even before the 2005 reforms, however, ensuring reliability was integrally related to FERC's core consumer protection mission. As FERC has sought to promote competition in wholesale markets, by requiring "open access" to transmission, and encouraging independent (non-utility) management of the grid, it has required state and regional grid managers to oversee system reliability as part of their duties. *See, e.g.*, Regional Transmission Organizations, 89 FERC ¶ 61,285 (Dec. 20, 1999) [hereinafter Order No. 2000] (codified at 18 C.F.R. pt. 35) (requiring independent grid

tion control requirements are one input into operator determinations about whether and when to retire or replace older, high-polluting electric generating units. These decisions can affect whether the amount of future electricity supply will be sufficient to meet anticipated consumer demand, which has obvious implications for reliability.[97]

EPA has no direct authority to interfere with FERC's main functions. EPA cannot compel FERC to set wholesale electricity prices at a particular level, or command FERC to approve transmission rates for new lines EPA would like to see built, or instruct FERC to manage reliability in a certain way. Yet EPA's regulatory authority inevitably intersects with FERC's performance of all of these functions to the extent that environmental regulation changes the economic and operational behavior of the market actors FERC regulates. And FERC in turn must respond to the economic and operational decisions of those market participants in order to perform its congressionally assigned duties. In sum, just as energy regulators, both federal and state, influence the conditions to which environmental regulators must react, so too do environmental rules, both federal and state, affect the context in which FERC operates.

One might conclude from this account that federal environmental and energy law have "converged" only in the sense that environmental law was grafted onto energy law. The courts began reading environmental considerations into progressive-era statutes, which was reinforced by Congress later adopting a separate statutory regime for environmental protection. In this telling, a recalcitrant FERC was forced to modify its traditional mission to accommodate public health and environmental concerns. That view has some truth to it, but it captures only part of the story. FERC has, for other reasons, independently taken steps that in practice accommodate environmental concerns, showing the agency to be more than a reluctant sufferer of imposed constraints.[98]

Nor is the ratchet of influence one-way. Like FERC, EPA is subject to certain limits on its regulatory discretion, which require the agency to account for energy system concerns. For example, the CAA mandates that EPA specifically take account of "energy impacts" along with cost and other considerations,

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managers to have operational control of the grid in their jurisdiction and giving them exclusive authority to maintain short-term reliability for the portion of the grid under their control).

97. Grid managers operate "capacity markets" in some parts of the country, auctions in which generators are compensated for promising to deliver adequate electricity in the future. The robustness of the capacity market is crucial to system reliability. For an explanation of capacity markets, see FERC, CENTRALIZED CAPACITY MARKET DESIGN ELEMENTS (2013), https://perma.cc/C9ZX-EDFE. Much of the country functions without capacity markets, including the Western United States and Texas, and they remain controversial. *See, e.g.*, Kennedy Maize, *Texas and the Capacity Market Debate*, POWER MAG., (Feb. 1, 2014), https://perma.cc/F36S-9FJH.

98. *See* Aagaard, *supra* note 6, at 1545–77 (describing examples of FERC policies that align energy and environmental objectives and advocating that agencies look for such synergies).

when establishing air pollution standards.[99] In addition, all major executive branch agency regulations, including those targeted at the utility sector, must undergo a rigorous regulatory impact analysis to ensure they are cost justified—a process in which EPA must account for any significant projected cost increases associated with its rules, considering both the compliance costs to the regulated industry and resulting costs to consumers.[100] The agency has done more, however, than comply with such requirements in a pro forma way. In several major rulemakings, EPA has shown notable sensitivity to both reliability and cost—the traditional concerns of energy regulators—because achieving its own mission depends increasingly on the cooperation and support of energy regulators and their constituencies. As Part II and III will show, each agency has taken steps toward closer alignment, in part because they have been forced by legal requirements to do so, but also in part for independent reasons.

II. FERC's Evolution

Beyond simply responding to environmental concerns raised in litigation and new environmental mandates imposed by Congress, FERC has undergone an internal evolution, which has led in the same direction, toward greater alignment with environmental law. This Part focuses on FERC's role as an energy market regulator, through which the agency has engaged in considerable legal and policy innovation. FERC has taken a number of steps to modernize the electricity system—steps which are also potentially favorable to public health and environmental protection—by using its broad statutory authority creatively while consistently invoking its traditional mission. By comparison, in its role as an infrastructure-licensing agency, where FERC also has opportunities to align its decisions with environmental regulation, the agency has shown a more limited capacity for such accommodation.

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99. *See, e.g.*, CAA, 42 U.S.C. § 7511b(e)(1)(A) (2012) (designating how EPA should set standards for ozone pollution). The 1977 revisions to the CAA added "energy requirements" to the list of things EPA must consider when setting standards for stationary source categories like power plants. CAA Amendments of 1977, Pub. L. No. 95-95, § 104(a), 91 Stat. 6585 (codified as amended at 42 U.S.C. § 7408(b)(1)). Congress also tasked EPA with analyzing the energy impacts of state implementation plans for meeting the national air quality standards, and state plans for meeting the additional requirements in newly created non-attainment zones where air quality fell short of the national standards. *See, e.g.*, CAA § 111(a), 42 U.S.C. § 7411(a) and CAA § 112(d)(2), 42 U.S.C. § 7412(d)(2) (both requiring the Administrator to consider the "cost of achieving such emission reduction" and "energy requirements"); *see also* CAA § 202(a)(3)(A), 42 U.S.C. § 7521(a)(3)(A) (governing standards for mobile sources, which instructs the Administrator to give "appropriate consideration to cost, energy, and safety factors" when establishing technology-based standards).

100. *See* Exec. Order 12866, 58 Fed. Reg. 51,735 (Sept. 30, 1993).

A. The Shift to Market Competition

Since the 1980s, FERC has made two principal changes to its oversight of the electricity sector, both of which have promoted the agency's core statutory mission, but which also might be seen as aligning FERC policy with the goals of public health and environmental protection. First, the agency has transformed its approach to regulating wholesale electricity prices in order to protect consumers from monopoly pricing—effectively replacing traditional "cost-of-service" rate regulation with competitive pricing set by the market. It is hard to overstate the radical nature of this transition. To accomplish this task, FERC creatively interpreted its existing statutory authority to set "just and reasonable" and not "unduly discriminatory or preferential" rates for wholesale power and transmission.[101] Whereas the agency had always viewed that language as requiring the agency itself to approve rates and balance the interests of industry and consumers, FERC now claimed that its duty extended only to overseeing the operation of markets, which, if sufficiently competitive, would be trusted to set prices appropriately. In order to encourage competition among generation sources, the agency adopted Order 888, which directed investor-owned utilities to functionally unbundle their generation from their transmission facilities.[102] And to ensure new entrants could connect their power to the grid, FERC also ordered the utilities to provide "open access" to their proprietary transmission lines on a non-discriminatory basis.[103]

Second, to manage increasingly complex and regional wholesale power markets, FERC strongly encouraged utilities to join and surrender operation of their transmission infrastructure to independent system operators ("ISOs") and regional transmission organizations ("RTOs")—independent, membership-based, non-profit organizations, which supervise the wholesale power markets, control the order in which electricity is dispatched, and oversee system reliability in their portion of the grid.[104] These regional grid managers hold competi-

101. *See* FPA §§ 205–206, 16 U.S.C. § 824d–824e (2012).

102. *See* Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, 75 FERC ¶ 61,080, 656 (Apr. 24, 1996) [hereinafter Order No. 888] (codified at 18 C.F.R. pts. 35, 385) (reviewing the final environmental impact statement of the order).

103. *Id.* Congress somewhat accidentally took a first step in this direction by passing the Public Utility Regulatory Policies Act ("PURPA"), 16 U.S.C. §§ 2601–2645 (2012), which required certain small third-party generators called "qualifying facilities" to be favorably compensated and ensured access to the grid. FERC's audacious move to market oversight in lieu of cost of service regulation was nevertheless dramatic and without specific congressional authorization. Although Congress has consistently ratified the agency's approach, FERC has led Congress down this path rather than the other way around. *See* Jody Freeman & David B. Spence, *Old Statutes, New Problems*, 163 U. PA. L. REV. 1, 62–63 (2014).

104. ISOs and RTOs are essentially synonyms, since they perform the same functions. For example, the California ISO performs all of the functions that RTOs like PJM and MISO per-

tive auctions to set wholesale prices. Through these auctions the RTOs balance supply and demand for electricity, matching bids from generators willing to sell electricity with orders from utilities and other buyers seeking to purchase wholesale power for resale to consumers.

Both of these innovations—FERC's new competition policy, and its regional approach to managing power markets—were responsive to shifts on the ground enabled by new technology, which allowed independent power generators to build smaller-scale generation capacity without also owning transmission wires. This development moved FERC to reconsider whether it was truly necessary for traditional, vertically integrated investor-owned utilities to own all three components of the electricity system (generation, transmission and local distribution) as they traditionally had, or whether competition, at least among generators, was possible. Competition would only flourish, however, if the new independent generators could access proprietary, utility-owned transmission lines—hence FERC's requirement for "open access." Likewise, FERC's decision to foster regional transmission planning was a response to new technology enabling the transmission of electric power over much longer distances, extending regionally and internationally, which required FERC to think beyond managing merely local grids.[105]

These shifts were also informed by new learning about regulation and markets, which FERC had acquired, rather painfully, through its experience regulating natural gas. An unexpected 1954 Supreme Court decision thrust FERC into the position of regulating the price of natural gas through cost-of-service ratemaking,[106] which FERC had historically declined to do, and which proved very challenging in a market with so many independent producers.[107] FERC's forced foray into this domain exceeded the agency's limited resources

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form in the East and Midwest. *Compare The Role of the California ISO*, CAL. ISO, https://perma.cc/ATB2-SJTM, *with PJM's Role as an RTO*, PJM, https://perma.cc/LF98-H9WD; *see also About 60% of the U.S. Electric Power Supply Is Managed by RTOs*, U.S. ENERGY INFO. ADMIN., (Apr. 4, 2011), https://perma.cc/JGB9-Z56S (listing and describing RTOs); Order No. 2000 (encouraging the formation of RTOs).

105. *See* Tomain, *supra* note 1, at 387–88.

106. *See* Phillips Petroleum Co. v. Wisconsin, 347 U.S. 672, 685 (1954) (holding that the Natural Gas Act requires the FPC to evaluate the reasonableness of rates charged by independent producers of gas).

107. The FPC initially fulfilled this obligation by using a cost-of-service methodology for all natural gas produced—whether by an independent producer, a pipeline company or an affiliate of a pipeline company. The approach proved impractical because the number of independent gas producers was far too large for the use of a cost-of-service methodology. Congress responded by passing the Natural Gas Policy Act of 1978, 16 U.S.C. §§ 3301–3432 (2012), which divided natural gas into different categories of supply subject to different rates. Ultimately, after a period of natural gas shortage blamed largely on price controls, FERC instituted a series of Orders that de-regulated the industry. *See* Richard J. Pierce, Jr., *The Past, Present, and Future of Energy Regulation* (Geo. Wash. Univ. Legal Studies, Research Paper No. 513, 2010), https://perma.cc/Z-FQ7P (recounting history of price controls).

and was widely considered disastrous—the ensuing price controls were subsequently blamed for natural gas shortages, which prompted Congress to intervene and ultimately FERC deregulated the industry.[108] This experience only reinforced the agency's view that market-based pricing would be preferable in situations only where FERC could be comfortable that market power would not distort prices.[109]

Thus, FERC's transition to market regulation in the electricity sector has unfolded over several decades as a result of both technological change and an "organic" agency learning process (sometimes painful, sometimes involuntary). FERC accomplished the shift toward competitive markets by interpreting its broad statutory mandate flexibly, and by leveraging its rate-approval authority under the statute to induce behavior change in the industry. FERC eased incumbents into open access first through a series of case-by-case orders requiring it in particular circumstances, prior to mandating open access industry-wide. This approach allowed FERC to test congressional tolerance for such a shift and sensitize the industry to it at the same time.[110] And even though both policies ultimately would prove helpful to advancing environmental goals, the justification for taking these steps toward greater competition and regional management was not articulated principally or even equally in terms of potential benefits for public health or environmental protection.[111] Indeed, quite the opposite.

1. Open Access

When FERC proposed Order 888, EPA and environmental groups objected strongly.[112] EPA commented at the time that the rule would be a boon for older coal-fired facilities in the Midwest and South, which had not been subject to expensive environmental controls because of favorable treatment under the CAA, and which would now be positioned to out-compete other sources subject to environmental abatement costs. The agency questioned FERC's modeling of the air pollution implications of the rule, and claimed that

108. *See id.*

109. *Id.*

110. *See* Freeman & Spence, *supra* note 103, at 44–47 (describing FERC's incremental approach).

111. Certainly, individual FERC commissioners, including the Chair at the time, Betsy Moler, may have believed that open wholesale markets would eventually allow independent generators more opportunities to displace utilities' aging coal plants, but to the extent FERC discussed environmental impacts, it focused on deflecting claims that the policy would necessarily worsen emissions. *See* Order No. 888, *supra* note 102, at 664–65 and *infra* notes 113–21 and accompanying text.

112. *See* EPA Comments on FERC Order No. 888, *supra* note 10; Nat. Res. Def. Council, Comment Letter on FERC Order No. 888 (Feb. 2, 1996); Legal Envtl. Assistance Found., Comment Letter on Open Access Non-discriminatory Transmission and Recovery of Stranded Costs (Aug. 4, 1995); Envtl. Action Found., Comment Letter (Aug. 14, 1995).

increased utilization of coal-fired power would result in worse interstate ozone pollution than FERC had projected.[113] EPA urged FERC to mitigate these negative effects by administering a pollution allowance program modeled on the sulfur dioxide program in the CAA.[114] FERC responded that Order 888 would not materially affect pollution trends, which in its view were largely driven by other factors, like the price of coal relative to natural gas.[115] And the agency firmly rejected the notion that, even if air pollution worsened, it had any obligation or authority to put regulatory mechanisms in place to address it. FERC was simply not willing to use its legal authority to compensate for the effects of different environmental standards across regions, which it viewed as a problem it neither had created, nor was empowered to fix.[116] If market conditions did wind up favoring coal, as EPA feared, EPA possessed the requisite authority to create an appropriate regulatory program.[117] The conflict between the agencies over Order 888 was so serious that EPA referred the matter to the White House Council on Environmental Quality ("CEQ") for dispute resolution, a process in which FERC refused to participate.[118] Clearly, FERC did not

113. The essential problem from EPA's perspective was that electric rates in the Midwest were lower than elsewhere because of weaker environmental requirements, and that competition would create incentives to draw more heavily on these higher-polluting sources. If wholesale power purchasers could access Midwestern power more easily due to Order 888's open access rule, demand for cheaper coal-fired generation would spike, and emissions would increase regionally. This new demand also might spur owners to invest in additional life extension projects at older plants, or incentivize retirements at nuclear plants, both of which could have significant adverse consequences for air quality. In its comments, EPA suggested numerous ways FERC could mitigate such negative environmental impacts using its rate approval authority under the FPA. For example, where one state proposes to import power from another with lower environmental standards, EPA suggested that FERC could approve utility or state efforts to impute an environmental cost to the imported power—meaning that the power would be dispatched as though subject to the importing state's higher environmental standards. *See* EPA Comments on FERC Order No. 888, *supra* note 10. FERC rejected this approach because it contradicted its traditional economic dispatch rules, which required power to be dispatched in ascending order of cost without taking into account the emissions profile of the various sources. *See* Order No. 888, *supra* note 102, at 690. EPA also proposed that FERC adopt stranded cost principles to create disincentives to keeping older coal units operating longer, for example by promising no penalty for early retirement. *See* EPA Comments on FERC Order No. 888, *supra* note 10.

114. *See* EPA Comments on FERC Order No. 888, *supra* note 10.

115. *See* Order No. 888, *supra* note 102, at 664–65.

116. *See id.* at 656.

117. *Id.* at 665 (discussing tension between a policy that is clearly beneficial to consumers, because competition will lower rates, but will likely increase NO_x pollution).

118. EPA Administrator Carol Browner referred EPA's dispute with FERC over Order 888 to the White House CEQ, pursuant to Section 309 of the CAA, 42 U.S.C. § 7609, and 40 C.F.R. Part 1504. *See* Order Responding to Referral to Council on Environmental Quality, Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 75 FERC ¶ 61,208, 4–5 (May 29, 1996) (describing EPA referral and

adopt its open access rules to benefit the environment, nor did it see itself, even when invited to do so, as an environmental regulator.[119] Yet FERC's steps toward market competition did in fact position the agency to accommodate environmental concerns in a significant way for the first time. Fostering great competition among independent power generators might have favored coal-fired power initially, as EPA feared, but it also has enabled alternative, relatively cleaner-burning generation to compete with fossil fuels.[120]

2. Regional Grid Management

As with FERC's approach to competition, FERC's effort to nurture a more regional approach to grid management through the creation of the regional transmission organizations was driven by its traditional commitment to affordable and reliable power, not any latent notion that regional management would have secondary benefits for public health and the environment.[121] Order 2000 encouraged the formation of RTOs to promote efficiency and transparency in wholesale markets. FERC did not cite as an additional justification, for example, that at some point in the future, a more regionalized approach to grid management might enable wind and solar power to access the grid more readily, or help to overcome parochial obstacles to approving and allocating the costs of new transmission lines.[122]

Yet as with FERC's embrace of competition, requiring open access to transmission lines did have salutary environmental effects, enabling a larger class of generators, including those producing renewable power, to reach energy markets that otherwise would be foreclosed to them.[123] Without competition

noting FERC's refusal to participate in an executive branch inter-agency dispute resolution process). EPA believed that CEQ had the authority to preside over the dispute pursuant to CEQ's role implementing NEPA, because EPA's objection to Order 888 had arisen in the context of a NEPA-mandated analysis of environmental impacts. *See Referral of Inter-Agency Disagreements to CEQ Under the National Environmental Policy Act*, COUNCIL ON ENVTL. QUALITY (Dec. 2016), https://perma.cc/8S6D-AS93 (describing the CEQ policy on referrals and listing the Order No. 888 dispute).

119. "We are in essence and by law, economic regulators," FERC insisted. While its FPA authority to ensure no "undue discrimination" in electricity markets was broad, it was confined to protecting consumers, and should not be used to fill in perceived gaps in a regulatory program that is "not our own." *See* Order No. 888, *supra* note 102, at 668.

120. GARY D. ALLISON & JOHN L. WILLIAMS, RES. FOR THE FUTURE, THE EFFECTS OF STATE LAWS AND REGULATIONS ON THE DEVELOPMENT OF RENEWABLE SOURCES OF ELECTRICITY 3 (Dec. 2010), https://perma.cc/VYH2-ESAW ("To the extent that federal initiatives to extend nondiscriminatory, open-access transmission services over huge areas of the country succeed, persons wishing to help the environment by buying and selling electric energy generated from renewable sources will have more competitive alternatives.").

121. *See* Order No. 2000, *supra* note 96, at 1–2.

122. *Id.*

123. *See id.*

and open access, such developments very likely would have been slowed, if not blocked entirely, by incumbent sources.[124] And regional grid management may well foster a more socialized approach to cost allocation for new transmission, which is necessary to bring remotely located resources to load centers.[125]

Finally, FERC's emphasis on regionalization has created another collateral benefit for environmental regulation by fostering the RTOs. As these institutions have crystallized, they are emerging as key intermediaries between the electric power industry, the states, FERC, and EPA.[126] The RTOs are now well-positioned to become crucial players in the implementation of federal and state environmental regulations, to the extent these rules will require regional grid managers to adjust dispatch and manage reliability. It would have been difficult to anticipate these events in the late 1990s, when FERC adopted Order 888 and Order 2000. Only in retrospect can these policies be described as helping to align energy and environmental policy.

B. Modernizing Transmission Planning

FERC has also in recent years sought to exert more control over the transmission planning process, in large part out of frustration with incumbent transmission owners and the states, which the agency views as hindering badly needed investment in new transmission. FERC has sought to promote grid expansion projects as necessary to ensure reliability and to promote operational efficiency. Although FERC's efforts to promote transmission siting may also help to further environmental goals,[127] this rationale has not been embraced prominently by FERC itself, which has consistently explained its policies on transmission in terms of the agency's traditional consumer protection and grid reliability mission under the FPA.

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124. *See* Kevin Porter, *Open Access Transmission and Renewable Energy Technologies*, NAT'L RENEWABLE ENERGY LAB. (Sept. 1996), https://perma.cc/K8C9-PTBE.

