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REGULATING RELIABILITY

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ABSTRACT

For too long, courts took a limited view of the dual jurisdiction between state and federal actors under the Federal Power Act. That changed when three new energy Supreme Court cases opened the door to a broader, and more functional interpretation of an eighty-year-old statute. This Article uses this analytical adjustment in energy federalism to explore its implications for authority over reliability of the electric system. The same statutory bright lines sharply divide authority over reliability between state and federal actors, but emerging energy initiatives surrounding distributed rooftop solar, carbon regulation, cybersecurity, and energy storage are placing pressure on federal actors to stretch beyond their jurisdictional sphere to address the impacts of these state-controlled activities on the federally-controlled grid.

This Article uses these jurisdictional crossovers to explore possible theoretical justifications for federal intervention deeper into the reliability of the entire system and possible legal avenues for this federal stretch. Reliability of the electric grid is a critical cornerstone of our economy. It is deserving of a new, more integrated framework that recognizes the interconnection of federal and state reliability efforts and treats reliability as an attribute of the grid that transcends artificial jurisdictional boundaries.

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I. INTRODUCTION

Authority over rates and facilities along the electric grid has long been sharply divided between state and federal actors. Congress provided states with authority over what was thought to be "local" or "intrastate" decisions—siting of power plants, the distribution grid, and retail sales of electricity—while providing the federal government with authority over what is deemed to be "interstate" or "bulk grid" decisions—transmission rates and wholesale sales of electricity.[1] But three recent Supreme Court cases, *ONEOK v. Learjet*,[2] *FERC v. EPSA*[3] and *Hughes v. Talen Energy Marketing,*[4] have caused a stir in the delicate balance of energy federalism. In all three cases, the Court appears to be recognizing the need to liberate our legal analysis from the antiquated bright-line divide. These cases open the door to a less rigid approach to energy jurisdictional analyses and provide an important opportunity to explore their consequences for other energy areas.

This Article uses this analytical adjustment in energy federalism to explore its implications for authority over reliability of the electric system. The same statutory bright lines sharply divide authority over reliability between state and federal actors, with responsibility for reliability of the "bulk power system" falling to federal actors and responsibility for reliability of the "local distribution grid" falling to the states.[5] This means that federal reliability standards have traditionally ended at the edge of the bulk energy grid, leaving states to regulate reliability as they see

1. Federal Power Act, § 201(b); 16 U.S.C. §§ 824(b), 824d, 824e(a) (2012).
2. Oneok, Inc. v. Learjet, Inc., 135 S. Ct. 1591 (2015).
3. FERC v. EPSA, 136 S. Ct. 760 (2016).
4. Hughes v. Talen Energy Mktg., LLC, 136 S. Ct. 1288 (2016).
5. The Bulk Electric System (BES) includes "all Transmission Elements operated at 100 kV or higher and Real Power and Reactive Power resources connected at 100 kV or higher. This does not include facilities used in the local distribution of electric energy." NERC, GLOSSARY OF TERMS 3 (Apr. 4, 2017), http://www.nerc.com/files/glossary_of_terms.pdf [https://perma.cc/5CCA-APXK] [hereinafter NERC GLOSSARY OF TERMS]. The Bulk Power System (BPS) refers to "(A) facilities and control systems necessary for operating an interconnected electric energy transmission network (or any portion thereof); and (B) electric energy from generation facilities needed to maintain transmission system reliability. The term does not include facilities used in the local distribution of electric energy." *See id.* at 6. For a discussion of the legal difference between BES and BPS, see NERC, USE OF "BULK POWER SYSTEM" VERSUS "BULK ELECTRIC SYSTEM" IN RELIABILITY STANDARDS, http://www.nerc.com/files/Final_BES_vs%20_BPS_Memo_20120410.pdf [https://perma.cc/HQ5D-XAEJ] [hereinafter BULK POWER VERSUS BULK ELECTRIC].

fit within their exclusive distribution sphere.[6] As a result, state regulation of reliability is varied, with some states declining to mandate reliability standards at all.[7] Reliability standards follow these bright lines, and their respective impacts are largely contained within these separate jurisdictional boxes.

But managing reliability of the grid involves much more than reliability standards. Reliability of the electric grid encompasses two components: (1) resource adequacy and (2) system quality.[8] Resource adequacy focuses on providing enough resources to meet the highest level of expected demand.[9] System quality focuses on having the right mix of capabilities (balancing services) deployed to ensure that supply and demand can be balanced in every moment, with a focus on voltage and frequency.[10] To satisfy these needs, utilities, states, regional actors, and federal actors have engaged in a variety of methods to maintain reliability, including creating competitive energy markets,[11] forming capacity markets,[12] developing other incentives for construction of new generation,[13] approving new transmission lines,[14] enlisting new energy technologies (like energy storage, electric vehicles, and demand response),[15] and

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6. *See* N. AM. ELEC. RELIABILITY CORP., FREQUENTLY ASKED QUESTIONS 1, 6–7, (Aug. 2013), http://www.nerc.com/AboutNERC/Documents/NERC%20FAQs%20AUG13.pdf [https://perma.cc/Z3KV-N27S] [hereinafter NERC FAQ]; *Standards*, N. AM. ELEC. RELIABILITY CORP., http://www.nerc.com/pa/stand/Pages/default.aspx [https://perma.cc/3TNW-T67T]; *see also* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,662 (Oct. 23, 2015) (codified at 40 C.F.R. pt. 60) (referencing deference to state flexibility 138 times).

7. *See infra* Section III.A.1.

8. NERC FAQ, *supra* note 6, at 1. State public utility commissions view reliability similarly. The Commission held the concept of reliability generally encompasses the: "(1) reservation of transmission capacity to back up large generating units; (2) provision of generation reserves; and (3) coverage of certain future needs." N.E. Utils. Serv. Co. v. FERC, 993 F.2d 937, 953 (1st Cir. 1993).