125. *See Renewable Energy on Regional Power Grids Can Help States Meet Federal Carbon Standards*, UNION OF CONCERNED SCIENTISTS (July 2014), https://perma.cc/KVT6-7KGN.

126. *See infra* text accompanying notes 254–70 (discussing EPA's efforts to address interstate pollution).

127. A lack of adequate transmission has been cited as one of the obstacles to the growth of renewable energy. *See, e.g.*, Kit Batten & Kari Manlove, *Identifying Hurdles to Renewable Electricity Transmission*, CTR. FOR AM. PROGRESS (Dec. 18, 2008), https://perma.cc/7X4F-3MDU.

1. Siting

Traditionally, the permitting process for transmission siting has been the exclusive domain of the states.[128] State agencies typically approve applications for new lines, exercise eminent domain as necessary to facilitate siting, and regulate the retail rates that allow utilities to pass the associated costs of local distribution lines onto their customers.[129] The relevant state laws governing this process were designed in an earlier era, when electricity grids were local and transmission lines were owned by vertically integrated utilities.[130] The utilities typically would propose new lines only when necessary to ensure efficient service to the customers in their service area, or to bolster reliability. Lines would be approved when their benefits, which were defined as local and direct, justified the costs. Moreover, statutes from that era tend to recognize only a narrow category of improvements as potentially beneficial.[131] New transmission infrastructure that offers more dispersed benefits, by bolstering regional system reliability, or delivering broader environmental benefits, would not meet state siting criteria under these statutes, at least as they have been interpreted by the states.[132] Beyond such limitations, there are other obstacles to siting new transmission when it must cross state lines. Collective action problems plague interstate transmission siting because the affected states—often one importing the energy, one exporting it, and some in between, which must host the transmission—rarely benefit equally from new lines.[133]

FERC has tried to overcome these state-level obstacles both directly and indirectly. First, the agency sought and received from Congress a limited power to preempt the states' siting authority to address transmission bottlenecks that could undermine system reliability.[134] In the wake of several high profile relia-

128. *See generally* Ashley C. Brown & Jim Rossi, *Siting Transmission Lines in a Changed Milieu: Evolving Notions of the "Public Interest" in Balancing State and Regional Considerations*, 81 U. COLO. L. REV. 705 (2010).

129. *See id.* at 707–09.

130. *See* Jim Rossi, *The Trojan Horse of Electric Power Transmission Siting Authority*, 39 ENVTL. L. 1015, 1018–22 (2009) (describing a variety of problems with state transmission laws).

131. *See id.* at 1019–21.

132. *See id.* at 1021.

133. On the various obstacles to build new transmission lines to transport wind over several states—including state laws that make it difficult for those lines to be sited or for them to use eminent domain, and state siting decisions that only consider local and not regional needs, see Alexandra B. Klass & Jim Rossi, *Revitalizing Dormant Commerce Clause Review for Interstate Coordination*, 100 MINN. L. REV. 129, 130–33 (2015); Alexandra B. Klass, *The Electric Grid at a Crossroads: A Regional Approach to Siting Transmission Lines*, 48 U.C. DAVIS L. REV. 1895, 1897–1901 (2015); *see also Transmitting Electricity in an Increasingly Complex Energy Market: A Legislative Update*, NAT'L CONFERENCE OF STATE LEGISLATURES (Apr. 2011), https://perma.cc/4FSF-DQFQ (describing challenges to siting interstate lines).

134. Brown & Rossi, *supra* note 128, at 741. In the 2005 Energy Policy Act, Congress also gave limited transmission siting authority to the DOE, allowing DOE to approve partnerships

bility failures, including the 2001 California energy crisis and the 2003 Northeast blackout, and amidst growing concern about the pathologies of state-level transmission siting, Congress granted FERC this "backstop" authority in the 2005 Energy Policy Act.[135] FERC was empowered to site transmission lines only in certain circumstances, however, including situations where the relevant state-level decision maker "withheld approval . . . for more than a year."[136] In a 2006 rule implementing its new backstop authority, FERC broadly interpreted this last phrase as encompassing not only circumstances of delay, but also situations where a state agency had disapproved an application for a transmission line.[137]

In *Piedmont v. FERC*,[138] the Fourth Circuit Court of Appeals rejected the agency's reading, cabining FERC's authority to situations of delay.[139] Conspicuously, neither in the rule itself nor in the agency's briefs to the Fourth Circuit did FERC invoke environmental benefits that could well flow from new high-voltage transmission lines, which are capable, among other things, of bringing renewable power to market.[140] This may have been a strategic decision; such reasons were perhaps judged to be peripheral to the central argument over the meaning of the word "withhold." But it is nevertheless noteworthy that, when describing the context in which Congress conferred FERC's new backstop authority, the agency did not suggest that Congress sought to support renewable power or argue that doing so was another reason why federal preemption was so

between transmission line operators and federal power marketing associations. This authority arguably enables DOE to override a state's negative siting decision. *See* EPAct § 1222, 42 U.S.C. § 16421 (2012). DOE exercised this authority for the first time in approving the Clean Line Energy Partners Plains & Eastern merchant transmission project after the Arkansas commission denied a permit. *See* Alexandra B. Klass & Jim Rossi, *Reconstituting the Federalism Battle in Energy Transportation*, 41 HARV. ENVTL. L. REV. 201 (2017).

135. EPAct § 1222, 42 U.S.C. § 16421.

136. 16 U.S.C. § 824p(b)(1)(C) (2012).

137. *See* Regulations for Filing Applications for Permits to Site Interstate Electric Transmission Facilities, 71 Fed. Reg. 69,445 (Nov. 16, 2006) [hereinafter Order No. 689] (codified at 18 C.F.R. pts 50 & 380). Section 216 of the FPA authorizes the Secretary of Energy to designate areas with electric transmission constraints affecting consumers as "national interest electric transmission corridors." *See* 16 U.S.C. § 824p(a). Section 216 gives FERC the authority in national interest corridors to issue permits for the construction or modification of transmission facilities in certain instances, including when a state entity with authority to approve the siting of facilities has "withheld approval for more than 1 year after the filing of an application" for a permit. 16 U.S.C. § 824p(b)(1)(C).

138. Piedmont Envtl. Council v. FERC, 558 F.3d 304 (4th Cir. 2009).

139. *Id.* at 320. The Court's ruling rested on a "plain meaning" view of the statutory language, which foreclosed *Chevron* deference. *See id.* at 315.

140. *See* Order No. 689; Michael S. Dorsi, Case Comment, *Piedmont Environmental Council v. FERC*, 34 HARV. ENVTL. L. REV. 593, 597 (2010) (noting that the Government's briefs "focused on reliability and economic efficiency" arguments, and that only in their petitions for certiorari to the Supreme Court did various industry parties raise the potential impact of the decision on the prospects of renewable energy).

necessary. Instead, the agency defended its interpretation as reasonable and necessary to fulfill its core mission, which was to address the economic and reliability challenges posed by constrained transmission.[141] FERC thus remained squarely in its traditional box.[142]

2. Planning and Cost Allocation

Denied a direct role in siting, FERC has sought other ways to nudge industry and the states toward more coordinated regional planning for new transmission. This is one purpose of Order 1000, which FERC issued pursuant to its authority to ensure "just and reasonable" and "not unduly discriminatory" transmission rates.[143] Order 1000 requires all transmission owners to participate in regional planning processes, and establishes governing principles for both transmission planning and cost allocation.[144] Under Order 1000, the RTOs (which, recall, FERC had nurtured into being with prior rules) serve also as central transmission planning bodies, overseen by FERC.[145]

As noted above, transmission planning historically has been a bottom-up process, in which incumbent utilities periodically assess their need for new lines based primarily on whether they are necessary to deliver power economically to their customers or to shore up the reliability of the system.[146] Incumbents traditionally have had little incentive to build new transmission that would provide

141. *See* Dorsi, *supra* note 140, at 598.

142. The Solicitor General, on behalf of FERC, filed a brief in opposition to certiorari, arguing that although the Fourth Circuit had "erred," review was not warranted because the case was not the appropriate vehicle for resolving the underlying issue. *See* Brief for FERC in Opposition, Edison Elec. Inst. v. Piedmont Envtl. Council, No. 09-343 (2009), https://perma.cc/Z3Z7-SASY. The brief mentioned the need for transmission to enable access to renewable power in a single sentence. *Id.* at 14.

143. *See* Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 136 FERC ¶ 61,051 (July 21, 2011) [hereinafter Order No. 1000] (codified at 18 C.F.R. pt. 35).

144. *See id.* Order 1000 also eliminated the right of first refusal for incumbents to build, own, and operate transmission in their service territories, potentially introducing greater competition to build new transmission, at least in areas where incumbents do not possess strong relationships with regulators, existing rights of way, and other advantages.

145. Initially, FERC sought to organize transmission by urging states to create Independent System Operators. In Orders Nos. 888 and 889, the Commission suggested the concept of an Independent System Operator as one way for existing tight power pools to satisfy the requirement of providing non-discriminatory access to transmission. *See* Order No. 888, *supra* note 102; Open Access Same-Time Information System (Formerly Real-Time Information Networks) and Standards of Conduct, 75 FERC ¶ 61,078 (Apr. 24, 1996) [hereinafter Order No. 889] (codified at 18 C.F.R. pt. 37). Subsequently, in Order 2000, the Commission encouraged the voluntary formation of RTOs to administer the transmission grid on a regional basis. *See* Order No. 2000, *supra* note 96. Order 2000 specified twelve characteristics and functions that an entity must satisfy in order to become a RTO. *See id.*

146. *See* Klass & Rossi, *supra* note 134 (discussing challenges of transmission siting).

more dispersed regional benefits beyond their service areas or to help bring far-flung renewable energy to load centers. As a result, simply by requiring all transmission owners to participate in a regional planning process as a condition of approving proposed rates, FERC has made transmission planning somewhat more top-down, and has forced providers to adopt a broader regional perspective on both the "need" for, and "benefit" of, more transmission infrastructure.

Order 1000 also specifically requires that the transmission planning process consider federal and state "public policy requirements,"[147] which is meant to encourage early anticipation of how state imperatives might influence future transmission needs. The scope of this mandate remains somewhat uncertain, since FERC opted not to define which state measures rise to the level of being "public policy requirements," but at a minimum, such requirements presumably include federal and state environmental rules, including state renewable portfolio standards, as well as legally binding programs to reduce greenhouse gas emissions—all of which could increase demand for new transmission to facilitate a shift to lower-polluting energy.[148]

The simplest explanation for Order 1000 is that a more regional approach to transmission planning is necessary given the physical realities of the modern U.S. grid, which has expanded to encompass much larger geographic areas of not just regional, but international scope. And because so many factors drive demand for new transmission, including market dynamics, consumption trends, ongoing technological innovation (on both the supply and demand side), and state and federal environmental policies, the need for greater coordination among the states is acute. The traditional patchwork approach to transmission planning, with its vested interests, numerous veto points and stubborn collective action problems, simply cannot respond effectively to all of these trends.[149] Thus, the need for an alternative approach is entirely justifiable by FERC in terms of its core statutory mission, as necessary to control costs and deliver reliable power.

Indeed, FERC's effort to drive a more open, coordinated and regional transmission planning process dates at least to 2007, when, during the George W. Bush Administration, FERC issued Order 890, the precursor of Order 1000, which first established principles for regional transmission planning, including measures to reduce barriers to intermittent sources of energy such as wind.[150]

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147. *See* Order No. 1000, *supra* note 143.

148. It remains unclear whether the term also includes less formal mechanisms by which states have set targets and goals.

149. Brown & Rossi, *supra* note 128, at 748; Rossi, *supra* note 130, at 1018–19.

150. *See* Preventing Undue Discrimination and Preference in Transmission Service, 72 Fed. Reg. 12,226 (Mar. 15, 2007) [hereinafter Order No. 890] (codified at 18 C.F.R. pts. 35 & 37). The then-prevailing rules created numerous obstacles to intermittent sources such as wind, because, for example, they forbade the sale of long-term transmission if transmission capac-

FERC never justified Order 1000 by pointing to its potential environmental benefits, even if some of the rule's supporters did.[151] Instead, as with Order 890, the agency explained its reforms as necessary to further FERC's traditional obligations—to prevent discriminatory pricing in the provision of "open access" transmission services, control costs, and ensure system reliability.[152] While Order 1000 went further than Order 890 had, by *explicitly* mandating that transmission planners take state and federal public policy requirements into account, this step can be understood as responsive to the states and thus consistent with the dual federalism model of the FPA, rather than as a proactive effort by FERC to embrace and advance an environmental agenda. Many of the states had by the late-2000s adopted some form of carbon constraint or renewable energy mandate, and those state policies could drive the need for additional transmission at least in the regions in which the most engaged states are concentrated, like the Northeast, Midwest, and California.[153]

Still, Order 1000 has the potential to deliver substantial environmental benefits, which some FERC officials must have foreseen.[154] It dovetailed nicely,

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ity was unavailable for even one hour per year. Under Order 890, FERC created new options to enable customers to access such intermittent energy. One example was known as "conditional firm service," which allows a customer to enter a long-term contract for the contracted capacity when it is available, and have priority to access other service for the hours in which it is not. *See generally* Jennifer Martin, *Energy Law Alert: Order No. 890: FERC Creates New Transmission Service Rules for Wind Energy; 'Prying Open the Black Box*,*'* STOEL RIVES LLP (Feb. 22, 2007), https://perma.cc/2V8P-LT9S.

151. *See* Shelly Welton & Michael B. Gerrard, *FERC Order 1000 as a New Tool for Promoting Energy Efficiency and Demand Response*, 42 ENVTL. L. REP. 11025, 11029 (2012) (discussing the potential environmental benefits of Order 1000).

152. *See* Order No. 1000, *supra* note 143.

153. *See, e.g.*, CAL. HEALTH & SAFETY CODE §§ 38500–38599; Regional Greenhouse Gas Initiative, *Memorandum of Understanding* (Dec. 20, 2005), https://perma.cc/97AC-3BBM.

154. For example, Jon Wellinghoff, who chaired FERC when Order 1000 was adopted, was openly supportive of renewable energy. Indeed, Wellinghoff testified in Congress often about the need to address the challenge of climate change, by facilitating a transition to a less carbon-intensive electricity supply, and he explicitly promoted renewable energy in FERC's strategic plan—notably adding the word "sustainable" to the "affordable" and "reliable" energy FERC was obligated to provide. *The American Energy Initiative: Hearing Before the Subcomm. on Energy and Power, H. Comm. on Energy Commerce*, 111th Cong. 1 (2011) (testimony of Jon Wellinghoff, Chairman, FERC), https://perma.cc/C97N-FFWX ("Electric reliability and environmental protection are both important to this country's future. The issues are related."); FERC, Statement of Chairman Jon Wellinghoff on The Strategic Plan (Oct. 15, 2009), https://perma.cc/2BVU-7XYH ("Our mission is to assist consumers in obtaining reliable, efficient, and sustainable energy services at a reasonable cost through appropriate regulatory and market means. . . . [We must create] market opportunities that will help to unlock the still largely untapped potential of renewable energy resources and demand resources [which] must be part of our strategy to move toward energy independence and to confront climate change."); FERC, THE STRATEGIC PLAN, FY 2009–2014, https://perma.cc/DZ2B-L28U.

for example, with the Obama Administration's simultaneous effort to regulate carbon emissions from the electricity sector in an EPA initiative known as the Clean Power Plan.[155] As discussed in greater detail below, the Clean Power Plan was expected to spur a shift in the electricity sector away from coal to natural gas, and away from both coal and gas toward a greater share of renewable energy sources like wind and solar power.[156] Thus, it was certainly possible that Order 1000 would prove helpful in implementing these standards (or any other federal policy to reduce carbon from the power sector), because it explicitly commands regional transmission planners to take such federal rules into account, spurring them to approve new transmission in a timely fashion.[157] This prod could be important because without additional transmission capacity to bring remotely located renewable energy to major population centers, the utility sector might struggle to meet carbon emission reduction targets.[158]

Finally, Order 1000 encourages the RTOs to experiment with new approaches to financing transmission lines, another policy that can be seen as potentially serving environmental goals, even if not immediately. Recall that FERC must approve transmission cost allocation schemes, since such infrastructure costs are passed on to consumers in their electric rates.[159] Under the agency's traditional "beneficiary pays" approach to cost allocation, only ratepayers that directly benefit from a new line can be required to contribute toward its cost.[160] Without formally departing from this principle, Order 1000 urges regional grid managers, which preside over the transmission planning process in their areas, to consider a wider variety of benefits from new transmission (which conceivably include more broadly dispersed social and environmental benefits, such as enhanced resilience) and propose rates that reflect those additional benefits. This new approach has the potential to enlarge the pool of ratepayers eligible to finance new transmission, which FERC sees as necessary to enable the smooth operation of a more regional and increasingly competitive grid.[161]

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155. *See* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,662 (Oct. 23, 2015) [hereinafter Carbon Standards for Existing Sources] (to be codified at 40 C.F.R. pt. 60).

156. *Id.* at 64,665.

157. *See* Order No. 1000, *supra* note 143, at 133.

158. *See* U.S. Energy Info. Admin., Analysis of the Impacts of the Clean Power Plan 9 (2015), https://perma.cc/3DVR-9HCB.

159. Recall that FERC must ensure rates for interstate transmission are "just and reasonable." *See* FPA §§ 205–206, 16 U.S.C. § 824d–824e (2012).

160. Historically, courts have required FERC to apply a "beneficiary pays" principle when reviewing rate applications that propose to allocate costs for new transmission lines. *See* Ill. Commerce Comm'n v. FERC (*ICC I*), 576 F.3d 470, 476 (7th Cir. 2009).

161. Regional grid managers have begun to implement Order 1000 along the lines FERC intended. For example, the Midcontinent Independent System Operator ("MISO") has explicitly taken state renewable energy requirements into account when determining whether additional transmission is necessary in its region. *See generally Regional Generation Outlet*

Essentially, FERC has invited regional planners to spread—or in transmission planning parlance to "socialize" the cost of new transmission—to help get new lines built.[162]

True to its pattern, FERC has justified this new approach as fully consistent with the agency's core mission. Because new transmission infrastructure is so critical to the prospects for renewable energy deployment, FERC's Order 1000 may turn out in time to have been as much environmental as energy policy.[163] Yet FERC has never explicitly embraced that view, leaving it to others to point out.[164] In both the text of the Order, and in litigation briefs defending the rule in federal court, FERC has stuck to its usual narrative: its new policy will help to improve efficiency, relieve congestion and bolster grid resilience.[165] The agency has carefully situated its transformative rule within the bosom of FERC's traditional mission.

C. Diversifying the Energy Supply

1. Demand Response

FERC has also used its regulatory authority to promote "demand response," which can reduce electricity consumption, obviating the need to bring additional and costly supply on-line during periods of peak demand. As noted above, in competitive wholesale energy markets, market operators conduct auctions in which they continuously balance supply and demand by matching bids from generators with requests for supply from buyers. Market operators dis-

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Study, MIDCONTINENT INDEP. SYS. OPERATOR, https://perma.cc/59ME-UCD3. MISO also proposed a method for paying for new lines that spread the costs more widely than before, treating all of the states in its jurisdiction as benefiting from new transmission, even the so-called "pass-through" states, which reap no direct benefits from additional power because they neither host the renewable energy developments nor receive power from them. In this case, MISO concluded that ratepayers in the pass-through states benefit indirectly from the greater system reliability afforded by integrating additional sources into the grid. *See* Ill. Commerce Comm'n v. FERC (*ICC II*), 721 F.3d 764, 772 (7th Cir. 2013).

162. The Seventh Circuit has, in principle, upheld FERC's authority to approve more broadly dispersed costs under its long-established "beneficiary pays" doctrine—as long as the agency provides sufficient empirical justification to link the benefits to the costs. *See ICC I*, 576 F.3d at 478 (rejecting FERC's cost-allocation method as inadequately supported by cost-benefit analysis); Ill. Commerce Comm'n v. FERC (*ICC III*), 756 F.3d 556, 564 (7th Cir. 2014) (rejecting FERC's decision again, but noting that FERC's methodology could be sufficient if FERC determines that further cost-benefit analysis is infeasible).

163. *See* Rossi, *supra* note 130, at 1018 (describing the need for both siting and cost allocation to build new infrastructure for renewables deployment).