9. NERC FAQ, *supra* note 6, at 1.

10. *Id*.

11. *See, e.g.*, Demand Response Compensation in Organized Wholesale Energy Markets, 134 FERC ¶ 61,187 (Mar. 15, 2011) [hereinafter Order No. 745].

12. *The Role of ISOs and RTOs*, ISO/RTO COUNCIL, http://www.isorto.org/about/Role [https://perma.cc/DC4J-JQ38].

13. *Maryland and New Jersey*, STATE POWER PROJECT, https://statepowerproject.org/states/maryland-and-new-jersey/ [https://perma.cc/V8HB-V5A3] (discussing Maryland and New Jersey's energy programs being preempted as intruding on FERC's jurisdiction).

14. Ill. Com. Comm'n v. FERC, 756 F.3d 556, 564 (7th Cir. 2014) ("By now it should be apparent that . . . the 500–kV lines['s] . . . purpose is to address specific reliability violations in the eastern part of PJM.").

15. *See, e.g.*, Third-Party Provision of Ancillary Services; Accounting and Financial Reporting for New Electric Storage Technologies, 144 FERC ¶ 61,056 (July 18, 2013) [hereinafter Order No. 784]; Order No. 745, *supra* note 11.

encouraging new forms of distributed generation like solar panels.[16] In some ways, nearly every action that takes place on the electric grid can be justified on the basis of enhancing reliability.

Unlike reliability standards and efforts of old, many of these new approaches to reliability have far-reaching effects beyond their jurisdictional boxes. To highlight just a few examples, federal rules for capacity markets and environmental restrictions limit the discretion of the states to choose their generation sources.[17] Energy storage is an ultimate crossover technology that can function as generation, transmission, and distribution, crossing over both state and federally regulated domains.[18] Demand response, by definition, resides on the distribution side of the grid, but federal rules allow it to be bid into federally regulated markets.[19] Transmission siting has remained in flux between state and federal actors.[20] State programs to increase the amount of customer-owned solar can impact the federally-regulated bulk energy grid.[21] In short, the lines are quickly blurring with no sign of clarity in the future.

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16. *See, e.g.*, Robert Walton, *How Will Utilities Profit in the Future? New York's REV Initiative Is Trying to Figure It Out*, UTILITY DIVE (Aug. 26, 2015), http://www.utilitydive.com/news/how-will-utilities-profit-in-the-future-new-yorks-rev-initiative-is-tryin/404579/ [https://perma.cc/6QEJ-28FQ] (discussing New York's REV program).

17. *See, e.g.*, N.J. Bd. of Pub. Utils. v. FERC, 744 F.3d 74, 95–96, 107–08 (3d Cir. 2014).

18. *See* Amy L. Stein, *Reconsidering Regulatory Uncertainty: Making a Case for Energy Storage*, 41 FLA. ST. U. L. REV. 697, 728–30 (2014); David E. Pomper, PAUSING THE SPEED OF LIGHT: RETHINKING THE BASIS FOR FEDERAL JURISDICTION OVER STORAGE SERVICES 7–8 (Oct. 11, 2011), http://www.spiegelmcd.com/files/Pomper_merged_2011_11_15_02_26_56.pdf [https://perma.cc/XG9E-UD58].

19. Order No. 745, *supra* note 11; *see also* FERC v. EPSA, 136 S. Ct. 760, 767 (2016).

20. Transmission siting had traditionally been under state jurisdiction until Congress amended the Federal Power Act to provide "backstop authority" under Section 216(b) to provide federal jurisdiction in congested areas. Energy Policy Act of 2005, Pub. L. No. 109-58, § 216(b), 119 Stat. 594, 947; *see* Rian R. Gish, *Is FERC Backstop Siting Authority Still Alive?*, POWER (May 1, 2011), http://www.powermag.com/is-ferc-backstop-siting-authority-still-alive/ [https://perma.cc/QS8X-HG68]. After the *Piedmont* decision that severely limited the reach of this federal siting authority, power largely reverted back to the states. Piedmont Envtl. Council v. FERC, 558 F.3d 304, 309–10 (4th Cir. 2009). Most recently, the federal government has invoked Section 1222 to allow private developers to use eminent domain to site transmission lines in the west. Energy Policy Act of 2005 § 1222; *see also Energy Department Announces Participation in Clean Line's Large-Scale Energy Transmission Project*, U.S. DEP'T ENERGY (Mar. 25, 2016), http://energy.gov/articles/energy-department-announces-participation-clean-line-s-large-scale-energy-transmission-10 [https://perma.cc/PVJ6-8ABV].

21. *E.g.*, *California Renewable Energy Overview and Programs*, CAL. ENERGY COMM'N, http://www.energy.ca.gov/renewables/ [https://perma.cc/6NL4-CLDN]; *see also* Steve LeBlanc, *Governor Baker Files Bill to Encourage Expansion of Solar Power*, BOS. GLOBE (Aug. 8, 2015), https://www.bostonglobe.com/business/2015/08/07/gov-baker-files-bill-encourage-expansion-solar-power/BbRpLzFy3PBZ2SlUyjGgPP/story.html (discussing a proposed plan in Massachusetts to encourage solar energy use).

These blurs have generated significant jurisdictional battles between federal and state actors. Some of the earlier jurisdictional crossovers have involved requirements of the lead energy agency, the Federal Energy Regulatory Commission (FERC), to participate in transmission planning and state efforts to incentivize more capacity.[22] Courts have traditionally resolved such disputes by adhering to the bright lines, limiting federal jurisdiction over certain aspects of the grid while affirming federal jurisdiction over others.[23] These analyses nearly universally repeat the familiar refrain that affirms the congressional plan to have separate and exclusive spheres and include predictable references to the respect for "traditional" state authority, no matter how far the federal plan extends.[24]

Although largely lurking in the background, regulation over reliability of the grid may become the next jurisdictional battlefield. Many of the initiatives being implemented by the state, regional, and federal actors, like energy storage, occur at the margins of the strict federal-state jurisdictional boundary. Both federal and state actors are clamoring to regulate tools like Tesla's Powerwall energy storage devices—technologies that lie at the edges of this jurisdictional divide.[25] Many more initiatives than ever before are occurring on the state-regulated distribution side of the jurisdictional ledger, but have the potential for far-reaching effects on the federally-regulated transmission grid. This Article addresses these challenges.

Part II examines the future of the historical bright lines through the lens of the Supreme Court's three recent energy decisions. Although none of the decisions explicitly addressed FERC's authority over reliability, reliability of the grid is implicated in all three decisions. Importantly, in all three cases,

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22. *See, e.g.*, California *ex rel.* Harris v. FERC, 809 F.3d 491, 496–98 (9th Cir. 2015); AT&T Corp. v. Core Commc'ns, Inc., 806 F.3d 715 (3d Cir. 2015); PPL EnergyPlus, LLC v. Solomon, 766 F.3d 241, 247 (3d Cir. 2014) (holding that the FPA preempted state efforts to provide capacity price supplements); S.C. Pub. Serv. Auth. v. FERC, 762 F.3d 41, 48 (D.C. Cir. 2014) (upholding FERC's authority to require public utilities to "participate in regional transmission planning"); PPL EnergyPlus, LLC v. Nazarian, 753 F.3d 467, 476 (4th Cir. 2014) (holding that the FPA preempted state efforts to subsidize prices in PJM auction); *see also* Joel Eisen, *FERC's Expansive Authority to Transform the Electric Grid*, 49 U.C. DAVIS L. REV. 1838 (2016).

23. Conn. Light & Power Co. v. Fed. Power Comm'n, 324 U.S. 515, 529 (1945) (rejecting FERC jurisdiction over substation facilities that received high voltage power and reduced the voltage for local distribution).

24. *See, e.g.*, New York v. FERC, 535 U.S. 1, 24 (2002) ("This Final Rule will not affect or encroach upon state authority in such traditional areas.").

25. *New Storage Technologies Open Doors for Wind and Solar*, BREAKING ENERGY (May 25, 2015), http://breakingenergy.com/2015/05/25/new-storage-technologies-open-doors-for-wind-and-solar/ [https://perma.cc/36R7-AQSY].

the Court cast aside its historical constraints and adopted a more functional analysis of the allocation of energy authority.

The regulation of reliability follows similar bright lines. Part III describes this regulatory regime and then explores how the traditional bright lines applicable to reliability may find themselves in increasing tension with the real world blurring between reliability initiatives on the distribution and transmission components of the grid. It demonstrates how distributed generation, the regulation of greenhouse gases, cybersecurity, and energy storage are on the cusp of entering the jurisdictional fray. As the impacts between these state-controlled and federally-controlled parts of the grid become more fluid, all actors are under increasing pressure to maintain reliability of the grid.

These crossovers suggest that we may see even more federal involvement in "traditional" state-regulated reliability efforts. In fact, we already see FERC push the limits of its authority over reliability into new areas.[26] At the very least, recent disputes over the allocation of energy authority to regulate the grid provide ample opportunity to examine rationales for greater federal regulation of reliability. Accordingly, Part IV explores possible theoretical justifications for federal intervention deeper into the reliability of the entire system and explores possible legal avenues for this federal stretch. Assuming no congressional intervention to expand FERC's scope of authority, this Part analyzes three existing statutory authorities that FERC may be able to tweak to regulate reliability of the larger system as opposed to merely its historical segment. It assesses methods of expanding authority through definitional changes or voltage thresholds, by using previously dormant authority on coordination, as well as tests the limits of the "practices directly affecting" test recently affirmed by the Supreme Court to assess whether it can be used to allow FERC more jurisdictional room to regulate reliability.

Although the last few years have seen a marked increase in the attention that industry, legislators, and regulators are giving to reliability of the electric grid,[27] the legal literature continues to

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26. *See supra* notes 1, 15.

27. *See, e.g., FERC Technical Conference on Environmental Regulations and Electric Reliability, Wholesale Electricity Markets, and Energy Infrastructure* (*Docket AD15-4-00),* ENERGY STORAGE ASS'N (Feb. 19, 2015), http://energystorage.org/events/ferc-technical-conference-environmental-regulations-and-electric-reliability-wholesale [https://perma.cc/LE44-TEDX] (explaining that multiple press conferences were held all over the United States to discuss the proposed rule); *Have Mandatory Reliability Standards Improved Reliability?*, ENERGY BAR ASS'N (2014), http://www.eba-net.org/2014-mid-year-meeting-conference#agenda [https://perma.cc/D6NK-2TRY]. *See generally* ROYAL SWEDISH ACAD. OF SCI., SCIENTIFIC BACKGROUND ON THE SVERIGES RIKSBANK PRIZE IN ECONOMIC SCIENCES IN MEMORY OF ALFRED NOBEL

only address it at the margins.[28] The more thoughtful analyses recognize reliability as an important component of managing the challenges of a changing electric grid, but their discussions are missing the critical federalism piece of the challenges of regulating reliability on the current system.[29] This Article is the first to fill that void.