164. *See* Welton & Gerard, *supra* note 151, at 11029. Aagaard, *supra* note 6, at 1552–53 (arguing that Order 1000 has significant environmental implications).

165. *See* Order No. 1000, *supra* note 143; Brief for Respondent FERC, *ICC I*, 576 F.3d 470; Brief for Respondent FERC, *ICC III*, 756 F.3d 556.

patch the available supply in ascending order of cost. However, the *last* source of supply dispatched in a given time period sets the market-clearing price for *all* sources of supply used during that period.[166] By lowering demand, it is possible to avoid deploying the last and highest-cost sources, which in turn lowers the market-clearing price. Demand response thus aligns nicely with FERC's traditional consumer protection mission, by moderating price volatility.

FERC has sought to encourage the integration of demand response into the electricity supply. In 2008, the agency adopted Order 719, which required wholesale market operators to accept demand response bids, except where state law prohibits it.[167] FERC subsequently went further by issuing Order 745,[168] which requires market operators to pay the same price for demand response as they would pay for the supply-side resources that would be called on in its absence—a rate known to economists as "locational marginal pricing."[169] Essentially, this strategy treats reducing demand (so-called "negawatts")[170] as equivalent to adding supply (megawatts), by compensating them equally. FERC justified this method of pricing as necessary to incentivize market actors to aggregate commitments from participants not to consume energy. Those aggregators would bid the commitments into the system, just as generators would bid in additional energy supply.[171] To ensure that such transactions are in fact cost-beneficial for consumers, Order 745 stipulates that payment of the locational marginal price is dependent on the transaction passing a "net benefits test."[172]

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166. Because all suppliers that bid generation into the system for a certain period of dispatch are paid the marginal cost of supply, the need to dispatch high-cost energy during peak demands raises the price for energy across the board for that period. *See* FERC v. Elec. Power Supply Ass'n, 136 S. Ct. 760, 765–66 (2016); FERC Staff, Economic Dispatch: Concepts, Practices and Issues, FERC (Nov. 13, 2005), https://perma.cc/BA4M-9U97.

167. Wholesale Competition in Regions with Organized Electric Markets, 125 FERC ¶ 61,071 (Oct. 17, 2008) (codified at 18 C.F.R. § 35.28(g)(1)).

168. Demand Response Competition in Organized Wholesale Energy Markets, 134 FERC ¶ 61,187 (Mar. 15, 2011) [hereinafter Order No. 745] (codified at 18 C.F.R. § 35.28(g)(1)(v)).

169. For a description of locational marginal pricing, see Richard J. Pierce, Jr., *A Primer on Demand Response and a Critique of FERC Order 745*, J. ENERGY & ENVTL L. 102, 104 (2012).

170. *See* Amory B. Lovins, *The Negawatt Revolution*, ACROSS THE BOARD, Sept. 1990, at 18. (coining the term "negawatt").

171. Critics of locational marginal pricing contend that it overpays demand response participants, who save money once by not consuming electricity and then again when compensated for not doing so. Proponents of this pricing method respond, however, that it is necessary to overcome market barriers to demand-side resources. On the different approaches to compensating demand-side resources, see R. Kenneth Skinner, *Order 745 Yields New Era for Competitive Markets*, NAT. GAS & ELEC. 27 (May 2011), https://perma.cc/2E2P-GMPC.

172. To ensure that the price-lowering benefits of the demand response outweigh the costs to consumers of paying for it, Order 745 requires demand response to pass a "net benefits" test. *See* Order No. 745, *supra* note 168 (including net benefits test). For demand response to

Demand response is highly appealing from an environmental perspective too, because reducing energy consumption ought, all things equal, to lower pollution. Reducing the consumption of fossil energy in particular should lower emissions of conventional air pollution and carbon pollution,[173] as well as reducing demand for water and other resources consumed in the life cycle of the energy production process.[174] The policy embodied in Order 745 thus has the potential to advance not only FERC's traditional consumer protection mission but also EPA's public health and environmental protection mandates.

Nevertheless, FERC justified Order 745 exclusively in terms of its traditional statutory assignments to control prices, and ensure the electric system's reliability.[175] In promulgating Order 745, the agency took a calculated risk, testing the boundaries of its jurisdiction in order to promote a strategy that only some states were prepared to embrace, and which would clearly incidentally affect retail energy sales, the states' traditional domain. To support this assertive stance, the agency cited studies suggesting that the economic savings from deploying demand-side strategies can be significant.[176] FERC included the net benefits test to underscore that the goal was cost savings for consumers.[177] FERC also explained how demand response strategies benefit reliability by relieving congestion at times of peak demand.[178] But the agency left claims about the potential environmental benefits to others.

A coalition of state and industry petitioners challenged Order 745,[179] arguing that FERC had exceeded its jurisdiction under the FPA by regulating retail sales of electricity.[180] The petitioners also claimed that locational marginal pricing is arbitrary and capricious because it overcompensates participants, who

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reduce prices for consumers, it must begin to bid into the market at pricing levels *lower* than when the most expensive supply is necessary (otherwise, payment for demand response would equal payment for the most expensive supply, negating its benefits).

173. In some instances, this may not be the case if reliance on demand-side resources results in consumers using dirtier substitute sources, like small diesel generators, instead of consuming energy delivered by the grid. *See* Gabriel Nelson, *Dirty Diesel Generators Test EPA, Demand-Response Industry*, E&E News (July 10, 2012), https://perma.cc/PU5R-RLWL.

174. *Cf., e.g.*, Spence, *supra* note 27, at 441–42 (discussing the "enormous quantities of water" used in fracking).

175. *See* Order No. 745, *supra* note 168, paras. 8–11.

176. PJM's independent market monitor, Monitoring Analytics, calculated that, without the demand response, the clearing prices would have been much higher and the generators would have reaped an additional $10 billion because of the higher supply-demand curve. *See* Petition for Rehearing *En Banc* of PJM Interconnection, LLC at 12, Elec. Power Supply Ass'n v. FERC, No. 11-1486 (D.C. Cir. July 7, 2014).

177. *See* Order No. 745, *supra* note 168, para. 2.

178. *Id.* at para. 10.

179. *See* FERC v. Elec. Power Supply Ass'n, 136 S. Ct. 760 (2016).

180. *See id.* at 766. FERC is authorized "to regulate 'the sale of electric energy at wholesale in interstate commerce,' including both wholesale electricity rates and any rule or practice 'affecting' such rates." *Id.* (citing 16 U.S.C. §§ 824(b), 824e(a) (2012), respectively). FERC is

save first by not consuming energy, and again when bidding their non-consumption into the market.[181] The Supreme Court ultimately upheld Order 745, finding that FERC possesses the authority to regulate demand response as incidental to its power to regulate wholesale energy markets.[182] The Court also deferred to FERC's pricing method as within the agency's discretion.[183]

While FERC surely understood the potential alignment of its approach with environmental policy goals, and while individual commissioners may well have privately embraced them, the agency did not cite those goals as a rationale for its demand response order. Nor did it invoke environmental considerations in the litigation over the rule. Given the risks associated with the agency's legal interpretation, this was likely a purposeful strategic choice. FERC portrayed demand response as helpful to controlling costs and bolstering reliability, sticking to its core mission and not straying into territory that could be portrayed as beyond FERC's authority and competence.

2. Variable Energy

Just as FERC has sought to integrate demand response into wholesale markets, the agency also has tried to enable variable resources like wind and solar energy to compete fairly with other more established supply-side resources like fossil energy and nuclear power. The obvious challenge for intermittent resources is the absence of storage—wind power is available only when the wind blows; solar power only when the sun shines. FERC cannot solve the storage problem through regulation, but it has issued a series of orders to help overcome market and structural barriers to renewables deployment. For example, the agency has required adjustments to market rules that restrict the potential for wind and solar to bid into wholesale auctions, and prompted reform of grid interconnection procedures to make them more hospitable.[184] Here again, FERC has justified its policy initiatives in conventional terms—as necessary to prevent undue discrimination against these resources in competitive electricity markets. FERC has taken care, as always, to portray itself as primarily reactive, rather than proactive. These resources are part of the new energy landscape made possible by advances in technology, as well as market dynamics, and state and federal policies. FERC commissioners, when testifying in Congress, have

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foreclosed from regulating "any other sale" of electricity, leaving retail sales within the purview of the states. 16 U.S.C. § 824(b).

181. *See Elec. Power Supply Ass'n*, 136 S. Ct. at 772–73.

182. *See id.* at 784.

183. *See id.*

184. *See* Integration of Variable Energy Resources, 139 FERC ¶ 61,246 (June 22, 2012) (codified at 18 C.F.R. pt. 35); Small Generator Interconnection Agreements and Procedures, 145 FERC ¶ 61,159 (Nov. 22, 2013) [hereinafter Order No. 792] (codified at 18 C.F.R. pt. 35); Order No. 1000, *supra* note 143.

consistently taken the position that the agency's legal charge requires it to ensure the smooth integration of these resources into the electricity supply.[185]

Thus, in defense of its variable energy orders, FERC has cited the need to level the playing field so that intermittent energy can compete effectively with more established sources, and emphasized their potential to bolster the reliability of the electricity system if integrated appropriately.[186] FERC commissioners are also surely aware that any policy to encourage greater reliance on renewable energy will be popular with environmental interest groups and cheered by EPA. Yet this happy coincidence seems decidedly secondary. True to its pattern, FERC in its variable energy orders has declined to adopt an environmental rationale even when one is readily available, and instead has stuck to its customary economic and reliability justifications. There is no reason to believe this strategy is disingenuous. To the contrary, it reflects a deep-seated and remarkably stable commitment to do *FERC's* assigned job—not any other agency's.

In addition to adopting new policies in this series of orders, FERC has also responded approvingly to certain state proposals that seek to more closely align energy and environmental policy. For example, FERC has made space to allow at least limited state experimentation with feed-in tariffs, which guarantee long-term price commitments at favorable rates for the delivery of renewable power—a strategy that has been tried by other jurisdictions, such as Germany, with mixed results.[187] While FERC has determined that the states are generally preempted from approving feed-in tariffs—because to do so would intrude upon FERC's exclusive jurisdiction to establish wholesale rates—the agency did carve out a limited exception: pursuant to the 1978 Public Utility Regulatory Policies Act ("PURPA"), the agency found that states may approve feed-in tariffs (thereby setting wholesale rates) for a small number of co-generators and small producers known as "qualifying facilities."[188]

FERC's interpretation of PURPA allows states to adopt rate structures that are highly favorable to renewable power on the theory that, because states have the authority to dictate a utility's purchasing decisions, they may also determine which generators are *displaced* by purchases from a qualifying facility,

185. *See, e.g.*, *The Role of Grid-Scale Energy Storage in Meeting Our Energy and Climate Goals: Hearing Before the S. Comm. on Energy and Nat. Res.*, 111th Cong. 2–3 (2009) (testimony of Jon Wellinghoff, FERC Chairman).

186. *Id.* at 3, 5.

187. *See* Timothy P. Duane, *Greening the Grid: Implementing Climate Change Policy Through Energy Efficiency, Renewable Portfolio Standards, and Strategic Transmission System Investments*, 34 VT. L. REV. 711, 763–64 (2010).

188. 16 U.S.C. § 824a-3 (2012) authorizes states to set prices for purchases of power from "qualifying facilities" (which are small generators) at the utility's "avoided cost" rate, which is the rate the utility would have to pay to purchase the same amount of power from another source.

for purposes of calculating the cost of avoided power.[189] Thus, for example, if pursuant to a state renewable portfolio standard, a state requires a utility to buy from certain generators (like renewable power generators), those generators determine the basis for calculating the utility's avoided cost rate. On this theory, FERC has approved under PURPA the use of what are called "tiered" avoided cost rate structures, which reflect these higher-cost utility procurement obligations, which derive from state policies like renewable portfolio standards.[190] In like manner, FERC has carved out a "safe harbor" of sorts for state net metering programs, which allow customers who generate their own power (from, for example, rooftop solar) to send excess electricity back onto the grid.[191] When utilities have protested to FERC that such programs amount to "wholesale sales" of electricity beyond state jurisdiction, FERC has demurred from exercising jurisdiction, leaving such programs in place.

Note that FERC's approach to feed-in tariffs allows but does not require states to use tiered avoided-cost rate structure;[192] and FERC has failed to speak further on net metering, apart from two orders in particular adjudications.[193] These examples show that FERC has found a way to be responsive to state demands, but in an incremental and cautious way, without fully embracing an explicitly environmental policy.

3. Environmental Dispatch

FERC has also reacted approvingly to state experiments with pricing carbon. Recall that, historically, power system generation in the United States has followed economic dispatch rules, the goal of which is to minimize cost, with environmental considerations being treated as externalities best handled by sep-

189. Kate Konschnik & Ari Peskoe, Minimizing Constitutional Risk: Crafting State Energy Policies That Can Withstand Constitutional Scrutiny 13 (2014), https://perma.cc/B48S-MA6X.

190. "For example, a utility in a state with an RPS may have to procure energy from two tiers of generators. One tier is defined by the RPS and the second tier consists of all other sources that the utility relies on to maintain adequate service." *Id.; see also* Order on Petitions for Declaratory Order, 132 FERC ¶ 61,047 (July 15, 2010) (responding to California Public Utility Commission's 2010 request for interpretation of state authority to require FITs).

191. *See* Sun Edison, LLC, 129 FERC ¶ 61,146, 61,618 (2009) (finding that a company's sales to end-use customers do not constitute a wholesale sale of electricity that would subject it to the FPA); MidAmerican Energy Co., 94 FERC ¶ 61,340, 62,261 (2001) (denying MidAmerican's request for a declaratory order and finding that the Iowa Board had the authority to implement its net metering requirements).

192. Konschnik & Peskoe, *supra* note 189, at 13.

193. *See* Benjamin Hanna, Note, *FERC Net Metering Decisions Keep States in the Dark*, 42 B.C. Envtl. Aff. L. Rev. 133 (2015) (arguing that FERC should issue clearer guidelines to encourage net metering).

arate regulation.[194] Economic dispatch principles require dispatching least-cost sources first, then higher-cost sources in ascending order, as needed to meet the demand for electricity while ensuring the reliability of the system.[195] This is not the only imaginable approach to dispatch order. It is also possible to design dispatch rules that seek to minimize environmental impacts rather than cost, or more modestly, which at least consider the emissions impacts of various generation alternatives as a relevant factor.[196] These alternative approaches seek essentially to internalize environmental impacts into dispatch rules. Yet because economic dispatch has always been the default approach endorsed by FERC, any affirmative policy to depart from it would be viewed as a seismic shift.

Nevertheless, in recent years, states have begun to experiment with incorporating operating costs associated with environmental compliance (such as emission fees or allowances) into dispatch orders by including such proposals in their tariff filings, which FERC must approve pursuant to its authority to ensure "just and reasonable rates."[197] For example, several states signed the Regional Greenhouse Gas Initiative, which caps carbon emissions from the utility sector, essentially putting a price on carbon, which FERC has allowed to be passed onto consumers.[198] More explicitly, California's ISO proposed to use an approach to dispatch that would account for the relative environmental impacts of different sources, which FERC has also approved.[199]

There are two ways to interpret FERC's stance toward carbon pricing. One is to view the agency as having departed from its traditional role as an economic regulator and to have signaled a willingness to approve environmental dispatch. But the better view is that FERC has simply approved actual operat-

194. *See* FERC, Security Constrained Economic Dispatch: Definition, Practices, Issues and Recommendations 5 (2006), https://perma.cc/7NVR-KQKU.

195. For an overview of environmental dispatch compared to economic dispatch, see William W. Hogan, *Electricity Market Design: Environmental Dispatch* (Dec. 4, 2014), https://perma.cc/MAM2-BW9G; *see also* Energy Policy Group, LLC, The Clean Power Plan Endangers Electric Reliability: RTO and ISO Market Perspectives, at v (Nov. 28, 2014) [hereinafter Clean Power Plan Endangers Electric Reliability], https://perma.cc/KM26-WMLF.

196. *See* Energy Policy Group, *supra* note 195, at v.

197. *See* FPA §§ 205–206, 16 U.S.C. §§ 824d–824e (2012).

198. *See, e.g.*, Comments on Draft RGGI Model Rule, Indep. Sys. Operator of New Eng. Inc. (May 22, 2006), https://perma.cc/TV5H-8VNP (discussing how the Model Rule implementing the Regional Greenhouse Gas Initiative could raise costs for fossil fuels plants, which must be passed through to customers pursuant to market rules that FERC must approve); *see also* Ari Peskoe, *Easing Jurisdictional Tensions by Integrating Public Policy and Wholesale Electric Markets*, 38 Energy L.J. 1 (2017) (analyzing the legal basis for FERC to approve carbon adders under its FPA authority to ensure rates are "just and reasonable").

199. *See* Order Conditionally Accepting Tariff Revisions, 140 FERC ¶ 61,070 (July 24, 2012), https://perma.cc/2FBR-53G6. This policy helps California to achieve its ambitious program to promote renewable energy and reduce greenhouse gas emissions from the electricity sector. *See, e.g.*, California Global Warming Solutions Act of 2006, Cal. Health & Safety Code §§ 38500–38599.

ing costs stemming from compliance with environmental requirements, and in doing so has deferred to state-level initiatives on federalism grounds to accommodate the states' energy policy preferences. As with its reactive approach to feed-in tariffs, on this question FERC is willing to follow but not lead. While the agency will approve state experiments with strategies for pricing environmental harms into the cost of electricity, FERC seems unwilling to get out ahead of the states and force a methodological change upon them. Given past precedent, that step likely would invite a firestorm of stakeholder criticism, create a significant risk of backlash in Congress, and present an uphill climb in the courts. Instead FERC has proceeded incrementally and cautiously, making space for reform, while adhering closely to its traditional role.

D. Incremental Change and Self-Restraint

The account above argues that, although FERC has taken some risks in its effort to modernize electricity policy, it has done so with deliberate caution, consistently justifying policy departures in terms of its traditional core mission. This strategy appears to have paid off: the agency's restraint has been met, for the most part, with an impressive string of legal and political victories. Considering the tremendous regulatory innovation that FERC has managed to implement since at least the 1980s—forcing unbundling and open access; shifting from cost of service to market regulation; promoting regional approaches to transmission planning and cost allocation; ensuring consideration of federal and state environmental requirements as part of transmission planning; and taking steps to level the playing field for variable and demand-side resources—the agency's record of success is striking. Overwhelmingly, Congress has either ratified FERC's policies after-the-fact, or remained silent. And, with few exceptions, the courts have largely upheld FERC's major Orders.[200]

200. FERC's only clear loss was in *Piedmont Envtl. Council v. FERC*, 558 F.3d 304 (4th Cir. 2009). The litigation over FERC's approval of new cost allocation methodologies for new transmission has been mixed. *See ICC III,* 756 F.3d 556 (7th Cir. 2014). Methods that socialize costs more broadly than the traditional approach appear to be acceptable to the Seventh Circuit (seen as consistent with the prevailing "beneficiary pays" principle), providing FERC can provide a better empirical basis for linking the more dispersed costs to the various beneficiaries. Instances in which FERC has pushed harder and been rebuked only reinforce the point about an incremental strategy as a key to the agency's success. A good example is the ill-fated effort, under the leadership of Chair Pat Wood during the George W. Bush administration, to adopt "Standard Market Design" and expand the RTO/ISO model in every region of the country (on the theory that independent control of the transmission system everywhere was necessary to avoid discrimination against new generators by incumbent utilities). FERC was met with considerable opposition and forced to retreat. *See FERC Proposals and Orders on Standard Market Design and Regional Transmission Organizations*, https://perma.cc/LBH2-S45L (describing FERC's Standard Market Design Initiative); *see also* Am. Pub. Power Ass'n, On the Ground: Public Power Utility Experiences in Wholesale Electricity Markets (2007), https://perma.cc/9XKL-

Notably, what FERC has *not* done is pursue environmental regulation as an end in itself, which would require the agency to press the limits of its legal authority under the FPA. There are numerous examples of policies that would go even further toward accommodating environmental concerns—toward "convergence" one might say—but which FERC has rejected or chosen to approach tentatively.

For example, some scholars have argued that FERC could use its regulatory authority over interstate transmission more assertively to promote renewable power, notwithstanding the Fourth Circuit's rejection of the agency's broad interpretation of its "backstop" transmission siting authority. Conceivably, under a different part of the backstop provision, FERC could require utilities to expand their transmission capacity to serve renewable generators by finding that such interconnections are necessary to serve the "public interest."[201] Traditionally, the public interest determination for interconnection orders has been limited to whether interconnection would increase competition in wholesale markets and thus lower costs to consumers—a purely economic consideration.[202] The suggestion here is that FERC could interpret the phrase "public interest" more expansively to include scrutiny of whether an interconnection order enabling greater use of renewable energy sources might have other benefits, such as reducing carbon pollution.[203] Such an interpretation would obviously require a fuller embrace of environmental goals than FERC has been willing to make thus far.

The agency arguably could do more to promote renewable energy by authorizing the use of feed-in tariffs more broadly than it has, even within the already narrow exception it has carved out.[204] Moreover, if it wished to do so, FERC could take steps to require the ISOs and RTOs that manage wholesale markets and operate the grids to consider environmental cost in their dispatch

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E33B (documenting effort by western public power associations to lobby members of Congress in opposition to the RTO/ISO model).

201. *See* Steven Weissman & Romany Webb, *Addressing Climate Change Without Legislation*, CTR. FOR LAW, ENERGY & ENV'T 14 (July 2014), https://perma.cc/W7ZC-MJCF.

202. *See* Nat'l Ass'n for the Advancement of Colored People v. Fed. Power Comm'n, 425 U.S. 662, 669–71 (1972) (holding that references to the "public interest" in the FPA do not give FERC "a broad license to promote the general public welfare," *id.* at 669, and describing the principal purpose of the FPA as being to "encourage the orderly development of plentiful supplies of electricity . . . at reasonable rates," *id.* at 670).

203. As Weissman and Webb explain, this would require FERC to argue that environmental considerations are relevant to such public interest determinations, which have traditionally focused on "cost minimization, non-discrimination and service adequacy." Weissman & Webb, *supra* note 201, at 16. Some scholars argue that accounting for all of the costs of providing electricity (including environmental costs) should be viewed as necessary to controlling total costs to consumers. *See, e.g.*, Jeremy Knee, *Rational Electricity Regulation: Environmental Impacts and the "Public Interest,"* 113 W. VA. L. REV. 739 (2011).

204. *See* Weissman & Webb, *supra* note 201, at 9.

rules. FERC could argue that such a policy shift is authorized by its mandate to ensure "just and reasonable" rates, just as it has utilized that broad language to accomplish so much else. Indeed, FERC unilaterally could adopt new pricing mechanisms—such as a carbon "adder"—to incorporate the cost of environmental harms into wholesale energy prices.[205] There is an economic rationale for doing so, which FERC certainly could cite, which is that adders are necessary to reflect the true cost of electricity generation, which remains artificially low to the extent that adverse public health and environmental impacts, including the social cost of carbon, have not been fully internalized. This case might be made on the economic merits quite apart from the environmental reason why such adders make policy sense.

Alternatively, and perhaps more persuasively, FERC might justify carbon adders as a prudent attempt to anticipate and signal the actual financial costs of foreseeable policies that are expected to either cap or tax greenhouse gas emissions. This framing of carbon adders would be more in line with FERC's traditional mission than a more speculative effort by a non-expert economic regulator to price environmental and public health damages, while accomplishing the same result.[206] There is no question however, that on any rationale, embracing carbon adders would be a significant risk. Just as there are those who express cautious optimism about FERC's authority to undertake these kinds of initiatives,[207] so too are there experts who are just as confident that any such effort lies clearly beyond the agency's legal authority.[208] In any event, perhaps for these reasons, FERC has thus far led from behind, as it were.

There remains a distinction, then, between FERC's incremental policy innovation over several decades, which has accommodated environmental concerns without leading the agency to stray markedly from its traditional mission, and a departure from that mission explicitly in the name of public health and environmental protection. Ensuring a level playing field for cleaner sources of generation to compete in the wholesale energy markets—FERC's approach to demand response and renewables—is not the same as requiring environmental dispatch, including a carbon adder in wholesale electricity rates, promoting feed-in tariffs, or requiring interconnection. Thus far FERC can justify regula-

205. This could be done by setting a dollar value per ton of carbon and adding that to rates. *See id.* at 4.

206. For an argument along these lines see, for example, Ralph Cavanagh et al., *Utilities and CO_2 Emissions: Who Bears the Risk of Future Regulation?*, 6 ELEC. J. 64 (1993); *see also* Peskoe, *supra* note 198 (surveying this view and other arguments why carbon adders may fall within FERC's purview).

207. Emily Hammond & David B. Spence, *The Regulatory Contract in the Marketplace*, 69 VAND. L. REV. 141, 197–201 (2016).

208. *See* Grand Council of the Crees (of Quebec) v. FERC, 198 F.3d 950, 956 (D.C. Cir. 2000) (distinguishing FERC's siting interests, which can include environmental concerns, from its ratemaking interests).

tions that upgrade transmission, lower peak demand, and diversify the energy supply as necessary to manage costs and bolster reliability, which fits comfortably within FERC's longstanding mandate and its broad legal authority under the FPA. Requiring dispatch that favors particular types of generation for environmental reasons, or raising wholesale electricity rates to reflect the cost of environmental harms, would put FERC more squarely in the shoes of an environmental regulator, with all of the attendant legal and political risks. A more explicit effort to align energy with environmental policy would also require a significant shift in agency culture. FERC commissioners, agency lawyers, and staff alike, tend to view themselves as economic regulators who have no business, nor any expertise, implementing the environmental laws.[209]

Indeed, one need only look to FERC's other key role, as an infrastructure licensing body, to detect a more ambivalent relationship to environmental regulation.[210] The discussion thus far has focused exclusively on FERC's role as a market regulator, in which capacity, I have argued, the agency increasingly has found itself pulling in the same direction as environmental regulators. Convenient alignments have arisen because, in responding to shifting dynamics in their respective domains, the interests of the two regulators have coincided. Unlike the market rulemaking context, however, licensing proceedings on the "project side" of the agency are structured as adversarial adjudications, which tend to pit project applicants against environmental and other public interest intervenors, with FERC as the decision-maker in the middle. State and environmental agencies, and regional EPA offices, also sometimes seek intervenor status to oppose infrastructure projects.[211] The opportunities for convenient alliances may be fewer in this context because licensing battles are narrower, more zero-sum, and yield fewer opportunities for tradeoffs across issue areas.

FERC's record of integrating environmental concerns in such proceedings is mixed at best and still evolving. For example, the agency has been credited with greatly improving its consideration of environmental concerns in hydro-

209. The public record is replete with statements to this effect from FERC commissioners, appointed by both Democratic and Republican presidents. Privately, FERC political appointees and career staff also express this view. Telephone Interviews with Anonymous FERC Officials (May–June 2016).

210. Section 7 of the Natural Gas Act of 1978 requires FERC approval for siting interstate natural gas pipelines and preempts conflicting state laws, unless FERC requires compliance with them as a condition of granting the certificate of convenience. *See* 15 U.S.C. § 717f (2012). The Act contains a savings clause preserving authority provided under the CAA, CWA, and Coastal Zone Management Act. *See id.* § 717b(d). FERC does not possess jurisdiction over oil interstate pipeline siting, which instead undergoes a state-by-state approval process.

211. *See FERC Confirms "Intervenors" Slowing Down Pipeline Process*, Marcellus Drilling News (2016), https://perma.cc/6NJT-6T3R; Paul W. Parformak, Cong. Research Serv., R43128, Interstate Natural Gas Pipelines: Process and Timing of FERC Permit Application Review 5–6 (2015), https://perma.cc/RVH2-9DYC (describing the role of intervenors in the permitting process).

power licensing (going so far as to adopt an alternative dispute resolution model, and granting state and federal environmental agencies a strong role).[212] Yet FERC continues to struggle to manage environmental opposition to pipeline applications. In many ways, the two settings are not comparable. Hydropower licensing has a much longer tradition, and in its heyday was the target of litigation and legislative reform campaigns aimed at introducing environmental considerations. Over time, FERC did improve its approach. Now that the era of new dam construction is largely over in the United States, most licensing applications are for renewals, and FERC has come to add more conditions to its re-licensing decisions in an effort to mitigate environmental impacts.[213]

This may change over time, as FERC gains experience. By comparison with dams, siting of natural gas pipelines and natural gas export terminals has been a relative backwater, garnering significant attention only in recent years.[214] Industry requests for certificates of convenience to site new natural gas infrastructure have risen markedly with the surge in U.S. natural gas production since 2009 and in response to complaints of natural gas transportation bottlenecks, which can contribute to higher costs for consumers. These projects have proven highly controversial, and produced a split in the environmental community.[215] While new pipeline infrastructure is cited as necessary to enable a shift from coal to gas-fired electric power—and so is favored by those who see it as a key strategy for addressing both conventional pollution and climate change—that view is not universal. Other members of the environmental community strongly oppose the pipelines, which they believe will bolster hydraulic fracturing and prolong dependence on fossil energy.[216] In any event, the agency remains in the early, tumultuous stages of adapting to the uproar over pipelines, and the same might be said of its permitting for liquefied natural gas facilities.[217] There is already a significant body of litigation challenging such approv-

212. *See* DeShazo & Freeman, *supra* note 9 (describing the history of hydro-power licensing and the efforts to require the agency to better account for and mitigate environmental impacts).

213. *See id.* at 2227–28.

214. *See generally* Michael R. Pincus, *FERC Pipeline Siting Program Deals with Legal Challenges*, 30 NAT. RESOURCES & ENV'T 44, 44 (2016), https://perma.cc/F9KD-GPFC ("FERC is under almost constant fire from environmental groups and landowners that oppose the construction of new or expanded pipelines and liquefied natural gas (LNG) terminals, drilling, and hydraulic fracturing. Protesters are now a relatively common sight outside the doors of 888 First Street NE, and in FERC open meetings.").

215. *See, e.g.*, Keith Brown, *Federal Energy Commissioner Concerned About Gas Pipeline Critics: 'We Have a Situation Here,'* NJ.COM, https://perma.cc/8X53-63F3 (quoting then-FERC Chair Cheryl LaFleur describing "unprecedented opposition" to natural gas pipelines).

216. *See, e.g.*, Tamara Dietrich, *Environmental Groups Oppose Four Natural Gas Pipeline Projects in Virginia*, DAILY PRESS (Oct. 26, 2015), https://perma.cc/XJ4F-6HEJ?type=image.

217. *See* Natural Gas Act, § 7, 15 U.S.C. § 717f (2012).

als, alleging violations of NEPA and other applicable environmental laws—at least one of which has been successful.[218]

A detailed account of FERC's role approving such energy projects is beyond the scope of this Article, but no fair assessment would contend that FERC's permitting process is *aligned* with environmental regulations aimed at mitigating their land use, wildlife, and greenhouse gas impacts.[219] Most important for present purposes, however, is the simple fact that FERC, acting under different titles of the FPA, and in its different capacities as market regulator and infrastructure-licensing body, can manifest such different responses to environmental concerns. This variation alone suggests that claims of a more general convergence between energy and environmental regulation should be tempered and, at a minimum, attuned to context.

III. EPA'S EVOLUTION

As with FERC's attitude toward environmental goals, EPA's regard for the longstanding priorities of energy regulators has been secondary to the agency's pursuit of its own core statutory mission: public health and environmental protection. Yet environmental regulation by its very nature embroils EPA in the domain of energy regulation.[220] As a result, the agency's rules inevitably affect the economics of the utility industry.[221] Moreover, EPA's impact on

218. *See, e.g.*, Del. Riverkeeper Network v. FERC, 753 F.3d 1304, 1319 (D.C. Cir. 2014) (finding FERC's environmental impact statement for Tennessee pipeline project insufficient, based on unlawful segmentation of connected projects).

219. Among other things, the agency fundamentally disagrees with environmental intervenors about the appropriate way to calculate greenhouse gas emissions attributable to the pipelines, which the intervenors believe should include end-use emissions from combustion and which FERC argues should be limited to pipeline construction and operation. *See* Michael Burger & Jessica Wentz, *Downstream and Upstream Greenhouse Gas Emissions: The Proper Scope of NEPA Review*, 41 HARV. ENVTL. L. REV. 109, 137 (2017).

220. Of course, environmental rules apply more broadly than the utility sector. EPA also sets emission standards for the transportation sector under the CAA's mobile source provisions. These standards, too, have the potential to influence energy policy by reducing oil consumption. *See, e.g.*, Light-Duty Vehicle Standards, *supra* note 60; Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, Final Rule, 75 Fed. Reg. 25,324 (May 7, 2010) (codified at 49 C.F.R. pts 531, 533, 536, 537 & 538). Indeed, the agency may prohibit the manufacture and sale of fuels and fuel additives if they, or their emissions, "may reasonably be anticipated to endanger the public health or welfare." *Id.* EPA also administers the Renewable Fuels Standard, a program added to the Clean Air Act by Congress in 2005 and amended in 2007, which requires specific volumes of "renewable" fuels (fuels with lower greenhouse gas intensity than gasoline by certain margins) to be blended into the nation's gasoline supply over time, ultimately reaching 22 billion gallons by 2022. *See* CAA § 211(o), 42 U.S.C. § 7545(o) (2012); *see also* SCHNEPF & YACOBUCCI, *supra* note 59.

221. Along with these other influences, complying with environmental regulations can affect the cost and thus the relative competitiveness of the various fuels that produce electricity. These

the utility sector has grown in recent years, as the agency has promulgated a number of major rules to address longstanding air quality problems that have defied prior efforts at control, such as interstate ozone pollution[222] and air toxics,[223] and to confront newly crystallized threats, like global climate change.[224]

Some reckoning of environmental and energy regulation is an entirely natural and foreseeable consequence of the pollution control scheme that Congress first adopted in 1970. After all, the CAA contains numerous programs targeted at the utility sector. EPA has long regulated new power plants for their emissions of conventional pollution,[225] and has long-possessed the authority to control their toxic emissions, too.[226] Congress also separately adopted the "acid rain" program in Title IV of the Act, which exclusively targets power plants for their sulfur dioxide and nitrogen oxide emissions.[227] To be sure, the CAA is not the only environmental law that impacts the utility sector. For example, under the Solid Waste Disposal Act, EPA also regulates certain solid waste products from electricity combustion, such as coal ash,[228] which can be hazardous, and under the CWA, EPA sets standards for wastewater from power plant cooling structures, which poses dangers to fish and aquatic ecosystems.[229] But air quality regulation pursuant to the CAA, which focuses directly on fuel *combustion*, has

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requirements may not be as important an influence, however, as electricity demand or fuel price, which studies have shown can overwhelm other drivers. *See* Burtraw et al., *supra* note 75, at 1–3.

222. *See* Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. 48,208 (Aug. 8, 2011) (codified at 40 C.F.R. at pts. 51, 52, 72, 78, and 97); Cross-State Air Pollution Rule, 76 Fed. Reg. 48,208 (Aug. 8, 2011).

223. *See* Mercury and Air Toxics Rule, 77 Fed. Reg. 9,304 (Feb. 16, 2012) (codified at 40 C.F.R. pts. 60, 63); *Clear Skies: Basic Information*, EPA (2003), https://perma.cc/68LK-LWH9 (describing the Clear Skies Act of 2003, legislation proposed during the George W. Bush Administration to reduce air pollution that never moved out of the Senate Environment and Public Works committee).

224. *See* Light-Duty Vehicle Standards, *supra* note 60; Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Generating Units, 80 Fed. Reg. 64,510 (Oct. 23, 2015) [hereinafter Carbon Standards for New Sources] (codified at 40 C.F.R. pts. 60, 70, 71, and 98); Carbon Standards for Existing Sources, *supra* note 155.

225. *See* 42 U.S.C. § 7411(b).

226. *See* 42 U.S.C. § 7412(c)(6).

227. *See* 42 U.S.C. § 7651–7651o.

228. *See* Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 80 Fed. Reg. 21,301 (Apr. 17, 2015) [hereinafter Coal Ash Waste Rule] (codified at 40 C.F.R. pts 257, 261) (discussing EPA's rule for coal ash waste, which EPA considered treating as hazardous waste but ultimately regulated as solid waste under RCRA).

229. *See* 33 U.S.C. § 1326 (2012); National Pollutant Discharge Elimination System—Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities, 79 Fed. Reg. 48,300 (Aug. 15, 2014) [hereinafter Cooling Water Intake Structures Rule] (codified at 40 C.F.R. pts 122, 125);

had the most powerful impact on the utility sector, and provoked the most controversy, and so merits the bulk of attention here.

A. Environmental Regulation as Energy Regulation

Since the CAA's inception, it has been clear that regulatory efforts to promote air quality would have a significant impact on the energy sector, for the simple reason that power plant emissions of the most pervasive, dangerous, and persistent air pollutants are so substantial.[230]

The 1970 statute instructed EPA to set and enforce uniform national air quality standards "requisite to protect the public health" with "an adequate margin of safety,"[231] which the states must achieve.[232] EPA subsequently set such standards, expressed as concentration limits in the ambient air, for six so-called "criteria" pollutants, many of which can be sourced to fuel combustion for electricity, including nitrogen oxides, sulfur dioxide, particulate matter and the pollutants that contribute to create ground-level ozone.[233] While EPA does not directly regulate power plants under this program—because the assignment of emissions cuts is delegated to the states in the first instance[234]—in order to achieve the ambient limits, states may need to control power plant emissions.

In addition to adopting these national ambient standards, EPA has separate authority to set performance standards for "categories" of stationary sources, which emit substantial amounts of the pollutants regulated under the Act.[235] All new and modified sources in those categories, including electric gen-

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Entergy Corp. v. Riverkeeper, Inc., 556 U.S. 208, 226 (2009) (holding that EPA properly relied on cost-benefit analysis in promulgating the cool water intake rule).

230. *See Environmental Impacts of Coal Power: Air Pollution*, UNION OF CONCERNED SCIENTISTS (2017), https://perma.cc/M6WH-LCHU; *Coal-Fired Power Plants: Understanding the Health Costs of a Dirty Energy Source*, PHYSICIANS FOR SOC. RESPONSIBILITY (2013), https://perma.cc/V4NV-Q6NT.

231. CAA § 109(b)(1), 42 U.S.C. § 7409(b)(1).

232. *See* CAA § 110(a)–(c), 42 U.S.C. § 7410(a)–(c) (requiring states to design implementation plans to meet national air quality standards subject to EPA approval, and prescribing requirements for state plans, including authorizing Federal Implementation Plans where EPA disapproves a state plan).

233. To take one example, the national ambient air quality standard for sulfur dioxide, which EPA first set in 1971, has an outsize impact on the utility sector because fossil fuel combustion is responsible for seventy-three percent of sulfur dioxide pollution. *See Fact Sheet: Revisions to the Primary National Ambient Air Quality Standard, Monitoring Network, and Data Reporting Requirements for Sulfur Dioxide*, EPA (June 2, 2010), https://perma.cc/G83J-PBRV.

234. CAA § 110(a)–(c), 42 U.S.C. § 7410(a)–(c) (requiring states to design implementation plans to meet national air quality standards subject to EPA approval).

235. 42 U.S.C. § 7411 (requiring EPA to list and set standards for emissions from categories of stationary sources that cause or contribute significantly to air pollution which may endanger public health or welfare). Congress added the New Source Performance Standards program

erating units at power plants, must meet these performance standards, which are updated on a regular basis to keep pace with improvements in pollution control. Thus new and updated power plants are subject to direct regulation under this program, quite apart from controls that may apply to them by virtue of the states' administration of the ambient standards program. Moreover, Congress clearly intended all source categories, including power plants, to improve over time: it specifically instructed EPA to set performance standards based on what is achievable using the "best system of emission reduction" that the Administrator determines is "adequately demonstrated" for that source category—a grant of authority that leaves considerable room for updating.[236]

Congress only strengthened the Act's requirements in subsequent amendments, adding new provisions that would burden the utility sector to a greater extent. For example, the 1990 Amendments included four major reforms, all with significant implications for power plants. First, to address the persistent failure, in the most polluted parts of the country, to achieve the national air quality standards by the Act's original deadline, Congress established a new schedule for compliance based on the degree of each region's non-attainment problem; required new sources in such areas to achieve the "lowest achievable emission rate,"[237] and—significantly for the existing fleet of power plants—required state plans for these areas to impose at a minimum "reasonably available control technology" on existing sources.[238] To address the problem of cross-state pollution, which interfered with the downwind states' ability to achieve certain standards, Congress established the Ozone Transport Commission, consisting of eleven northeastern states and EPA. The Commission was to develop a regional plan for ozone attainment, a process that ultimately was unsuccessful, and which prompted EPA to issue a cross-state pollution rule.[239]

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to the Act in 1977. This program ensures that all sources within the same industrial classification meet nationally uniform minimum standards. It is intended to ensure that as industry builds new infrastructure, or modernizes old infrastructure, the units will keep pace with new technology, which enables better pollution control. *See Portland Cement Racks: New Source Performance Standards (NSPS)*, EPA (2015), https://perma.cc/Q9S4-QTZ8.