II. EVOLVING FRAMEWORK FOR ENERGY JURISDICTION

The 1930s brought a series of Supreme Court Commerce Clause cases rooted in "dual federalism," a theory that suggests that the proper role of the federal and state governments is capable of discernment through the application of some bright-line rule.[30] "In those cases, the Court drew a bright line between the 'intrastate' activities of electric and gas companies, which the states were free to regulate, and those activities, principally interstate transmission and sales-for-resale, considered to be 'interstate' in nature and hence beyond the power of the states under the Commerce Clause."[31] Congress similarly jumped on the "dual federalism" bandwagon, enacting a number of statutes that

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2014: JEAN TIROLE: MARKET POWER AND REGULATION (Oct. 2014), http://www.nobelprize.org/nobel_prizes/economic-.sciences/laureates/2014/advanced-economicsciences2014.pdf [https://perma.cc/XQS8-XS5D] (winning the Nobel Prize for his work on regulation of networked industries like electricity).

28. *See generally* Richard Drom & Christian D. McMurray, *Maintaining System Reliability: Responding to the Retirement of Coal-Fueled Electric Generation Resources*, 34 ENERGY L.J. 589 (2013) (addressing only coal's contribution to the electric grid); John Moot, *A Modest Proposal for Reforms of the FERC's Reliability and Enforcement Programs*, 33 ENERGY L.J. 475 (2012).

29. *See, e.g.,* William Boyd, *Public Utility and the Low-Carbon Future*, 61 UCLA L. REV. 1614, 1700 (2014); Emily Hammond & David B. Spence, *The Regulatory Contract in the Marketplace*, 69 VAND. L. REV. 141 (2016); H. Osofsky and H. Wiseman, *Dynamic Energy Federalism*, 72 MD. L. REV. 773, 778 (2013) (focusing on reliability standards as opposed to the reliability resources); Ashira Ostrow, *Grid Governance: The Role of a National Network Coordinator*, 35 CARDOZO L. REV. 1993, 2005–08 (2014).

30. Prior to 1937, Supreme Court jurisprudence enforced the constitutional norms of federalism by adhering to the doctrine of dual federalism. "Dual federalism" refers to the theory that federal and state governments are separate, but equal sovereigns, operating in mutually exclusive spheres. Martin H. Redish & Steven G. Sklaver, *Federal Power To Commandeer State Courts: Implications for the Theory of Judicial Federalism*, 32 IND. L. REV. 71, 87 n.86.(1998); Roderick M. Hills, Jr., *The Political Economy of Cooperative Federalism: Why State Autonomy Makes Sense and "Dual Sovereignty" Doesn't*, 96 MICH. L. REV. 813, 849 (1998); Ernest A. Young, *Protecting Member State Autonomy in the European Union: Some Cautionary Tales from American Federalism*, 77 N.Y.U. L. REV. 1612, 1646–47 (2002); *see* Frank R. Lindh, *Federal Preemption of State Regulation in the Field of Electricity and Natural Gas: A Supreme Court Chronicle*, 10 ENERGY L.J. 277, 291, 308 (1989) (showing that dual federalism also applies to energy regulation).

31. *See* Lindh, *supra* note 30, at 277; *see also* Pub. Util. Comm'n v. Attleboro Steam & Elec. Co., 273 U.S. 83, 89–90 (1927) (declaring that the Commerce Clause barred states from regulating wholesale energy transactions). The FPA was enacted to fill this "Attleboro gap." FERC v. EPSA, 136 S. Ct. 760, 767 (2016).

provided seemingly clear divisions of authority between state and federal actors. This Part describes how Congress embraced the concept of such bright lines rules in the creation of the Federal Power Act (FPA) and then explores the recent Supreme Court jurisprudence that casts doubt on the continuing viability of such bright-line analyses.

A. Bright Lines for Energy Authority

In 1935, Congress enacted the FPA[32], tracking the bright-line mindset with precision. Consistent with the dual federalism theories of the time, Congress established separate and distinct roles for the states and the federal government with regard to electricity. At its most basic level, the electric grid consists of three parts: a generator that makes the electricity and sells it at wholesale to a local distributor (usually a utility), a transmission operator that bring the electricity from generator to end user, and a local distributor that then sells the electricity at retail to industries and households.[33] The FPA empowers FERC to regulate "the middle of this three-leg journey—interstate transportation and wholesale sales," but leaves the opening and closing phases—generation at one end and retail sales at the other—to the states.[34]

More specifically, under the 1935 FPA, the federal government is responsible for the high-voltage transmission lines and wholesale sales of electricity while the states are responsible for the low-level distribution lines, the siting of new generation, and retail sales of electricity.[35] Section 201(b)(1) of the FPA directs the Federal Power Commission (the predecessor to FERC) to regulate the terms and conditions of interstate wholesale electricity transactions and the transmission of electric energy in interstate commerce.[36] At the same time, the FPA provides the states with authority to regulate the terms and conditions of intrastate retail sales transactions, as well as all siting decisions with respect to distribution facilities, transmission line facilities, and electric energy generation facilities.[37]

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32. 16 U.S.C. §§ 791–828c (2012).

33. Section 201(a) of the FPA grants FERC jurisdiction over "the transmission of electric energy in interstate commerce" and, therefore, over transmission rates. 16 U.S.C. § 824(a) (2012).

34. *Cf.* Oneok Inc. v. Learjet Inc., 135 S. Ct. 1591, 1603–4 (2015) (Scalia, J., dissenting) (discussing the several parts of the natural gas trade under the Natural Gas Act, a statute similar to the FPA).

35. Federal Power Act § 201(b), 16 U.S.C. §§ 824(b), 824(d), 824e(a) (2012).

36. *Id.* §§ 824d, 824e(a).