236. *See* 42 U.S.C. § 7411(a)(1) (defining "standard of performance").

237. 42 U.S.C. § 7503(a)(2). New sources in nonattainment zones, where air quality falls short of a national standard, must meet more stringent technology-based standards than in areas that attain standards. *See* 42 U.S.C. §§ 7501–7503 (requiring new sources to obtain permits, secure offsets, and meet "lowest achievable emission rate" for that category of source).

238. 42 U.S.C. § 7503(a)(2). State plans "must provide for the implementation of all reasonably available control measures . . . (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum of reasonably available control technology)." 42 U.S.C. § 7502(c)(1).

239. *See* 42 U.S.C. § 7506a. For more detail, see *infra* section III.B.1 (discussing the good neighbor provision in CAA § 110, and EPA's adoption of the Cross-State Air Pollution Rule).

Second, the 1990 amendments added a market-based "cap and trade" program to reduce power sector emissions of the pollutants that cause acid rain.[240] With this new initiative, Congress set a total volumetric cap on sulfur dioxide emissions from the utility sector, established a market in emission allowances (permits to emit a ton of pollution), and required operators to hold sufficient allowances to cover their emissions, which they could buy, sell, and bank, in order to achieve the required emission reductions in the most cost-effective manner.[241] To comply with the requirements of this new program, utilities were afforded considerable flexibility. They could purchase sufficient allowances beyond their initial free allocation as necessary to cover their emissions, or obviate the need for additional allowances by installing pollution control equipment; switch to cleaner-burning fuels (like natural gas instead of coal); shift some production to lower-emitting units; or retire older units.[242]

In designing this program, Congress clearly assumed that achieving the level of pollution control necessary to protect public health and environment was entirely compatible with the provision of a stable, affordable energy supply,[243] even if doing so might require the electricity system as a whole to shift to a greater share of lower-polluting fuels, or invest in strategies that would reduce demand. Indeed, Congress specifically authorized allowances for renewable energy and energy efficiency, encouraging their use as a compliance option, and signaling awareness that the scheme could result in a new mix of supply and

240. *See* CAA Title IV, §§ 401–416, 42 U.S.C. § 7651–7651o. Prior to the 1990 amendments, acid deposition from these pollutants was a severe environmental problem, resulting in the acidification of lakes and forests in the Northeast and Canada. In addition to mandating a volumetric cap on total emissions of sulfur dioxide, Congress also set a stringent intensity-based limit on nitrogen oxides from these sources. *See* 42 U.S.C. § 7651f(b).

241. To ease the economic impact, Congress issued allowances to the regulated sources for free and eased in the cap over time. *See* Paul L. Joskow & Richard Schmalansee, *The Political Economy of Market-Based Environmental Policy: The U.S. Acid Rain Program*, 41 J.L. & ECON. 37, 46–53 (1998) (referring to negotiations over the acid rain bill in the Senate, which resulted in Phase I allocations being given as "bonus" allowances to utilities in high sulfur coal states; to later "technical" corrections that led to allowances being given to units that had already been retired; and to rent-seeking by high sulfur emitting and high coal-producing states, which did disproportionately well in accumulating final allocations). The first phase of the program began in 1995 and lasted until 2000, and applied to 110 mostly coal-fired power plants. *See id.* at 41. The second phase began in 2000 and lasted until 2009, and applied the program to all remaining sources. *See id.*

242. *See id.* ("[T]he 1990 law gave utilities with multiple fossil-fired generating units enormous and unprecedented flexibility in complying with emissions limits even if they traded no allowances at all with other utilities.").

243. *See* 42 U.S.C. § 7651b(d). "In order to insure electric reliability," the allowance system authorized by the Act was required "not [to] prohibit or affect temporary increases or decreases in emissions within utility systems . . . that result from their operations, including emergencies and central dispatch," and provided that such increases and decreases did not require a transfer of allowances, yet reiterated that total tonnage from all units in a utility system should not exceed their total allowances. *Id.*

demand.[244] And the compliance flexibility afforded by the allowance-trading presumably was intended to ensure that the electricity system would remain both efficient and reliable. Congress also appeared to believe that EPA and FERC's distinct authorities were compatible. The new program stipulated only that EPA's implementation not interfere with the traditional rate-setting authority reserved to FERC and the corresponding rate-setting power of the state public utility commissions. Since the Act's new emissions limits would clearly affect the *price* of electricity (by driving up the relative cost of dirtier fuels) Congress could only have meant by this provision to prevent any direct effort by EPA to dictate rates, something the agency has never sought to do.[245] What the Acid Rain Program, like so many other programs in the CAA, shows is that EPA has *always* been in the business of energy regulation.

The final reform in the 1990 amendments with significant implications for the power sector was the new program to limit hazardous air pollution.[246] Congress jettisoned the original design, which had called on EPA to establish health-based standards—and which proved ineffective—and replaced it with a scheme that is more prescriptive, technology-based, and action-forcing.[247] The new program instructed EPA to set standards for nearly two hundred toxic pollutants specified by Congress in the statute based on the "maximum degree of reduction achievable."[248]

Even this short review of some of the CAA's main programs makes the key point that air quality regulation unavoidably requires power sector regulation. It makes clear that some degree of reconciliation between the imperatives of the energy sector and the aims of environmental law was structured into the CAA from its inception, and only reinforced over time. This distinguishes the CAA from Title II of the FPA, which, in assigning FERC its rate regulation role, does not speak to environmental regulation, either directly or indirectly. And it illustrates why FERC and the state public utility commissions find themselves *responding* to federal environmental mandates—because they affect the economic and operational behavior of the same market participants whose rates and infrastructure plans they oversee. Still, EPA historically has not imagined itself to be an energy regulator any more than FERC has seen itself as

244. *See* 42 U.S.C. § 7651c(f) (allocating allowances for "qualified energy conservation measures or qualified renewable[s]" that mitigate sulfur dioxide emissions).

245. *See* 42 U.S.C. § 7651b(f), (h) (providing that the program not interfere with state regulation of "electric utility rates and charges," or "modify[ ] the Federal Power Act," or "affect[ ]" FERC's authority under that law, or "impair any program for competitive bidding for power supply" in states in which such programs were established).

246. *See* 42 U.S.C. § 7412.

247. *See* 42 U.S.C. § 7412(c) (requiring EPA to set technology-based standards for listed pollutants by certain deadlines).

248. This standard is defined, for new and modified sources, as matching "the best controlled similar source." 42 U.S.C. § 7412(d)(3). For existing sources, it is defined to require achieving the performance of the average of the top twelve percent similar sources. *Id.*

an environmental one. The principal aim of setting pollution standards has always been to protect public health and the environment, not to manage the nation's energy system.[249]

B. Major EPA Rules Affecting the Utility Sector

While Congress has not amended the CAA since 1990, EPA has continued to implement the statute to address contemporary public health and environmental risks. Among the most prominent of such efforts are new rules to address interstate air pollution,[250] air toxics,[251] and climate change.[252] On first glance, these regulatory initiatives seem to exemplify the traditional conflict between energy regulation (with its goal of cheap power) and environmental regulation (with its goal of public health and welfare protection).[253] Yet this appearance is misleading. While EPA has continued to pursue its traditional mission, the agency has at the same time grown more sensitive to the perspective of energy regulators and the electricity industry. And this sensitivity has manifested, in recent years, in a greater willingness to accommodate concerns about both cost and reliability.

1. The Cross-State Pollution Rule

EPA's commitment to cost concerns is evident in its approach to interstate air pollution, a persistent problem that was one of the impetuses for the CAA of 1970.[254] Migrating pollution from upwind to downwind states makes compliance with the national air quality standards especially challenging for the downwind states, frustrating their progress even when they have imposed strict

249. *See, e.g.*, CAA § 101(b), 42 U.S.C. § 7401(b) (declaring the purposes of the CAA).

250. *See* Cross-State Air Pollution Rule, *supra* note 31.

251. *See* Mercury and Air Toxics Rule, *supra* note 31.

252. *See* Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the CAA, 74 Fed. Reg. 66,496 (Dec. 15, 2009) [hereinafter Greenhouse Gas Endangerment Finding] (codified at 40 C.F.R. ch. 1); Light-Duty Vehicle Standards, *supra* note 60; Carbon Standards for New Sources, *supra* note 224; Carbon Standards for Existing Sources, *supra* note 155. *See also* Coal. for Responsible Regulation, Inc. v. EPA, 684 F.3d 102, 113 (D.C. Cir. 2012) (upholding Light-Duty Vehicle Standards).

253. These rules, while issued during the Obama Administration, each have long histories, spanning two or three presidential administrations. Notably, all of these initiatives focus on emissions from the power sector. *See infra* section III.B.1–3.

254. The need for a national solution to interstate pollution was one of the reasons why state and local air pollution regulators supported a federal statute. *See* Bruce M. Kramer, *Transboundary Air Pollution and the Clean Air Act: An Historical Perspective*, 32 KAN. L. REV. 181 (1983). In 1977, Congress added stronger language to section 110, prohibited tall stacks and dispersion techniques, and added a process under section 126 through which states could petition EPA to require states to amend their implementation plans to address interference with downwind attainment. *See id.* at 195–97, 209.

control measures on their own sources.[255] Indeed, in an illustration of the extent to which energy regulation can drive environmental regulation, interstate air pollution temporarily worsened as a result of FERC's decision in the 1980s to deregulate the electricity sector and promote competition in wholesale markets, which increased utilization of high-polluting coal-fired power.[256]

After decades of failed attempts by Congress and EPA to ameliorate this problem,[257] EPA issued a new cross-state pollution rule in 2011, mandating significant cuts in power plant emissions of both sulfur dioxide and nitrogen oxides (the precursors of downwind ozone pollution and particulate matter), from twenty-seven upwind states.[258] EPA's legal authority to address upwind pollution stems from the CAA's "good neighbor" provision, which requires states, in designing their implementation plans for achieving national ambient air quality standards, to prohibit "amounts" of any pollutant "which will contribute significantly" to non-attainment in any other state.[259] Past efforts by EPA to craft a program under this authority had stumbled over the problem of

255. *See* EPA v. EME Homer, 134 S. Ct. 1584, 1593–94 (2014) (describing the challenge).

256. FERC's policy led, as EPA had feared, to increased utilization of coal-fired power from the South and Midwest—power that was competitively advantaged in large measure because it had been exempt from stringent environmental controls. *See supra* Part II.A.1. Greater uptake of coal-fired power produced more emissions of NO_x and SO_x pollution, which migrated from upwind to downwind states, interfering with the latter's ability to attain air quality standards for particulate matter and ozone. *See* Albert Monroe, *The Good Neighbor Problem: Regulating Interstate Transport of Smog Precursors* 5–7 (Feb. 26, 2014), https://perma.cc/5AVM-BZWN.

257. Congress in the 1990 CAA amendments designated a group of states as the Ozone Transport Region, established these states and EPA as the Ozone Transport Commission, and instructed the Commission to plan for ozone attainment. *See* CAA § 176a, 42 U.S.C. § 7506a (2012). In 1994, the Ozone Transport Region states agreed to control their NO_x emissions, from power plants and other large industrial sources, using a cap and trade program. By 1995, however, it became clear that for this effort to succeed, Midwestern power plant emissions would also need to be brought into the scheme, and EPA convened a larger group of states known as the Ozone Transport Assessment Group to negotiate an agreement. This initiative ultimately failed, and EPA turned in 1998 to a regulatory solution instead, using its authority to enforce the good neighbor provision in Section 110 by the NO_x SIP Call, which required upwind states to revise their state implementation plans to address interference with downwind attainment. *See generally* Monroe, *supra* note 256; Finding of Significant Contribution and Rulemaking for Certain states in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone, 63 Fed. Reg. 57,356, 57,370 (Oct. 27, 1998). EPA ultimately imposed its own solution, issuing the Clean Air Interstate Rule in the George W. Bush administration, but the D.C. Circuit invalidated the rule. *See* North Carolina v. EPA, 531 F.3d 896, 930 (D.C. Cir. 2008).

258. *See* Cross-State Air Pollution Rule, *supra* note 31.

259. State plans must "contain adequate provisions prohibiting . . . any source or other type of emissions activity within the state from emitting any air pollutant in amounts which will . . . contribute significantly to non-attainment [of any air quality standard by any other state]." CAA § 110(a)(2)(D)(i), 42 U.S.C. § 7410(a)2(D)(i). The Act does not define "significant," however. In petitioners' reading of the statute, responsibility for remediating downwind

determining the "amounts" from upwind states that "contribute significantly" to downwind non-attainment. A prior version of the Cross-State Pollution Rule, known as the Clean Air Interstate Rule ("CAIR") had been adopted during the George W. Bush Administration, but vacated by the D.C. Circuit in *North Carolina v. EPA*.[260] In CAIR, EPA had adopted a "cap and trade" approach, used in its initial effort to apply the "good neighbor" provision in 1999.[261] This approach consisted of calculating the potential for cost-effective reductions by the sources in each upwind state, assigning each state a corresponding share of a regional budget of pollution allowances, and then authorizing sources to buy and sell allowances to cover their emissions.[262] The D.C. Circuit struck down this approach, however, because it lacked measures to assure that upwind states would actually abate their unlawful emissions to the extent contemplated by each state's emissions budget. Theoretically, under EPA's scheme, an upwind state could continue polluting at the same level, without reducing its emissions, simply by buying credits from sources that over-controlled their emissions.[263]

In designing the new Cross-State Air Pollution Rule, EPA tried once again to solve the interstate pollution problem in a way that would survive judicial review. And once again, EPA opted to calculate the significance of each state's contribution to downwind non-attainment based on the relative cost of installing pollution controls balanced against the relative contribution to non-attainment in downwind areas.[264] This approach still made practical and economic sense in EPA's view.[265] And EPA also retained the "cap and trade" framework for implementation, notwithstanding the *North Carolina* court's skepticism. The agency met the court's concerns by adding incentive-based

problems should be allocated *in proportion* to each state's contribution to them. *See id.* at 1606 (summarizing petitioners' argument).

260. *North Carolina*, 531 F.3d at 930 (vacating the Clean Air Interstate Rule).

261. Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone, 63 Fed. Reg. 57,356, 57,365–69 (Oct. 27, 1998).

262. Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule), 70 Fed. Reg. 25,162 (May 12, 2005); *see also North Carolina,* 531 F.3d at 903–05.

263. *See North Carolina*, 531 F.3d at 907.

264. *See* EPA v. EME Homer, 134 S. Ct. 1584, 1596–97 (2014) (describing the regulatory scheme). The rule establishes state budgets for NO_x and SO_2 pollution from power plants in twenty-seven states. EPA establishes the required emissions reductions in two steps. First, EPA makes a threshold finding to exclude states making only *de minimis* contributions to downwind non-attainment. Second, EPA calculates how much emission reduction benefit can be achieved by sources cost-effectively at different threshold levels (dollars per ton) of investment in pollution control. Excess pollution above what can be achieved through the installation of cost-effective controls constitutes a "significant" contribution, and such emissions must be eliminated; emissions below that level are not treated as significant. *Id.*

265. *Id.* at 1594 (discussing "the vagaries of the wind").

design elements to the rule, which limited the extent to which sources could drive their respective states' emissions levels above their budgets.

A coalition of states and utilities criticized the rule as likely to compromise electric system reliability,[266] and challenged it as unlawful, arguing that EPA had essentially substituted a capacity to pay test for the CAA's requirement to assign responsibility based on each state's proportional contribution to downwind non-attainment.[267] This time, however, the Supreme Court upheld EPA's interpretation of the Act, and its methodology for determining each state's respective "significant contribution" as reasonable, finding that cost was a relevant, pragmatic, and fair way to determine which "amounts" of pollution were "significant contributions" to downwind non-attainment, given the realities of interstate air pollution.[268]

What is most striking about the Cross-State Pollution Rule for purposes of the argument here is the lengths to which EPA went to continue to rely on market mechanisms like allowance-trading in order to control industry compliance costs and ensure the kind of flexibility needed to accommodate the various demands made on the power sector. In its per curiam opinion, the D.C. Circuit in *North Carolina* had made clear that it was troubled by EPA's design of the rule because the agency had appeared to set emission budgets for the upwind states, and then render those budgets meaningless by permitting sources within the states to buy, sell, bank, and borrow an unlimited number of emission allowances. This design seemed to wholly untether the state-specific obligations to achieve certain emission reductions (the budgets) from the actual reductions that would occur in practice (which would be driven exclusively at the source-level by least-cost emissions-reduction opportunities), violating the text of the good neighbor provision, which, in the Court's view, requires *some* linkage between the volume of emission reductions being allocated to each state, and the states most responsible for downwind attainment. In short, unlimited trading seemed inconsistent with the logic of state "budgets."[269]

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266. Industry stakeholders suggested that they might not be able to maintain system reliability while implementing the Cross-State Air Pollution Rule which, the industry suggested, might require a significant share of generating capacity to go off-line, either to add pollution control equipment, or retire. *See* Susan F. Tierney, Greenhouse Gas Emission Reductions from Existing Power Plants: Options to Ensure Electric System Reliability 1–3 (2014), https://perma.cc/VQ3M-MKUJ. But EPA had extensively modeled the rule's impact on both cost and reliability. *See* Resource Adequacy and Reliability Analysis in the IPM Projections for the Transport Rule, EPA (2011), https://perma.cc/UK29-LAU4; Regulatory Impact Analysis for the Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States, EPA (2011), https://perma.cc/2GTG-A5ED.

267. *See EME Homer*, 134 S. Ct. at 1589–99.

268. *Id.* at 1609–10.

269. *See* North Carolina v. EPA, 531 F.3d 896, 921 (D.C. Cir. 2008).

EPA's Cross-State Pollution Rule represented a delicate and potentially risky effort to replace the Clean Air Interstate Rule with a cost-effective pollution control regime with sufficient flexibility to protect system reliability, while respecting the reasoning of the D.C. Circuit's opinion in *North Carolina*. EPA struck this balance by permitting sources to buy, sell, and bank allowances to cover their emissions, but with certain new constraints. For example, the rule establishes four separate cap-and-trade programs that group states subject to the same level of emissions control together, separating them for trading purposes, and it imposes an upper limit on the number of allowances that can be bought without paying an effective penalty.[270] These aspects of the rule's design, which impose a virtual "collar" on the states' ability to escape emissions reduction entirely, ingeniously garner the economic and reliability benefits of trading, while preserving the conceptual integrity of state budgets. This part of the saga over interstate air pollution may be easy to overlook, but the Cross-State Pollution Rule serves as a good example of the extent to which EPA has internalized concerns about cost and reliability, which are normally attributed to energy regulators like FERC.

2. The Mercury and Air Toxics Rule

In 2012, EPA addressed another longstanding air pollution problem stemming from the utility sector, finally issuing a rule to limit emissions of mercury and other air toxics from power plants, after years of delay.[271] EPA had com-

270. *See* Blair Beasley & Daniel Morris, *Modeling the Electricity Sector: A Summary of Recent Analyses of New EPA Regulations* 2 (Res. for the Future, Discussion Paper 12-52, 2012) (describing the four trading programs and their requirements, and explaining that, "[a]lthough intragroup trading among facilities is unlimited, individual states have their own emission caps . . . . [I]f states exceed those caps by more than 20%, the responsible sources have to pay a penalty and submit additional allowances.").

271. The CAA's hazardous air pollution program applies automatically to stationary sources that emit over a threshold amount of hazardous air pollution (ten tons of a single pollutant or twenty-five tons of a combination of pollutants). *See* CAA § 112(a), 42 U.S.C. § 7412(a) (2012). Congress created a special procedure for applying the program to power plants, however, in view of the fact that these sources would also be subject to other controls, including the new Acid Rain Program. Congress imagined that these other requirements alone might sufficiently reduce hazardous pollutants from power plants, and so directed EPA to take the additional step of conducting a study of the public health hazards still posed by power-plant emissions after the other CAA requirements had been implemented. *See* CAA § 112(n), 42 U.S.C. § 7412(n). Then, "after considering the results of the study," EPA was to regulate power plants under the toxics program only if it found that "regulation [was] appropriate and necessary." CAA § 112(n)(1)(A), 42 U.S.C. § 7412(n)(1)(A). EPA interpreted the statutory phrase "appropriate and necessary" without considering costs, viewing the threshold decision—whether to regulate—as governed solely by the question of whether regulation was necessary in light of residual public health risks. EPA did take cost into account, however, when setting the specific standards for the different categories of power plant units. For an overview of the history of the mercury rule, see *Regulatory Actions—Final Mercury and Air*

pleted a public health study of mercury's effects in 1998, and concluded in 2000 that regulation of power plants was "appropriate and necessary," as required by the CAA, before EPA may set emissions standards.[272] In 2005, however, the George W. Bush Administration sought to revoke this finding, delist mercury as an air toxin, and establish a cap-and-trade scheme to control its emission. This rule was struck down by the D.C. Circuit, leaving the task of designing a replacement to the next administration.[273]

When EPA subsequently affirmed the "appropriate and necessary" determination and promulgated the Mercury and Air Toxics Rule, a coalition of states and industry groups sued, claiming that EPA had neglected to consider costs in making the threshold finding that regulation was, in the first instance, warranted. The controversy over cost was due in large part to the agency's cost-benefit analysis, which looked wildly imbalanced. The agency's regulatory impact analysis had calculated $9.6 billion in annual costs and only $4 to $6 million of quantifiable direct benefits. Yet EPA had explained that numerous health-related benefits from reducing hazardous air pollutants were unquantifiable, and had found that the rule would produce significant ancillary benefits stemming from lowering emissions of other pollutants such as particulate matter and sulfur dioxide. With these benefits as part of the equation, the regulation's total quantifiable benefits were $37 to $90 billion—far in excess of its costs. The Supreme Court agreed with petitioners, and remanded the rule to EPA.[274] The agency subsequently issued a supplemental finding that regulation of power plant toxics emissions was still warranted, even after considering costs at the threshold stage.[275]

Behind the central controversy in the litigation, however, lies another story about the extent to which the production of this rule demonstrated EPA's con-

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Toxics Standards (MATS) for Power Plants, EPA (Apr. 14, 2016), https://perma.cc/2Z84-DQYN.

272. *See* Regulatory Finding on the Emissions of Hazardous Air Pollutants from Electric Utility Steam Generating Units, 65 Fed. Reg. 79,825, 79,826 (Dec. 20, 2000) (finding "regulation of HAP emissions from coal- and oil-fired electric utility steam generating units under section 112 of the CAA is appropriate and necessary"); *see also* CAA § 112(n)(1)(A), 42 U.S.C. § 7412(n)(1)(A) (setting requirement that regulation be "appropriate and necessary").

273. *See* New Jersey v. EPA, 517 F.3d 574, 580, 583 (D.C. Cir. 2008).

274. Michigan v. EPA, 135 S. Ct. 2699 (2015). The Court found that the phrase "'appropriate and necessary' requires at least some attention to cost," describing the phrase as "the classic broad and all-encompassing term that naturally and traditionally includes consideration of all the relevant factors." *Id.* at 2707.

275. *See* Supplemental Finding That It Is Appropriate and Necessary to Regulate Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units, 81 Fed. Reg. 24,420 (Apr. 25, 2016) (codified at 40 C.F.R. pt. 63); *see also* Legal Memorandum Accompanying the Proposed Supplemental Finding That It Is Appropriate and Necessary to Regulate Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units (EGUs), EPA (2015), https://perma.cc/55FF-M3YS.

cern for electric sector reliability. Like the Cross-State Pollution Rule, the Mercury and Air Toxics Rule was denounced as likely to compromise grid reliability, by forcing untimely shutdowns and accelerating retirements of needed electric generating units.[276] To assuage such concerns, EPA had gone to considerable lengths to model and analyze impacts on resource adequacy—the essential foundation for system reliability—ultimately concluding that grid managers were well-equipped to make any necessary adjustments with the tools already at their disposal.[277] EPA also relied on a separate DOE study, which concluded that resource adequacy would not be compromised by either the Cross-State Pollution Rule or the Mercury and Air Toxics rule.[278]

Still, one might be skeptical of such analyses, on the theory that agencies are bound to manipulate the inputs, and interpret ambiguities, in a light most favorable to their rule. To some extent, of course, this is true—agencies work hard to justify their regulations—but they cannot just say anything. Indeed, agencies face significant institutional pressure to be thorough and rigorous in these analytic assessments. As noted in Part I, EPA must examine energy sector impacts as a matter of law: the CAA mandates in a variety of provisions that EPA specifically take account of "energy impacts" or "energy requirements," along with cost, available technology, and other effects when establishing air pollution standards.[279] In addition, EPA's major air pollution rules qualify as "significant actions" under the terms of Executive Order 12,866, and so must

276. *See* N. Am. Elec. Reliability Corp., 2011 Long-Term Reliability Assessment 75 (2011), https://perma.cc/8A63-TVNT; Tierney, *supra* note 266 (noting industry concerns about the Cross-State Pollution Rule and the Mercury and Air Toxics rule expressed in congressional testimony and comments in rulemakings). One editorial accused EPA of "bur[ying] its own reliability announcement." *The EPA's Reliability Cover-Up*, Wall St. J. (Nov. 15, 2011), https://perma.cc/HYP9-7R74.

277. *See* EPA, Resource Adequacy and Reliability in the IPM Projections for the MATS Rule (2011), https://perma.cc/A5A7-MXWT; EPA, Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards, ES-1 (2011), https://perma.cc/M2CS-6TTB.

278. *See* U.S. Dep't of Energy, Resource Adequacy Implications of Forthcoming EPA Air Quality Regulation (2011), https://perma.cc/UWE2-CHHQ. The DOE study concludes that "resource adequacy would not be compromised" under the Cross-State Air Pollution Rule or the Mercury and Air Toxics Standards and that "[m]echanisms exist to address reliability concerns or other extenuating circumstances on a plant-specific or more local basis." *Id.* at vii.

279. The 1977 revisions to the CAA added "energy requirements" to the list of things EPA must consider when setting standards for stationary source categories like power plants. Congress also tasked EPA with analyzing the "energy impacts" of state implementation plans for meeting the national air quality standards, and state plans for meeting the additional requirements in newly created "non-attainment zones" where air quality fell short of the national standards. *See, e.g.*, CAA § 111(a), 42 U.S.C. § 7411(a) (2012) and CAA § 112(d)(2), 42 U.S.C. § 7411(d)(2) (requiring the Administrator to consider the "cost of achieving such [emission] reduction" and "energy requirements"); s*ee also* CAA § 202(a)(3)(A), 42 U.S.C. § 7521 (governing standards for mobile sources, which instructs the Administrator to give

undergo a rigorous cost-benefit analysis, overseen by the White House, to ensure they are cost-justified.[280] Because of the potential effect on cost, a rule's impact on electricity system reliability also must be analyzed, monetized, and discussed in detail as part of this larger Regulatory Impact Analysis.[281]

Modeling the reliability implications of proposed environmental rules is part art and part science, with results differing widely depending on the granularity of the model and the assumptions used.[282] And projecting the cost and reliability impacts of air quality rules for an increasingly competitive and diverse utility sector has become ever more complicated.[283] In view of this complexity, one might suspect that agencies might be granted some latitude, or that at least oversight would be "light-handed" for high-priority rules that the President has publicly embraced.[284] But established procedures and conventions ensure that agency regulatory impact analyses, even under these circumstances, do not get a free pass. In the inter-agency review process, agency officials must offer a credible defense of their assumptions and conclusions to a discerning set of White

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appropriate consideration to "cost, energy, and safety factors" when establishing technology-based standards).

280. *See* Exec. Order 12,866, 58 Fed. Reg. 51,735 (1993); *see also* Nicholas Bagley & Richard L. Revesz, *Centralized Oversight of the Regulatory State*, 106 COLUM. L. REV. 1260, 1304–20 (2006) (describing role of OIRA).

281. Any major EPA rule targeting the utility sector is bound to raise concerns about the extent to which its implementation could compromise system reliability (for example, because it is claimed that the rule will force retirements of certain units, or require investments in retrofits that could take units temporarily offline, or because it could reduce reserves, or impair the capacity markets). *See, e.g.*, *Technical Conference on Environmental Regulations and Electric Reliability, Wholesale Electricity Markets, and Energy Infrastructure Before FERC*, at ES-3 (Feb. 19, 2015) (statement of Susan F. Tierney, Analysis Group), https://perma.cc/4SJG-N2SH.

282. These include the final rule's precise requirements (which cannot be known at the proposal stage), the likely cost of compliance options (which itself depends on assumptions about technology cost over time), and projections about future demand for electricity, economic growth, fuel price, and many other things. *See* Burtraw et al., *supra* note 75.

283. As one study put it:

> The basic structure of environmental regulation . . . was developed during a time when the power sector was a vertically integrated, cost-based, regulated monopoly. The cost of pollution control was passed onto consumers, investment decisions for major generation projects had substantial public scrutiny, and decisions relating to retirement of plants were based on cost-of-service considerations. The design of major environmental and pollution control policies never had to take into account how they would interact with competitive markets to create winners and losers, because gains and losses were simply passed on to consumers dollar-for-dollar.

KENNETH COLBURN ET AL., INTEGRATING ENERGY AND ENVIRONMENTAL POLICY, Regulatory Assistance Project Glob. Power Best Practice Series 11–12 (2013), https://perma.cc/J9BF-6W6M.

284. *See* THE PRESIDENT'S CLIMATE ACTION PLAN, *supra* note 68, at 6 (describing "cutting carbon pollution from power plants" as an administration priority).

House economists from the Office of Management and Budget and the Council of Economic Advisors, who are, as a matter of disciplinary training, likely to be skeptical of EPA's assumptions, methodologies and claims.[285] EPA must also run the gauntlet of subject-matter experts from other agencies with "equities" in the matter,[286] who can be prickly about rules that might interfere with or affect their own missions. And quite apart from the need to survive this painstaking inter-agency review process, EPA officials know that their regulatory impact analyses will wind up as part of a larger rulemaking record, which for major air quality rules will in all likelihood be reviewed by the D.C. Circuit Court of Appeals, if not the Supreme Court.[287]

In any event, during the development of the Mercury and Air Toxics Rule, EPA went beyond conducting the requisite analyses to survive inter-agency review to demonstrate its commitment to reliability. For example, EPA consulted regularly with an organization known as the ISO/RTO Council, which represents the regional grid managers, as well as FERC and DOE staff regularly. These consultations made a meaningful difference to the shape of the rule, according to those involved.[288] The best evidence of this impact may be the policy memorandum EPA ultimately issued, indicating that it was prepared to use enforcement discretion to allow units to operate in violation of the new standards temporarily, if necessary to ensure system reliability.[289] Operators could appeal to EPA for extra compliance time if their units were deemed "reli-

285. Bagley & Revesz, *supra* note 280; *see also* Lisa Heinzerling, *Inside EPA: A Former Insider's Reflections on the Relationship Between the Obama EPA and the Obama White House*, 31 PACE ENVTL. L. REV. 325, 348 (2014) (referring to how OIRA "lavishes skeptical attention on EPA's estimates of regulatory costs").

286. Heinzerling, *supra* note 285, at 343 (referring to the many other agencies with a role in regulatory review). The term "equities" just means interests; it is part of the vernacular of the inter-agency process in the experience of the author, who served in the White House in 2009–2010.

287. Freeman & Spence, *supra* note 103, at 42–43; *Litigation Challenges to EPA Clean Air Act Rules Promulgated Under the Obama Administration*, NAT. RES. DEF. COUNCIL, https://perma.cc/PNC3-FXB9 (listing challenges to thirty EPA rules promulgated under the CAA between 2009 and 2014).

288. Telephone Interview with Anonymous EPA and FERC Officials (May 2016).

289. *See, e.g.*, EPA, THE ENVIRONMENTAL PROTECTION AGENCY'S ENFORCEMENT RESPONSE POLICY FOR USE OF CLEAN AIR ACT SECTION 113(A) ADMINISTRATIVE ORDERS IN RELATION TO ELECTRIC RELIABILITY AND THE MERCURY AND AIR TOXICS STANDARD (2011) [hereinafter EPA Policy Memorandum], https://perma.cc/ES25-F5XC (explaining the procedure for owner/operators of regulations units to request permission enabling them to operate temporarily in non-compliance with the Mercury and Air Toxics Standards should it be necessary to meet a documented reliability risk to the bulk-power system). EPA Administrator McCarthy repeatedly said that "we will not in any way force the lights to go out" as a result of the Mercury and Air Toxics Standards rule. *See, e.g.*, Puneet Kollipara, *EPA Won't "Force the Lights to Go Out*," FUEL FIX (Sept. 15, 2011), https://perma.cc/JFA5-BYZL.

ability critical," a determination that would turn heavily on FERC's validation. The policy memo acknowledges the "complexity of the electric system and the local nature of many reliability issues," and says EPA will rely on FERC, along with RTOs, ISOs, the North American Electric Reliability Corporation, and the state public utility commissions, to identify and analyze reliability risks.[290] FERC agreed to evaluate applicant claims to being "reliability critical," and to advise EPA on whether complying with the rule might violate a FERC-approved reliability standard.[291] To operationalize this agreement, FERC issued its own policy statement detailing precisely how it would provide such advice to EPA.[292] Finally, EPA formally established an inter-agency task force of senior staff from EPA, DOE and FERC, which, once the rule was finalized, monitored implementation jointly, convening at least monthly to discuss what was happening on the ground.[293] At every meeting of the inter-agency task force, EPA also included a representative of one of the regional transmission organizations, whose job is to manage reliability day-to-day.[294]

These efforts to carefully analyze reliability impacts, consult and enlist FERC and the grid managers in rule design, build compliance flexibility into the rule, and share responsibility for monitoring reliability, may seem like small concessions in the grand scheme of things. But this level of coordination among the agencies over air pollution rules is unprecedented. And it clearly shows EPA to be serious about addressing the possible unintended consequences of its rules for electric system reliability.

3. The Clean Power Plan

The Clean Power Plan, which set standards to control carbon emissions from the nation's power plants, is perhaps EPA's most ambitious, and certainly one of its most controversial, rulemakings to date. Notwithstanding the near-

290. *See* EPA Policy Memorandum, *supra* note 289, at 2. This extra step was necessary because the toxics provisions of the CAA require performance standards to be set source-by-source, and do not allow for significant compliance flexibility to address reliability (such as through trading and banking allowances among sources). *See* CAA § 112(n), 42 U.S.C. § 7412(n) (2012); Telephone Interview with Joseph Goffman, Former Senior Counsel to the Assistant Administrator, and Associate Assistant Administrator for Climate, EPA Office of Air and Radiation (Apr. 2017).

291. *See* Telephone Interview with Joseph Goffman, *supra* note 290.

292. FERC, Policy Statement on the Commission's Role Regarding the Environmental Protection Agency's Mercury and Air Toxics Standards, 139 FERC ¶ 61,131 (May 17, 2012).

293. Several EPA officials stated, off the record, that they had sought unprecedented input from FERC, DOE, and independent experts because they recognized that they did not possess all of the information and expertise sufficient to fully predict electric system impacts. Telephone Interviews with Anonymous EPA Officials (May 2016, Apr. 2017).

294. Telephone Interview with Joseph Goffman, *supra* note 290.

epic litigation it spawned,[295] the rule's development provides another illustration of how EPA has increasingly internalized traditional energy sector concerns about cost and reliability.

In the Obama Administration, after two Supreme Court decisions affirming that greenhouse gases are "pollutants" subject to EPA's jurisdiction under the CAA,[296] EPA made a finding that greenhouse gases pose a danger to health and welfare,[297] and embarked on a plan to control them.[298] First, the agency adopted a policy for the transportation sector, setting carbon emission standards for light-duty vehicles (passenger cars and trucks) and heavy-duty trucks, under the mobile source provisions of the Act.[299] Second, EPA sought to regulate greenhouse gas emissions from stationary sources, beginning with the nation's power plants, which produces the largest share of greenhouse gas emissions in the U.S. economy.[300] In 2012, EPA proposed for the first time to set standards for carbon dioxide from both new and existing power plants, an initiative known as the Clean Power Plan.[301] The standards were finalized in 2015.[302]

To fully understand the intensity of industry and state opposition to the Clean Power Plan requires some additional explanation. EPA's rule for *new* power plants, which is authorized by section 111(b) of the CAA, was set based on the expectation that carbon capture and sequestration technology would be

295. For an overview of the complex litigation, see Linda Tsang & Alexandra M. Wyatt, Cong. Research Serv., R44480, Clean Power Plan: Legal Background and Pending Litigation in *West Virginia v. EPA* 1 (2017), https://perma.cc/CH54-4JSP (referring to the Clean Power Plan as "one of the more singularly controversial environmental regulations ever promulgated").

296. *See* Am. Elec. Power Co. v. Connecticut, 564 U.S. 410 (2011) (holding that federal public nuisance suits are precluded by the CAA, under which EPA has been delegated the authority to regulate greenhouse gases); Massachusetts v. EPA, 549 U.S. 497 (2007).

297. *See* Greenhouse Gas Endangerment Finding, *supra* note 252.

298. EPA's recent greenhouse gas rules followed from litigation that began at the close of the Clinton Administration and proceeded through George W. Bush's tenure. Invalidating EPA's view at the time, the Supreme Court in 2007 held that greenhouse gases are "pollutants" under the CAA, and rejected as unlawful EPA's reasons for refusing to determine whether they pose an endangerment to health and welfare. *See Massachusetts*, 549 U.S. at 534–35 (remanding to EPA its denial of a petition to set emission standards for mobile sources under CAA § 202).

299. EPA and the National Highway Traffic Safety Administration jointly issued rules setting standards for light duty vehicles. *See* 42 U.S.C. § 7521 (2012) (requiring EPA to set standards for emissions from new vehicles for pollutants that endanger health or welfare); Light-Duty Vehicle Standards, *supra* note 60; Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 76 Fed. Reg. 57,106 (Sept. 15, 2011) (codified in scattered sections of 40 C.F.R.).

300. *See Sources of Greenhouse Gas Emissions*, EPA (2017), https://perma.cc/Q3JQ-UMVW.

301. *See Factsheet: Overview of the Clean Power Plan*, EPA (2015), https://perma.cc/H6N8-JZJQ.

302. *See* Carbon Standards for New Sources, *supra* note 224; Carbon Standards for Existing Sources, *supra* note 155.

viable economically at scale in the foreseeable future, enabling new coal plants to reach stringent levels of control.[303] This rule is most significant, however, because under the terms of the statute it triggers regulation of *existing* power plants, which are a far more important regulatory target for purposes of reducing emissions from the power sector. These aging "clunkers" are on average forty-two years old,[304] and produce forty percent of the nation's greenhouse gas emissions.[305] Recall that the CAA grandfathers these older sources for emissions of the conventional ground-level pollutants regulated under the national ambient air quality program, which means these sources, while high-polluting, have been exempt from the stringent standards that apply to new sources.[306] They have been free, as a result, to operate without substantial controls, unless the states independently require them to cut emissions, or unless the sources themselves make substantial enough equipment upgrades to trigger being treated as if they are new.[307] However, section 111 of the CAA contains a gap-filling provision, which authorizes EPA to regulate pollutants that are not covered by the Act's other programs, and which would otherwise escape regulation. For such pollutants, setting 111(b) standards for new sources triggers a requirement to set Section 111(d) standards for existing sources as well.[308]

Section 111 defines performance standards as the level of emission control achievable by applying the "best system of emission reduction" that the Administrator determines has been "adequately demonstrated" taking into account en-

303. The rule would reinforce the trend toward natural gas substitution for coal in the electricity sector by making it difficult to build new coal-fired power plants in the U.S. without installing carbon capture technology. *See* Carbon Standards for New Sources, *supra* note 224.

304. *See* Steven Mufson, *Vintage U.S. Coal-Fired Power Plants Now an 'Aging Fleet of Clunkers,'* WASH. POST (June 13, 2014), https://perma.cc/BM59-98AD.

305. *See* Freeman & Spence, *supra* note 103, at 32–33, n.132.

306. *See* 42 U.S.C. § 7411(b)(1)(B) (2012) (requiring EPA to set standards for new sources); 42 U.S.C. § 7411(a)(2) (defining "new" source).

307. *See* 40 C.F.R. § 52.21 (2016) (excluding "routine maintenance" from the definition of modification); *Fact Sheet: Final Rule to Improve the Routine Maintenance, Repair and Replacement Exclusion Under EPA's New Source Review Program*, EPA (2003) https://perma.cc/8M6Y-Y7DH.