37. *Id.*; Benjamin K. Sovacool, *The Best of Both Worlds: Environmental Federalism*

When jurisdictional controversies occurred, federal courts adopted a bright-line approach to jurisdictional debates under both the FPA and the Natural Gas Act (NGA). Courts uniformly respected these bright-line rules, noting how "Congress meant to draw a bright line easily ascertained, between state and federal jurisdiction, making unnecessary such case-by-case analysis."[38]

These bright lines led to some notable jurisdictional defeats for FERC with reference to its jurisdiction over transmission. For instance, in *Connecticut Light & Power v. FPC*, the Supreme Court overruled FERC and the D.C. Circuit in rejecting FERC jurisdiction over substation facilities that received high voltage power and reduced the voltage for local distribution.[39] The Commission determined that these facilities "were 'for the transmission of electric energy . . . as distinguished from local distribution thereof'" because "the energy received . . . 'regularly, frequently and for substantial periods of time included electric energy in substantial amounts transmitted from [out of state].'"[40] The Supreme Court reversed the D.C. Circuit, rejecting functional arguments about the unitary nature of the grid to support jurisdiction.[41] Although the Court noted how these bright-line rules may not always comport with the real world, it nevertheless repeats the familiar refrain of adherence to "traditional" state rights. The Court lamented that "if any part of a supply of electric energy comes from outside of a state it is, or may be present in every connected distribution facility," then "[b]y this test the cord from a light plug to a toaster on the breakfast table is a facility for transmission of interstate energy if any part of the load is generated without the state."[42] The Court affirmed the use of bright lines, noting that "state lines and boundaries cut across and subdivide what scientifically or economically viewed may be a single enterprise."[43]

B. Judicial "Smudging" of Bright Lines

After decades of strict adherence to these bright line rules, the Supreme Court issued three recent energy decisions that cast

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and the Need for Federal Action on Renewable Energy and Climate Change, 27 STAN. ENVTL. L.J. 397, 446 (2008).

38. Fed. Power Comm'n v. S. Cal. Edison Co., 376 U.S. 205, 215–16 (1964); Miss. Power & Light Co. v. Mississippi *ex rel.* Moore, 487 U.S. 354, 371 (1988).

39. Conn. Light & Power Co. v. Fed. Power Comm'n, 324 U.S. 515, 529 (1945).

40. *Id*. at 520.

41. *Id*. at 529.

42. *Id*.

43. *Id*. at 530; Frank Lindh et al., *State Jurisdiction over Distributed Generators*, 34 ENERGY L.J. 499, 530 (2013).

doubt on its future. These cases suggest a departure from the long-standing bright line rules in favor of a "common-sense" application of the jurisdictional boundaries, an outcome that Justice Scalia referred to as "smudg[ing]."[44] The first case, *ONEOK v. Learjet*, analyzed the extent of federal jurisdiction in the context of a field preemption analysis.[45] The Court rejected a bright-line analysis in favor of one that focused on the target of the regulation to establish federal jurisdiction.[46] The second, *FERC v. EPSA*, analyzed the extent of federal jurisdiction in a statutory interpretation context.[47] The Court again rejected a bright-line analysis in favor of one that allowed for a broader interpretation of "practices affecting" wholesale rates.[48] The last case, *Hughes v. Talen*, demonstrated the difficulties of using bright line rules where activities cross over both state and federal jurisdictional boundaries.[49] Although the Court did not explicitly decide these cases on reliability grounds, each holding chipped away at the bright-line rule that has been in place for the last seventy years.

1. Not-So-Bright Lines for Natural Gas. The first key case was not a FPA case, but an NGA case. These two statutes are similar in many respects, including Congress' use of dual federalism to sharply divide the electric and the natural gas worlds between state and federal actors.[50] In *ONEOK v. Learjet*,[51] the Supreme Court faced an issue of whether the NGA preempted state antitrust laws.[52] Numerous companies alleged market manipulation against natural gas traders and filed antitrust suits. The questionable pricing behavior "affected *both* federally regulated *wholesale* natural-gas prices *and* non-federally regulated *retail* natural-gas prices", creating a jurisdictional blur.[53]

Central to the arguments were the sharp jurisdictional lines between wholesale and retail gas prices. Courts recognized the

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44. Oneok Inc. v. Learjet, Inc., 135 S. Ct. 1591, 1603 (2015) (Scalia, J. dissenting).

45. *Id.*

46. *Id.* at 1605 (Scalia, J. dissenting).

47. FERC v. EPSA, 136 S. Ct. 760, 773 (2016).

48. *Id.*

49. Hughes v. Talen Energy Mktg., LLC, 136 S. Ct. 1288, 1297–99 (2016).

50. Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953, 956 (1986); PPL Energyplus, LLC v. Solomon, 766 F.3d 241, 246 (3d Cir., 2014); Ky. Utils. Co. v. FERC, 760 F.2d 1321, 1325 n.6 (D.C. Cir. 1985) ("It is, of course, well settled that the comparable provisions of the Natural Gas Act and the Federal Power Act are to be construed *in pari materia*.").

51. *Oneok*, 135 S. Ct. at 1591.

52. *Id.* at 1594.

53. *Id.*

jurisdictional bright lines under the NGA just as they recognized them under the FPA, with Section 1(b) providing FERC with exclusive jurisdiction over wholesale transactions and Section 5(a) authorizing FERC to address "practices" affecting wholesale rates.[54] The natural gas traders/pipelines argued that the allegation in question fit squarely under federal jurisdiction and that the state law claims should be preempted.[55] Natural gas traders tried to block the antitrust claim by arguing that it was preempted by the Natural Gas Act, and the key question became whether Congress intended to occupy the field of antitrust claims concerning gas traders' pricing behavior.[56]

The Ninth Circuit upheld the antitrust claims, taking a narrow reading of the NGA's preemptive effect.[57] The Supreme Court affirmed, agreeing with the narrow preemption interpretation as applied to antitrust claims. While the Court agreed that the federal government and corresponding preemptive effect would apply if the prices at issue were purely wholesale, a more functional approach must be applied when the prices affected are a mixture of both wholesale and retail.[58] The Court looked deeper than the mere bright lines to assess the intent and target of the state regulation.[59]

This departure from a bright-line rule provided the first suggestion that the Court was willing to look deeper than the historical statutory divide to achieve a ruling that comported with the realities in front of it. In fact, the Court even questioned the continuing viability of a bright line rule: "Petitioners and the dissent argue that there is, or should be, a clear division between areas of state and federal authority in natural-gas regulation. . . . But that Platonic ideal does not describe the natural gas regulatory world."[60]

To reach its decision, the Court distinguished the *ONEOK* facts with a number of other holdings where the NGA or the FPA preempted state claims.[61] In doing so, it highlighted the differences between state efforts that intrude on federal jurisdiction and the present case, where the states are trying to regulate behavior that affected a mixed state and federally

54. Natural Gas Act §§ 1(b), 5(a), 15 U.S.C. §§ 717(b), (d) (2012).

55. *Oneok*, 135 S. Ct. at 1598.