308. *See* CAA § 111(d), 42 U.S.C. § 7411(d). Specifically, section 111(d) requires the states to set performance standards for existing sources of a pollutant when: (1) standards have been set for that pollutant from new sources; (2) the pollutant is not already subject to regulation under the national ambient air quality program; and (3) when it is emitted from a source not already regulated under the air toxics program. The first criterion is satisfied by EPA's proposal to regulate new power plants under section 111(b), as noted above. The second is satisfied because EPA has never set a national ambient air quality standard for carbon dioxide or other greenhouse gases. And EPA considers the third requirement to be satisfied because carbon dioxide emissions are not regulated as a toxic pollutant under the Act's hazardous air pollution program. *See* Carbon Standards for Existing Sources, *supra* note 155, at 64,710 (explaining why EPA possesses requisite authority notwithstanding that power plants are also regulated under section 112 for *other* pollutants).

ergy requirements among other considerations.[309] For existing sources, the Act requires the states to file implementation plans establishing the standards of performance.[310] However, EPA plays a crucial role in the process by establishing guidelines for the states—under the terms of 111(a), EPA alone determines what constitutes the "best system of emission reduction."[311]

In the Clean Power Plan, EPA adopted a broad interpretation of "best system," which includes substituting lower-polluting generation for higher-polluting generation. This interpretation is novel because, historically, pollution standards have been expressed as a rate-based limit on pollution—X pounds of pollution per Y megawatt hours of electricity, for example. And typically, regulated sources would comply by adopting the technology EPA had used to set the standard. In other words, in the past, performance standards tended to envision engineering solutions that sources could install, in the form of equipment add-ons or upgrades, efficiency improvements, or other operational adjustments, all of which could be made by the source at the source.[312]

Greenhouse gas emissions are unique, however, and so is the electricity sector. While there are a variety of steps owners can take to marginally improve the efficiency of their electric generating units,[313] as of 2015, when EPA finalized the Clean Power Plan, there was no widely available "end-of stack" technology to control greenhouse gas emissions—no carbon dioxide scrubbers, as it were. Much deeper emissions reductions are available, however, if one thinks more broadly about the regional electric grids. Because of the interconnected nature of the electricity system—with many different sources of supply feeding power to a regional transmission grid—it is possible to reduce carbon dioxide emissions at high-polluting sources by reducing their utilization, and drawing more supply from other, less carbon-intensive sources.[314] Accordingly, in EPA's

309. *See* CAA § 111(a), 42 U.S.C. § 7411(a)(1) (defining "standard of performance").

310. *See* CAA § 111(d), 42 U.S.C. § 7411(d) (referring to EPA-established "regulations").

311. *See* CAA § 111(a), 42 U.S.C. § 7411(a) (defining "standard of performance" as the "best system of emission reduction . . . *the Administrator determines* has been adequately demonstrated" (emphasis added)).

312. In some instances, of course, Congress has departed from this approach, as when it adopted the cap-and-trade system in Title IV, which authorized regulated entities to buy sufficient allowances to cover their emissions, rather than make equipment upgrades on site. *See* 42 U.S.C. § 7651.

313. *See* EPA, Regulatory Impact Analysis for the Proposed Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units 4-13 to 4-15 (2012), https://perma.cc/TU7B-A9RB ("There are many small actions that can be undertaken which, cumulatively, can result in notable efficiency improvements. Such improvements include optimizing air pre-heaters, installing heat recovery systems, reducing steam leaks and refurbishing the steam turbine.").

314. This is not the case with pollutants that can cause significant harm if they are locally concentrated—with such pollutants it matters where the reductions occur. At the same time, environmental justice advocates argue that the co-pollutants that increase or decrease along with carbon dioxide do have local effects, so EPA's approach to the rule could wind up intensify-

view, there is no logical reason why performance standards in section 111 must be limited to engineering solutions that can be installed to units on-site, if off-site measures might reduce emissions from such units cost-effectively.[315]

In line with this thinking, EPA's final rule for existing coal- and gas-fired electric generating units conceived of power plants as interconnected, essentially treating them as one giant machine. It asked what sources could achieve by taking advantage of emission reduction opportunities available to them on a regionally interconnected grid. EPA's final rule sets a single national emission rate for all coal- and gas-fired units, respectively, based on three considerations: (1) EPA's calculation of the potential emission reductions that could be achieved by improving the efficiency of the units themselves; (2) additional emission reductions that could be achieved by substituting natural-gas fired electricity for coal-fired electricity; and (3) reductions achievable by displacing both coal- and gas-fired units with more renewable energy.[316] The agency's methodology is controversial, however, for obvious reasons. Broadening the consideration of emission reduction opportunities to what might be available on a regional grid will increase the stringency of the standards. A narrower approach—one that defines "best system" only in terms of technology upgrades or efficiency improvements that can be made locally at the source, would require only limited investments and result in more modest emission reductions.[317]

In 2015, numerous petitions challenging the Clean Power Plan were consolidated in the D.C. Circuit Court of Appeals, in *West Virginia* v. *EPA*, in which a coalition of twenty-eight states and a variety of coal- and utility-industry stakeholders challenged the legality of the rule.[318] In 2016, the Supreme

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ing pollution in low-income neighborhoods. *See* Letter from Nat'l Envtl. Justice Advisory Council to Gina McCarthy, Adm'r, EPA (May 21, 2015), https://perma.cc/LS7Z-W4NG.

315. *See* Carbon Standards for Existing Sources, *supra* note 155, at Part V (describing EPA's approach to Best System of Emission Reduction and its "building block" methodology).

316. *See id*. EPA projected that the rule would result in a thirty-two percent reduction in electricity sector carbon dioxide emissions compared to 2005 levels by 2030. EPA, Regulatory Impact Analysis for the Clean Power Plan Final Rule 3-1 to 3-48, 3-20 Table 3-6 (2015), https://perma.cc/V887-55ZN [hereinafter RIA for Existing Sources].

317. *See* Carbon Standards for Existing Sources, *supra* note 155, at 64,745.

318. *See* Opening Brief of Petitioners on Core Legal Issues, West Virginia v. EPA, No. 15-1363 (D.C. Cir. Apr. 22, 2016); *see also* Tsang & Wyatt, *supra* note 295, at 10 (listing parties challenging the rule). Petitioner's effort to obtain judicial review before the rule was final was rebuffed in *In re Murray Energy Corp.*, 788 F. 3d 330 (D.C. Cir. 2015). Petitioners make two primary arguments: first, that EPA lacks the authority to regulate power plant emissions of greenhouse gases under this program of the CAA because power plants are already regulated under the air toxics program; and second, that EPA's definition of "best system" is unlawful. For a summary of petitioner arguments and EPA responses, see Jody Freeman & Richard Lazarus, *Is the President's Climate Plan Constitutional?*, Harv. L. Today (Mar. 18, 2015), https://perma.cc/QVB5-4DBV?type=image; Laurence H. Tribe, *Why EPA's Climate Plan Is Unconstitutional*, Harv. L. Today (Mar. 20, 2015), https://perma.cc/MY5G-XTKR?type=image; Jody Freeman & Richard Lazarus, *A Rebuttal to Tribe's Reply*, Harv. L.

Court took the extraordinary step of staying the rule, after which the D.C. Circuit opted to hear the case en banc.[319] Following the 2016 presidential election, Donald Trump issued an executive order directing EPA to reconsider the rule, and the Department of Justice promptly asked the D.C. Circuit, which had not yet issued an opinion, to suspend the litigation.[320]

Critics assailed the Clean Power Plan just as they had attacked the Cross-State Pollution Rule and Mercury and Air Toxics Rule,[321] but on an even grander scale because of its scope: were this rule to survive legal review, power plants would be shuttered,[322] blackouts would ensue,[323] electricity costs would rise dramatically,[324] and the coal industry would be destroyed.[325] One commentator likened the Clean Power Plan to setting the Constitution afire.[326] And some critics charged that EPA had sought to become a "central energy planning authority," encroaching unlawfully upon the jurisdiction of FERC and the state public utility commissions.[327] In this view, EPA had veered badly "out of

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TODAY (Mar. 21, 2015), https://perma.cc/DD56-22EJ?type=image; Laurence H. Tribe, *A Rebuttal from Tribe*, HARV. L. TODAY (Mar. 29, 2015), https://perma.cc/J85F-6CXM?type=image.

319. *See* West Virginia v. EPA, 136 S. Ct. 1000 (2016) (staying the rule until the Court either denies certiorari or rules on its legality); Lyle Denniston, *Carbon Pollution Controls Put on Hold*, SCOTUSBLOG (Feb. 9, 2016), https://perma.cc/MM2P-E5NE.

320. *See* Notice of Executive Order, EPA Review of Clean Power Plan and Forthcoming Rulemaking, and Motion to Hold Case in Abeyance, West Virginia v. EPA, No. 15-1363 (D.C. Cir. Mar. 28, 2017).

321. *See, e.g.*, NICOLAS LORIS, HERITAGE FOUND., THE MANY PROBLEMS OF EPA'S CLEAN POWER PLAN AND CLIMATE REGULATIONS: A PRIMER (2015), https://perma.cc/ESX3-NF4U.

322. *See, e.g.*, Harry Weber, *Clean Power Plan to Shutter 4,000 MW of Texas Coal Output*, BLOOMBERG (Oct. 16, 2015), https://perma.cc/2374-K7MP.

323. *See, e.g.*, ELEC. RELIABILITY COORDINATING COUNCIL, THE EPA'S CLEAN POWER PLAN: A CLEAR THREAT TO ELECTRIC RELIABILITY (2015), https://perma.cc/QM3C-BEUW.

324. *See, e.g.*, *EPA's "Clean Power Plan" Hikes Prices in All 47 States That It Regulates*, INST. FOR ENERGY RESEARCH (Nov. 23, 2015), https://perma.cc/62E7-QK47.

325. *See, e.g.*, SETH SCHWARTZ, ENERGY VENTURES ANALYSIS, INC., EVALUATION OF THE IMMEDIATE IMPACT OF THE CLEAN POWER PLAN RULE ON THE COAL INDUSTRY 1 (2015), https://perma.cc/XDQ9-FX8A (claiming that the Clean Power Plan will cause a "massive reduction" in the consumption of coal).

326. *See, e.g.*, *Hearing on EPA's Proposed 111(d) Rule for Existing Power Plants: Legal and Cost Issues before the H. Comm. on Energy and Commerce*, at ii (Mar. 17, 2015) (Testimony of Laurence H. Tribe), https://perma.cc/YAZ8-CGRV (likening the Clean Power Plan to "[b]urning the Constitution"); Laurence H. Tribe, *The Clean Power Plan Is Unconstitutional*, WALL ST. J. (Dec. 22, 2014), https://perma.cc/ZL9R-6FAF (arguing that the rule commandeers the states and represents executive overreach on the scale of Truman's seizure of the steel mills during World War II).

327. Devin Henry, *Coal Country's Top Lawyer Takes on Obama's EPA*, THE HILL (Apr. 25, 2016) (quoting West Virginia Attorney General Patrick Morrissey referring to EPA as a "central energy planning authority"); *see also* William S. Scherman, Charles H. Haake & Jason J.

its lane" of pollution control into energy regulation where it does not belong. But of course this distinction entirely misses the extent to which pollution regulation necessarily affects the energy sector. In fact, EPA's approach to the Clean Power Plan exhibits real sensitivity to the cost and reliability concerns that normally occupy FERC.

First, EPA thoroughly analyzed both the cost and reliability impacts of the new rules.[328] The agency used the well-established "IPM" model to project impacts on elements of the electricity system that affect reliability, including regional resource adequacy, operating reserve margins, grid congestion, and flow problems.[329] EPA's analysis found that the rule governing new sources would have negligible effects because, even without it, no new coal-fired generation was expected to come on-line by 2020.[330] The rule for existing sources, by contrast, *was* projected to affect the generation mix, but to a limited extent and in line with historical trends.[331] For example, EPA's modeling estimated that the rule would result in a loss of coal-fired generation by 2025 between twelve and fifteen percent, with other types of generation, such as natural gas and renewables, increasing at the same time as they were projected to do even without the rule (although renewables would increase at a somewhat greater rate than in the rule's absence).[332] The agency's technical support analysis further showed that the effect on reliability of these shifts in the generation mix would be both "modest and manageable."[333] In arriving at this result, EPA's model took into account that grid managers and regulators possess numerous tools for addressing any loss of capacity, including by substituting alternative capacity and shifting reserves, among other things.[334] In addition, EPA found that energy efficiency and demand-side management, both of which were expected to

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Fleischer, *EPA's Dangerous Desire to Become America's Energy Regulator*, FORBES (May 11, 2015), https://perma.cc/G7L6-BX7U.

328. *See* EPA, REGULATORY IMPACT ANALYSIS FOR THE FINAL STANDARDS OF PERFORMANCE FOR GREENHOUSE GAS EMISSIONS FROM NEW, MODIFIED, AND RECONSTRUCTED STATIONARY SOURCES: ELECTRIC UTILITY GENERATING UNITS 4-1 to 4-37 (2015), https://perma.cc/EP36-LM9J [hereinafter RIA FOR NEW, MODIFIED, AND RECONSTRUCTED SOURCES]; RIA FOR EXISTING SOURCES, *supra* note 316.

329. *See* RIA FOR NEW, MODIFIED, AND RECONSTRUCTED SOURCES, *supra* note 328, at 1-5; RIA FOR EXISTING SOURCES, *supra* note 316, at 3-1.

330. *See* RIA FOR NEW, MODIFIED, AND RECONSTRUCTED SOURCES, *supra* note 328, at 4-1, 4-2.

331. *See* RIA FOR EXISTING SOURCES, *supra* note 316, at 3-26.

332. *Id.* at 3-28.

333. EPA, TECHNICAL SUPPORT DOCUMENT: RESOURCE ADEQUACY AND RELIABILITY ANALYSIS 1 (Aug. 2016).

334. *Id.* at 4 (noting that "to maintain resource adequacy in each region where existing resources retire, the model relies on any excess reserve that are available from continuing to operate existing capacity, additions of new capacity, reduced total resource requirements from increases in energy efficiency, and the ability to shift transmission among regions"); *see also Technical Conference on Environmental Regulations and Electric Reliability, Wholesale Electric-*

increase as a result of the rule, could assist system managers by lowering demand.[335] A number of independent analyses validated the agency's results.[336] In addition, EPA's claims about the extent to which grid managers could accommodate reliability issues turned out to be vindicated by the successful implementation of the Mercury and Air Toxics Rule.[337]

In addition to modeling reliability impacts, EPA continued to consult with the inter-agency task force from the Mercury rule—informally asking members to advise on the Clean Power Plan. Indeed, before submitting the proposed rule to the White House for inter-agency review, EPA invited some task force members to a detailed briefing about key elements of the rule, including the agency's approach to "best system," details about the building blocks, and the agency's plans for compliance flexibility. EPA asked these FERC staff to "B team" the proposal—meaning analyze it for potential trouble spots, and suggest possible fixes—which they reportedly did.[338] It is extremely implausible that these staff members would provide their feedback to EPA without consulting their bosses at the Commission, which means that FERC Commissioners likely were aware of the structure of the Clean Power Plan well before it emerged as a final proposal. Most importantly, FERC's input was meaningful and produced concrete changes. For example, EPA adopted a "safety valve" concept in the final rule that would allow sources to exceed the applicable emis-

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ity Markets, and Energy Infrastructure Before FERC 3 (Feb. 11, 2015) (statement of John Moore, The Sustainable FERC Project), https://perma.cc/GXJ9-RVNB.

335. *See* RIA FOR EXISTING SOURCES, *supra* note 316, at 3-25.

336. A study by the Analysis Group found that the rule's lead-time and flexible approach to compliance would obviate any reliability impacts. *See* Susan F. Tierney, ANALYSIS GRP., GREENHOUSE GAS EMISSION REDUCTIONS FROM EXISTING POWER PLANTS: OPTIONS TO ENSURE ELECTRIC SYSTEM RELIABILITY 46 (May 2014), https://perma.cc/XX3S-6H28; *see also Technical Conference on Environmental Regulations and Electric Reliability, Wholesale Electricity Markets, and Energy Infrastructure Before FERC*, *supra* note 281 (statement of Susan F. Tierney, Analysis Group) (discussing tools that grid managers may use to ensure reliability while implementing the Clean Power Plan). A study by M.J. Bradley & Associates concluded that the utility industry was well-positioned to address the reliability impacts of these rules. *See* MICHAEL J. BRADLEY ET AL., ENSURING A CLEAN, MODERN ELECTRIC GENERATING FLEET WHILE MAINTAINING ELECTRIC SYSTEM RELIABILITY 3–5 (Nov. 2011), https://perma.cc/EV28-949D.

337. *See* SUSAN TIERNEY ET AL., ANALYSIS GRP., ELECTRIC SYSTEM RELIABILITY AND EPA'S CLEAN POWER PLAN: THE CASE OF MISO 16 (2015), https://perma.cc/TW5F-LVQR (analyzing how one regional transmission organization, MISO, had managed compliance with the Mercury and Air Toxics Rule, and noting that regional grid managers consistently have demonstrated the capacity to ensure reliability in the face of industry changes, environmental policies, and other market-driven factors that affect the balance of demand and supply).

338. Telephone Interview with Joseph Goffman, *supra* note 290.

sion limits temporarily if doing so was necessary to deal with unforeseen exigencies. This idea had been proposed by FERC.[339]

EPA also came to recognize, over the course of this process, that its appreciation of potential reliability challenges was incomplete.[340] While EPA was certainly able to model the proposed rule's impacts on resource adequacy, that was only a first step. The agency could not fully assess the more granular reliability impacts until a later stage, when the states and utilities had developed their compliance plans and had begun to implement them. EPA acknowledged, moreover, that its own staff was not in a position to monitor implementation, and would need to rely on the expertise of grid operators. In response to this problem, and building on its positive experience with the Mercury and Air Toxics Rule, EPA struck a written agreement with DOE and FERC to monitor electric system reliability jointly over the course of the rule's implementation.[341]

Finally, even though the final Clean Power Plan was unquestionably creative and ambitious, EPA had also showed signs of legal restraint. The agency made three key changes between the proposed and final rule. First, the final rule placed the regulatory burden directly on sources, rather than states, which corresponds more closely to the text of section 111(d), and aligns EPA's approach squarely with past performance standards.[342] Second, whereas the proposal had used energy efficiency as a fourth building block, projecting that states could cut energy demand from consumers 1.5 percent per year after 2020, the final rule dropped it.[343] This building block exposed EPA to criticism that there was no logical stopping point to its view of "best system" (and thus no limit to stringency) because the agency had made it fair game to predict energy consumption patterns. To neutralize this vulnerability, the agency eliminated energy efficiency as a consideration for stringency, and assumed no reduction in consumer demand.[344] In doing so, EPA clearly gave up additional emission reduction opportunities, but in exchange gained greater legal defensibility. Finally, the agency extended the initial compliance date two years, to 2022,[345]

339. *See* Letter from Norman Bay, Chairman, FERC, et al., to Janet G. McCabe, Acting Assistant Adm'r 2 (May 15, 2015), https://perma.cc/FEK8-9HZ6.

340. Telephone Interview with Anonymous EPA Officials (May 2016).

341. *See* EPA, EPA-DOE-FERC Coordination on Implementation of the Clean Power Plan 1 (Aug. 3, 2015), https://perma.cc/X8FE-ZEA2 (referring to inter-agency cooperation to monitor reliability for the Mercury and Air Toxics rule).

342. *See* Carbon Standards for Existing Sources, *supra* note 155, at 64,665–66.

343. *See* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830, 34,851 (June 18, 2014) [hereinafter Clean Power Plan Proposed Rule].

344. *See* Carbon Standards for Existing Sources, *supra* note 155, at 64,717–18.

345. *Id.* at 64,667.

responding to concerns expressed by FERC and other stakeholders about the lead-time for necessary compliance.[346]

For its part, while FERC did not hold hearings or initiate any formal process with respect to the Clean Power Plan, it did host a series of technical conferences on the rule's implications, at which reliability and other impacts were vocally debated.[347] The conferences were organized with input from EPA, and attended by senior EPA officials, who gave testimony and took feedback.[348] These public events not only sent a signal to stakeholders that the agencies were working together, but it also helped to strengthen relationships and build trust among agency staff.[349]

One must be careful not to overstate the level of coordination between the agencies. FERC staff did not, by any means, share responsibility for the Clean Power Plan. Testimony from FERC and EPA officials is somewhat unclear about precisely when the FERC commissioners were permitted to see the full proposal.[350] Indeed, at least one FERC Commissioner was particularly ag-

346. Email from Joseph Goffman, Assoc. Assistant Adm'r for Climate & Senior Counsel to the Assistant Adm'r for Air & Radiation, EPA, to the author (Apr. 11, 2017) (on file with author).

347. *See, e.g.*, *FERC Technical Conference Addresses Reliability Issues and EPA Regulations*, Troutman Sanders LLP, https://perma.cc/XT3Y-279H (discussing a FERC technical conference in 2011 that devoted a day to this topic, and at which various FERC commissioners expressed divergent views about whether FERC should be doing more to evaluate and mitigate the reliability risks of EPA rules). FERC oversees the development of mandatory and enforceable reliability standards for the bulk-power system. *See* 16 U.S.C. § 824o(d)(1)–(2) (2012) (requiring that a Commission-certified Electric Reliability Organization set reliability standards, which must be approved by FERC). The North American Reliability Organization is the designated Electric Reliability Organization. *See generally* Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards, Order No. 672, FERC Stats. & Regs. 3 ¶1,204, *order on reh'g,* Order No. 672-A, FERC Stats & Regs. ¶ 31,212 (2006).

348. *See* FERC, Supplemental Notice of Technical Conferences No. AD15-4-000 (Feb. 13, 2015), https://perma.cc/F7P7-EPHP (describing FERC technical conference on the Clean Power Plan featuring remarks by Joseph Goffman, EPA); *Technical Conference on EPA's Clean Power Plan Before FERC* (Feb. 19, 2015), https://perma.cc/65A6-GWJ4 (statement of Janet McCabe, Acting Assistant Adm'r, Office of Air & Radiation).

349. *See* Douglas Smith & Avi Zevin, *FERC's Clean Power Plan Technical Conferences: Investigating Reliability, Market Structure, and Infrastructure Impacts of EPA's 111(d) Proposal*, Van Ness Feldman LLP (Feb. 13, 2015), https://perma.cc/VS3Q-HF7E.

350. *See* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Generating Units, 79 Fed. Reg. 34,830, 34,899 (June 18, 2014) ("EPA has met on several occasions with staff and managers from the Department of Energy and the Federal Energy Regulatory Commission to discuss our approach to the rule and its potential impact on the power system."). At an Energy & Power Subcommittee hearing on June 19, 2014, EPA Acting Air Administrator Janet McCabe testified that electric reliability "was paramount in our minds as we worked through the proposal" and that EPA "consulted with FERC and DOE and other agencies that have this as a chief responsibility." EPA's *Proposed Carbon Dioxide Regulations for Power Plants Hearing on "Carbon Pollution Standards for Modified and*

grieved about EPA's failure to properly consult FERC on reliability and other matters.[351] And inter-agency cooperation over the Clean Power Plan was motivated at least in part by the agencies' mutual need to play defense: while these rules were being developed, a host of critics from the utility industry, the states and Congress assailed *both* agencies—EPA for being too cavalier about cost and reliability, and FERC for not playing a more active role scrutinizing EPA's

Reconstructed Stationary Sources: Electric Generating Units" Before the Subcomm. on Energy and Power of the H. Comm. on Energy and Commerce, 113th Cong. 81 (2014) (Testimony of Janet McCabe, Acting Assistant Adm'r for Air & Radiation, EPA). She stated that, "I or my staff have consulted with staff at FERC. They are part of the interagency review process that we always go through, and so they have given us their input on electric reliability." *Id.* at 95 (The Assistant Administrator was likely referring to the formal inter-agency review process that begins once a proposed rule is submitted to the White House Office of Information and Regulatory Affairs in the Office of Management and Budget pursuant to Executive Order 12,866.); *see also FERC Perspective: Questions Concerning EPA's Proposed Clean Power Plan and Other Grid Reliability Challenges: Hearing on "Carbon Pollution Standards for Modified and Reconstructed Stationary Sources: Electric Generating Units" Before the Subcomm. on Energy and Power of the H. Comm. on Energy and Commerce*, 113th Cong. 4 (2014) (statement of Cheryl A. LaFleur, Acting Chairman, FERC) (responding to questions about FERC's input into the proposal by saying that FERC staff were given oral summaries of the draft proposal at various stages and provided oral input, but that EPA did not request written advice or analysis regarding the potential impacts of the proposal on grid reliability, and stating that, "[o]nce the Clean Power Plan entered the Office of Management and Budget (OMB) inter-agency review process, FERC provided input to EPA primarily from a reliability perspective.").

351. *See* John Siciliano, *FERC Urged to Ease Climate ESPS Implementation, Reliability Fears*, INSIDEEPA.COM (June 18, 2014) (quoting Commissioner Moeller saying that he had "zero chance" to review the rule prior to it being proposed; expressing concern that the rule would require "environmental dispatch" instead of dispatch based on economics; worrying that EPA "should be expected to really understand the electric system"; and saying that FERC "needs to "improve" its relationship with EPA); *Hearing on FERC Perspective: Questions Concerning EPA's Proposed Clean Power Plan and other Grid Reliability Challenges: Hearing on "Carbon Pollution Standards for Modified and Reconstituted Stationary Sources: Electric Generating Units" Before the Subcomm. on Energy and Power of the H. Comm. on Energy and Commerce* (2014) (statement of Philip D. Moeller, FERC Comm'r). Moeller's account flies in the face of the evidence of regular consultation, and misleadingly portrays FERC as more eager to participate in reliability assurance than the agency actually was. For example, for all of the concern about reliability, FERC itself never sought to do reliability modeling. Indeed, when pressed by members of Congress about whether FERC had attempted to model EPA's projections, several FERC Commissioners demurred, explaining that the independent grid managers and operators, who possess the requisite data, expertise, and capacity, were in the best position to do such monitoring, not FERC. *See, e.g.*, Responses of Acting Chairman Cheryl A. LaFleur to Committee on Energy & Commerce Subcommittee on Energy & Power, Preliminary Questions for the Federal Energy Regulatory Commission (July 29, 2014) (responding to questions about the nature and extent of EPA and FERC consultation over the Clean Power Plan).

claims.[352] It was thus in the interest of both agencies to take steps to work together to quell the uproar.

The fact remains, however, that the level of attention EPA paid to the traditional concerns of energy regulators is considerable, and the agency's effort to consult FERC was striking, especially given the significant impediments to inter-agency cooperation the agencies had to overcome. Such obstacles are considerable even when sister agencies in the executive branch seek to work together, but they are greater still when one agency is situated within the executive branch and the other is independent, as was the case here. Independent regulatory commissions such as FERC, consisting of appointees from both parties, do not speak with one voice, and must be careful not to compromise their claim to independence by becoming instruments of the White House.[353] FERC commissioners might be naturally reticent too, about becoming too closely entangled in the regulatory decisions of other agencies, decisions FERC cannot control, and for which the Commissioners do not want to be blamed.[354] Yet even in the face of such disincentives, EPA did find ways to apprise FERC staff of its plans, FERC officials did express their views, and together the two agencies did devise some creative solutions—both procedural and substantive—to difficult problems.[355]

C. Inching Toward Accommodation

Each of the three rules summarized above met with fierce opposition from a variety of electricity industry stakeholders, suggesting that the gulf between energy regulation and environmental regulation is as large as ever. But that characterization is at best misleading, and greatly oversimplifies a more complicated dynamic. Like FERC in its own domain, EPA has felt compelled to act in response to exogenous developments—technological innovation, market dynamics, regulatory trends, shifting political preferences—which the agency alone does not control. Indeed, EPA's mission of pollution regulation has been influenced by the same trends that have changed the regulatory landscape so dramatically for FERC, including the shift away from coal to cheaper natural gas, made possible by hydraulic fracturing and horizontal drilling;[356] technological innovation which has enabled grid regionalization; growth of intermittent

352. *See, e.g.*, KATHLEEN HARTNETT WHITE, TEX. PUB. POLICY FOUND., EPA'S APPROACHING REGULATORY AVALANCHE: "A REGULATORY SPREE UNPRECEDENTED IN U.S. HISTORY" 3, 8 (Feb. 2012), https://perma.cc/NP9T-CRLF (summarizing effects of EPA air quality rules, and asking, among other things, where FERC is).

353. Telephone Interview with Anonymous FERC Official (June 2, 2016).

354. *Id.*

355. *See supra* notes 341–45 and accompanying text.

356. *See Natural Gas Expected to Surpass Coal in Mix of Fuel Used for U.S. Power Generation in 2016*, U.S. ENERGY INFO. ADMIN. (Mar. 16, 2016), https://perma.cc/MNR9-JXNJ.

resources such as wind and solar energy;[357] and the development of energy efficiency and demand-side strategies.[358]

For example, consider each agency's response to the technological advances that allowed regional grids to operate across larger geographic areas. For FERC, this shift created the impetus for encouraging more effective and efficient regional grid management through the creation of ISOs and RTOs, to which monopolist transmission-owners would surrender control of their lines, lowering costs for consumers and bolstering system reliability. For EPA, however, this development raised the prospect that air pollution problems emanating from the utility sector, which are by their nature regional if not global, might be managed effectively on a regional basis, across an interconnected grid.

Likewise, greater fuel diversity from the growth of wind and solar power,[359] and the rise of demand-side strategies like energy efficiency and demand response, have impacted both agencies. Whereas FERC, from its perch as an economic regulator, has been prompted by these developments to take steps toward leveling the playing field for these resources, enabling them to compete more effectively in wholesale markets, EPA has reacted from the perspective of a pollution control agency, embracing these alternatives as enabling greater substitution of relatively low-polluting fuels for higher-polluting ones.

Indeed, the Clean Power Plan example shows how developments in the electricity sector prompted FERC and EPA policy in a compatible direction—which one might think of as a step toward convergence. The rule for existing power plants explicitly envisions that some state implementation plans will enforce the standards by requiring utility fuel switching from coal to natural gas; by adding renewable energy that might displace both coal and natural gas; or by investing in demand side strategies like energy efficiency or demand response, which will reduce energy consumption.[360] Though EPA's interpretation of "best system" was new, it is at least arguably entirely reasonable in light of the unique nature of the pollutant requiring control and the distinct features of the sector being regulated, which, in each of the three national grids, operates as an integrated whole. EPA's approach also accurately reflects the operational reality of the power system. Grid operators already manage that system by drawing on different generation sources—ramping them up or down—to match supply

357. *See id.*

358. *See The History of Energy Efficiency,* ALL. COMM'N ON NAT'L ENERGY EFFICIENCY POLICY 12–14 (Jan. 2013), https://perma.cc/N2F3-MNUH (discussing state energy efficiency programs).

359. On the growth of renewables, see Daniel A. Lyons, *Federalism and the Rise of Renewable Energy: Preserving State and Local Voices in the Green Energy Revolution*, 64 CASE W. RES. L. REV. 1619, 1621 (2014).

360. *See* Carbon Standards for Existing Sources, *supra* note 155, at 64,717 (describing EPA's approach to Best System of Emission Reduction and its "building block" methodology).

with demand.[361] Indeed, EPA's interpretation is only conceivable in a world in which technology innovation has enabled grids to span larger geographic territories; supply has diversified to the point that grid managers have options for substituting different alternatives from both the supply and demand side; and FERC has incentivized both competition among these sources *and* greater regional grid coordination.

Certain shifts have touched EPA uniquely because of the nature of its mission. New science, and growing stakeholder demand for action, has led EPA inexorably to confront problems, like climate change, which Congress did not fully envision when it passed the CAA. Grappling with these new imperatives has required EPA to adapt its implementation of the CAA, in some instances by relying on little-used provisions, or novel interpretations, which requires the agency to take measured legal risks. This process is reminiscent of FERC's efforts to deploy the FPA, a depression-era statute, to manage the vagaries of contemporary electricity markets, and to modernize the nation's electricity grids. Both statutes, on their face, confer broad discretion on their respective implementing agencies—for example, FERC is instructed to ensure rates are "just and reasonable," while EPA is to set performance standards for sources using the "best system" of emission reduction.[362] But these terms, while capacious, do not exist in a vacuum, and courts must interpret them in the context of other statutory text, and in light of precedent. Like FERC, EPA has justified its interpretations as within the bounds of its broad authority to interpret statutory ambiguities, and tried to temper the associated legal risk.[363] The agency has also framed its approach in purposive terms, as necessary to accomplish the task that Congress set for it in the CAA.[364]

Most of the legal attention paid to EPA's rules has focused on whether the agency has gone too far, exceeding the bounds of its lawful discretion. As noted above, a coalition of states and industry parties challenged two of the rules

361. Final Brief of Intervenors Calpine Corporation et al. at 3, West Virginia v. EPA, No. 15-1363 (D.C. Cir. Apr. 22, 2016) (describing generation shifting as "business-as-usual" within the electric power industry.).

362. *See* 42 U.S.C. § 7411(d) (2012); 16 U.S.C. § 824d(a) (2012).

363. *See* Brief for the Federal Petitioners at 44–45, EPA v. EME Homer, 134 S. Ct. 1584 (2014) (Nos. 12-1182, 12-183) (arguing that "significant contribution" is an ambiguous term which may reasonably be interpreted to include cost considerations); Brief for the Federal Respondents at 26–27, Michigan v. EPA, 135 S. Ct. 2699 (2015) (Nos. 14-46, 14-47, 14-49) (arguing that "appropriate" is a broad term reasonably interpreted to exclude cost considerations).

364. *See* Brief for the Federal Respondents at 38–40, Michigan v. EPA, 135 S. Ct. 2699 (2015) (Nos. 14-46, 14-47, 14-48) (discussing how EPA's interpretation was "a sensible way to achieve the CAA's purposes").

immediately upon promulgation,[365] and one even before it was finalized.[366] On first glance, the legal challenges suggest that the interests of energy regulation (keeping costs down; ensuring reliability) and environmental regulation (public health and environmental protection) must inevitably conflict. But a closer look paints a more nuanced picture. The rules have caused a split in the utility industry, and among the states, suggesting that at least some electric industry participants and certain states believe that energy and environmental goals can be accomplished simultaneously at a reasonable cost to consumers.[367] And careful scrutiny of EPA's rulemaking process reveals that the agency has taken some care—to the extent feasible, within its own constraints—to build in flexibility, and respond to the concerns of energy regulators. While these steps do not support a grand claim to "convergence," they do suggest that EPA has inched towards accommodation in its own way.[368]

This process has been motivated not by magnanimity, but by EPA's own interest in accomplishing its core mission. The agency has been forced by legal requirements, political imperatives and practical reality to address traditional

365. *See* EPA v. EME Homer, 134 S. Ct. 1584 (2014) (challenging Cross-State Air Pollution Rule); Michigan v. EPA, 135 S. Ct. 2699 (2015) (challenging the Mercury and Air Toxins rule).

366. In re Murray Energy Corp., 788 F.3d 330 (D.C. Cir. 2015) (challenging the Clean Power Plan at the proposal stage).

367. *See, e.g.*, Brief for State and Municipal Intervenors in Support of Respondents, West Virginia v. EPA, No. 15-1363 (D.C. Cir. Apr. 22, 2016) (brief of eighteen states, five cities, one county, and the District of Columbia in support of EPA); Final Brief for Intervenors Calpine Corp. et al., West Virginia v. EPA, No. 15-1363 (D.C. Cir. Apr. 22, 2016) (brief of nine power companies in support of EPA). The claim that electric system efficiency and reliability can be achieved by energy regulators even while improving the environmental performance of electricity generation has proven itself already, at least to date. The real price of electricity has not increased over the past half century as environmental laws have been implemented. *Cf. Annual Energy Review*, U.S. Energy Info. Admin. (Sept. 27, 2012), https://perma.cc/SY6R-TU64; *State Electricity Profiles*, U.S. Energy Info. Admin. (Jan. 17, 2017), https://perma.cc/PUJ9-GPHU. As a share of consumer expenditures, the amount spent nationally on electricity has been declining. *See* Steve Mitnick, *Why This Low?*, Pub. Utils. Fort. (2017), https://perma.cc/432C-MRSR. And the average electricity customer in the United States experiences less than two hours of outages per year. *See EIA Data Show Average Frequency and Duration of Electric Power Outages*, U.S. Energy Info. Admin. (Sept. 12, 2016), https://perma.cc/BY24-2H4U.

368. At the same time, greater policy congruence at the federal level appears to have prompted more coordination between energy and environmental regulators at the state level. While this effect should not be overstated (there is considerable variety, and differing levels of appetite among the states, for greater alignment between energy and environmental regulation—see *supra* note 11, discussing state legislation requiring closer coordination), for states lacking an independent impetus for coordination, the Clean Power Plan sparked productive conversations among regulators about possible compliance pathways, at least until the Supreme Court stayed the rule. *See* Emily Holden & Rod Kuckro, *Where Will Clean Power Plan Organizers Refocus Their Efforts?*, E&E News (Jan. 30, 2017), https://perma.cc/WN3Y-DNJ2.

energy sector concerns about cost and reliability, and to show that the goals of both environmental and energy regulation can be achieved simultaneously and compatibly. EPA's relative willingness to accommodate traditional electricity sector concerns in the three rulemakings described above has roots in the agency's longstanding regulation of the electricity sector, dating to the original CAA Amendments of 1970. But greater urgency and heightened sensitivity to both reliability and cost no doubt stems from a growing realization that the success of its own mission depends on the cooperation and expertise of energy regulators like FERC and the state public utility commissions, and other key actors in the electricity sphere, such as the independent grid managers, electric reliability organizations, and the regulated utilities themselves.[369]

Conclusion

Scholars and experts in energy and environmental law have, in recent years, expressed optimism about the possibility of integration between the two fields, suggesting that they may be on track for convergence. This Article tempers that enthusiasm and adds needed nuance. It chronicles a growing policy alignment between FERC and EPA, but also shows that trend to be significantly cabined by legal, structural, and cultural constraints. FERC has in fact adopted policies that coincide more closely with the traditional goals of environmental protection, and EPA has sought to accommodate the imperatives of energy regulators. Yet the agencies have not pursued this alignment as a primary goal, achieving it instead as a by-product of responding to market, technology, regulatory and political trends that have affected them both, and spurred them in a compatible direction. Each agency has done so, moreover, by taking calibrated legal risks, creatively adapting their statutes to address new realities on the ground. In doing so, they have remained fiercely wed to their respective historical missions.

If the test of "convergence" is that agencies must develop their regulatory initiatives with complete transparency, take on their sister agency's mission as their own, and do this out of a spirit of generosity, neither FERC nor EPA meets that bar. Instead, as the analysis here has shown, the story of FERC's accommodation of environmental goals is one of gradual steps rather than great leaps, of interest-based compatibility rather than love-struck merger. Likewise, the story of EPA's regulation of the energy sector is one of deepening acculturation

369. EPA knows that FERC will continue to exercise its authority to ensure that wholesale power and transmission rates are "just and reasonable," and determine whether Commission-approved reliability standards have been violated as a result of air pollution regulations. And beyond its role as a regulator of wholesale prices, FERC's infrastructure approval authority—over pipelines and liquefied natural gas terminals—can be exercised in a way that is more or less compatible with EPA's policy aims, and might be necessary to accomplish them. *See* FPA §§ 204, 205 & 215, 16 U.S.C. §§ 824d, 824e & 824o (2012).

ation, characterized by a growing acknowledgement that the traditional concerns of energy law—chiefly cost and reliability—must be adequately addressed, and that the ultimate success of environmental regulation depends significantly on the cooperation of energy regulators.

An important lesson of this Article is that whatever policy alignment has been achieved to date remains fragile, the product of contingent factors that no one can perfectly control. Moreover, given the tenacity of the historical divide between the two fields, it may be relatively easier to stymie this gradual process of habituation through neglect or hostility than to nurture and sustain it over time. A determined President may not be able to command convergence, but he or she may be able, at least temporarily, to thwart it, especially at a time when Congress seems subdued.

The story of tentative and delicate alignment between energy and environmental law presented here is perhaps less exciting, but surely more accurate, than any claim to total or inevitable convergence. Perhaps, in any event, convergence is not the right goal. It may be comforting to think that if one agency changes direction, or one level of government withdraws from energy and environmental regulation because of shifting political winds, other actors with their own separate legal authority and their own sense of mission may continue to make progress in a different direction, in the meanwhile.