56. *Id*.

57. *In re* W. States Wholesale Nat. Gas Antitrust Litig., 715 F.3d 716, 729 (9th Cir. 2013).

58. *Oneok*, 135 S. Ct. at 1599–1600.

59. *Id*. at 1600–01.

60. *Id*. at 1601.

61. *See id*. at 1594, 1601–02.

regulated issue.[62] Nevertheless, in a scathing dissent, Justice Scalia declared that the majority decision "smudges this line" between federal and state regulators and rests on a "case-by-case" analysis of the impact of the state regulation upon the national interest," in clear contradiction of precedent.[63]

2. "Common-sense" Construction for Demand Response. At the same time that the Court in *ONEOK v. Learjet* was considering the preemptive effect of FERC's "affecting" jurisdiction under the NGA, *FERC v EPSA* was being litigated under the FPA. This litigation involved demand response, with a particular focus on the specific form of demand response that was being bid into wholesale energy markets.[64]

Demand response resources are those that can be "dialed down" during periods of peak power demand to reduce the need for expensive emergency generators. By definition, demand response resources are flexible customer resources (e.g., heating and air conditioning in buildings, pool pumps, and ancillary services) located on the distribution grid.[65] Therefore, these resources necessarily fall within state jurisdiction.[66] After decades of state development of these resources to assist with reliability of the distribution grids, sophisticated aggregators began coordinating these demand response resources into larger relief resources.[67]

In addition to their use in state-regulated retail markets, FERC began contemplating the use of demand response resources in federally-regulated wholesale markets.[68] These resources could both reduce the wholesale prices during periods of peak demand, as well as enhance reliability of the system. Regional transmission organizations (RTOs) found that "[d]emand response has been critically important in permitting certain RTOs to maintain

62. *See id*. at 1601–02 (distinguishing Miss. Power & Light Co. v. Mississippi ex rel. Moore, 487 U.S. 354 (1988) (state action that affected a jurisdictional element) and FPC v. La. Power & Light Co., 406 U.S. 621, 633–35 (1972) (unavoidable conflict) from *Oneok* (in contrast to challenging "background marketplace conditions" affecting jurisdictional and no jurisdictional conditions)).

63. *Oneok*, 135 S. Ct. at 1603 (Scalia, J., dissenting).

64. FERC v. EPSA, 136 S. Ct. 760, 767, 774 (2016). At issue were FERC's regulations requiring wholesale market operators to compensate DR consumers at the same rate as energy generators. *Id.*

65. *Demand Response Saves Electricity During Times of High Demand*, EIA (Feb. 8, 2016), http://www.eia.gov/todayinenergy/detail.cfm?id=24872 [https://perma.cc/QQ5V-WEGZ].

66. *EPSA*, 136 S. Ct. at 776–77.

67. DEMAND RESPONSE, PJM (2017), http://learn.pjm.com/three-priorities/buying-and-selling-energy/markets-faqs/~/media/BD49AF2D60314BECA9FAAB4026E12B1A.ashx. [https://perma.cc/DMH4-LFQH].

68. Order No. 745, *supra* note 11.

reliability."[69] The Department of Energy also determined that "in particular locations at peak times, employing demand response may be the only way to balance supply and demand and thus to avoid power interruptions."[70] In short, all parties recognized "the value of demand response for both system reliability and efficient pricing."[71]

Based on these pricing and reliability impacts, FERC issued Order 745 to allow these resources to participate in the wholesale energy markets.[72] FERC based its jurisdiction over these resources on Section 205 of the FPA, which provides FERC with authority to regulate any "rule, regulation, practice, or contract affecting [a wholesale] rate."[73]

Generators did not view this intrusion into the wholesale markets favorably. By allowing demand response resources to bid into the wholesale energy markets, there were less demand resources available for the retail markets. More importantly, their involvement in the wholesale market would drive down the ultimate prices paid to generators competing in the energy markets.[74] The challengers primarily relied on the historical bright-line approach to drive FERC back into its segmented jurisdictional box. They argued that demand response resources necessarily involved customers who were located on the distribution grid and were therefore subject to state jurisdiction.[75] They characterized FERC's actions as regulating wholesale prices through the retail market, an action that "crosses a very important boundary in the Federal Power Act."[76]

In 2014, the D.C. Circuit vacated FERC's demand response rule, holding that demand response lies at the "confluence of state

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69. Petition for Writ of Certiorari at 32, FERC v. EPSA, 136 S. Ct. 760 (2016) (No. 14-840).

70. *Id*. (citing U.S. DEP'T OF ENERGY, NATIONAL TRANSMISSION GRID STUDY 41 (May 2002), https://www.ferc.gov/industries/electric/indus-act/transmission-grid.pdf).

71. *EPSA*, 136 S. Ct. at 770.

72. Order No. 745, *supra* note 11, para. 10.

73. 16 U.S.C. §§ 824e(a), 824d(a) (2012). Notably, FERC limited the scope of its rule to demand response resources "participating in a day-ahead or real-time energy market administered by an RTO or ISO," not those participating in RTO emergency programs or ancillary services markets. Order No. 745, *supra* note 11, para. 2 n.4.

74. These organized wholesale markets rely on least-cost, security-constrained dispatch, ordering the supply bids from least to most expensive and paying all the suppliers the clearing price that was offered when the demand was satisfied. FERC took this into account in designing its rule, however, including a net benefits test to account for the fact that "it would not be efficient for wholesale-market operators to select a demand-response commitment whenever it is the lowest bid." Petition for Writ of Certiorari at 7, 11 n.3, FERC v. EPSA, 136 S. Ct. 760 (2016) (No. 14-840).

75. Transcript of Oral Argument at 29, FERC v. EPSA, 135 S. Ct. 2049 (2015) (No. 14-840).

76. *Id*.

and federal jurisdiction," that it does not involve a "sale" of energy, and that FERC's rationale would leave us with "no limiting principle."[77] The D.C. Circuit rejected FERC's "directly affecting" test, instead preferring to define the limits by reference to the "context of the overall statutory scheme."[78] The D.C. Circuit went even farther, noting that even if FERC did have jurisdiction, the method of compensating demand response at the full locational marginal price was arbitrary and capricious and overcompensated demand response resources.[79]

FERC scored its victory in early 2016 when the Supreme Court reversed the D.C. Circuit, upholding FERC's authority over demand response in wholesale markets.[80] First, the Court noted that the FPA's jurisdictional division is steadily disputed as wholesale and retail energy markets are "inextricably linked," as FERC ensures that rules or practices in the wholesale energy market are "just and reasonable."[81]

In a surprising turnaround, the Court then approved "a common-sense construction" of the FPA by limiting FERC's jurisdiction to "practices that '*directly* affect the [wholesale] rate.'"[82] The Court found that FERC had not only the authority, but the duty to "ensure that rules or practices 'affecting' wholesale rates are just and reasonable."[83] This was not the first time that FERC had advanced this "direct affect" test,[84] and it had been advanced by FERC counsel and scholars,[85] but it was the first time the Supreme Court adopted it. The "practices directly affecting" test proved to be quite instrumental to the reasoning of the Court, with even Justice Scalia suggesting at oral argument that FERC was trying to drive down retail rates by "directly managing retail rates," an approach he found

77. EPSA v. FERC, 753 F.3d 216, 219, 221 (D.C. Cir. 2014).

78. *Id*. at 221.

79. *Id.* at 224.

80. FERC v. EPSA, 136 S. Ct. 760, 784 (2016).

81. *Id.* at 766–67. As one federal circuit court recognized, FERC has "moved away" from this "just and reasonable" approach to influencing the market to produce interstate competitive rates. *See* PPL Energyplus, LLC v. Solomon, 766 F.3d 241, 247 (3rd Cir. 2014).

82. *EPSA*, 136 S. Ct at 774 (quoting Cal. Indep. Sys. Operator Corp. v. FERC, 372 F.3d 395, 403 (D.C. Cir. 2004)); *see also Solomon*, 766 F.3d at 254–55 (noting the limits of FERC's jurisdiction under the FPA.

83. *EPSA*, 136 S. Ct at 774.

84. Cal. Indep. Sys. Operator Corp. v. FERC, 372 F.3d 395, 403 (D.C. Cir. 2004). The D.C. Circuit had held that FERC's statutory authority to regulate rules and practices "affecting" wholesale rates is "limited to those methods or ways of doing things on the part of the utility that directly affect the rate or are closely related to the rate." *Id*.

85. Transcript of Oral Argument at 14, FERC v. EPSA, 135 S. Ct. 2049 (2015) (No. 14-840); Eisen, *supra* note 22, at 1814.

exceeded FERC's authority under the statute.[86] FERC counsel's framing proved more persuasive, however, focusing on how FERC was merely setting the rules for the wholesale market, actions clearly within FERC's jurisdiction.[87]

Additionally, the Court foreclosed the familiar state argument that FERC's jurisdiction was limited where the action impacts the retail market. Even though FERC's rule substantially affected aspects of the retail market, it did not violate the FPA's proscription against federal regulation of retail rates, as wholesale transactions inevitably impact the retail market.[88] The Court was careful to prevent complete federal preemption of state energy regulations, but nevertheless broadened FERC's reach over practices directly affecting wholesale rates.

One of the more interesting threads in the *FERC v. EPSA* opinion is that of cooperative federalism. Cooperative federalism has been a hallmark of environmental legislation since the 1970s, establishing the parameters of a more integrated federal-state relationship than existed in the dual federalism statutes of the 1930s.[89] Congress has established the typical cooperative federalism relationship as one where the federal government is directed to establish national rules or standards and the states are provided the flexibility to decide how to meet those standards.[90] The contours of cooperative federalism and its relative merits have been extensively studied by scholars, but the FPA has rarely to never been envisioned as a "cooperative federalism" statute.[91] As was described earlier, far from being cooperative, it is usually referred to as a "dual federalism" framework, one where state and federal actors work in their respective spheres.[92]

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86. *EPSA*, 136 S. Ct at 784 (Scalia, J. dissenting); Transcript of Oral Argument at 8, FERC v. EPSA, 135 S. Ct. 2049 (2015) (No. 14-840).

87. Transcript of Oral Argument at 9, FERC v. EPSA, 135 S. Ct. 2049 (2015) (No. 14-840).

88. *EPSA*, 136 S. Ct at 776 ("[The effect] is of no legal consequence."). It is relevant to note that courts find it similarly inconclusive in jurisdictional controversies where retail transactions impact the wholesale market.

89. Robert L. Fischman, *Cooperative Federalism and Natural Resources Law*, 14 N.Y.U. ENVTL. L.J. 179, 187 (2005).

90. *Id*. at 188–89.

91. *See, e.g.,* Philip Weiser, *Towards a Constitutional Architecture for Cooperative Federalism*, 79 N.C. L. REV. 663 (2001).

92. *See* Nicholas W. Fels & Frank R. Lindh, *Lessons from the California "Apocalypse:" Jurisdiction over Electric Utilities*, 22 ENERGY L.J. 1, 2 (2001); Hannah J. Wiseman, *Moving Past Dual Federalism to Advance Electric Grid Neutrality*, 100 IOWA L. REV. BULL. 97, 102 (2015).

Despite its reputation for "dual federalism," FERC counsel played off this language in oral argument, suggesting that this is a "strong cooperative Federalism program here in which States have the—States are masters of their own fate."[93] In her opinion, Justice Kagan embraced this language, referring to the implementation of the demand response rule as one of "cooperative federalism."[94] It is possible that this language reflects the Court's inclination towards finding state choice in the matter at hand. In all of the cases where FERC jurisdiction was upheld, the courts addressed how the state could either meet the federal requirement in other ways (e.g., states did not have to build new generators to meet the capacity requirements but many chose to do so)[95] or the state could choose not to participate at all in the federal "game" (e.g., states could prohibit demand response resources from participating in the wholesale markets).[96] In dissent, Judge Edwards even recognized that states were still free to prohibit demand response resources from participating in wholesale markets, noting "[t]his is hardly the stuff of grand agency overreach."[97] These attempts to frame the FPA as "cooperative" are a bit puzzling, but they may reflect the struggles to redefine the relationship between federal and state energy actors in the absence of legislative adjustment. Efforts to affirm or expand federal power in future cases may hinge on the ability of the government to nevertheless highlight state power in the face of such expansions.

3. Limited Usefulness of Bright Lines. A third key area where FERC exerted its regulatory muscle over reliability is in capacity markets. Capacity markets were designed to provide an additional incentive for those with generating capacity to ensure there would be sufficient generation resources in the future, allowing generators to bid to meet the electricity demands for the next three years.[98] Because capacity markets necessarily impact

93. Transcript of Oral Argument at 58, FERC v. EPSA, 135 S. Ct. 2049 (2015) (No. 14-840).

94. FERC v. EPSA, 136 S. Ct. 760, 780 (2016).

95. EPSA v. FERC, 753 F.3d 216, 234 (D.C. Cir. 2014) (Edwards, J., dissenting) (citing Conn. Dep't of Util. Control v. FERC, 569 F.3d 477, 482 (D.C. Cir. 2009)).

96. *EPSA*, 136 S. Ct. 760, 779, 787.

97. EPSA v. FERC, 753 F.3d 216, 233 (D.C. Cir. 2014) (Edwards, J., dissenting).

98. "[C]apacity markets provide an additional incentive for developers of generating capacity (i.e., power plants or DR providers) to make their capacity available to electric markets where price signals alone would not. Capacity providers are paid on a kilowatt per year basis for the capacity that a power plant can generate . . . ." ENERNOC, DEMAND RESPONSE DECONSTRUCTED: GET PAID FOR YOUR FLEXIBILITY 7 (2014) https://www.enernoc.com/sites/default/files/eBook_Demand_Response_Deconstructed.pdf [https://perma.cc/

generation (an area jurisdictionally reserved for the states) but do so through capacity wholesale markets (an area jurisdictionally reserved for the federal government) the following cases provide ripe crossover examples.

In the first category of cases, state actors challenged decisions relating to capacity markets as encroaching on state territory because these actions impacted the generator resource base.[99] For instance, RTOs implemented a number of initiatives to ensure sufficient capacity, each requiring FERC approval. These range from deficiency charges for failing to secure sufficient capacity[100] to capacity requirements specifying the amount of generation needed,[101] to preventing certain generators from participating in markets that would unduly depress market prices.[102] Professor Joel Eisen tracked the historical jurisprudence surrounding capacity, noting how the courts consistently affirmed FERC's authority over these capacity markets.[103]

In the second, and more recent category, the Supreme Court affirmed FERC's authority over determining wholesale capacity rates.[104] In *Hughes v. Talen* it was not, however, federal action that was challenged as an intrusion into state territory, but state action that was challenged as an intrusion into federal territory. Both New Jersey and Maryland sought to steer the direction of resource development. In New Jersey, the state provided an extra subsidy to resources bidding into the capacity markets,[105] and in Maryland, the state provided higher rates for certain sources.[106]

EGP7-HBPN]; *see also* Jay Morrison, *Capacity Markets: A Path Back to Resource Adequacy*, 37 ENERGY L.J. 1 (2016).

99. *See, e.g.*, N.J. Bd. of Pub. Utils. v. FERC, 744 F.3d 74, 90–92 (3d. Cir. 2014).

100. Municipalities of Groton v. FERC, 587 F.2d 1296 (D.C. Cir. 1979).

101. Conn. Dep't of Util. Control v. FERC, 569 F.3d 477, 480 (D.C. Cir. 2009).

102. New Eng. Power Generators Ass'n v. FERC, 757 F.3d 283, 291 (D.C. Cir. 2014).

103. Eisen, *supra* note 22, at 1824.

104. Hughes v. Talen Energy Mktg., LLC, 136 S. Ct. 1288, 1298 (2016).

105. Order at 1, *In re* Long-Term Capacity Agreement Pilot Program, EO11010026 (N.J. Bd. Of Pub. Utils. Mar. 29, 2011). *But see* PPL Energyplus v. Solomon, 766 F.3d 241, 255 (3rd Cir. 2014) (finding this state law preempted by the Federal Power Act).

106. Jamie Smith Hopkins, *Power Plants Coming to Electricity Hungry Region*, BALT. SUN (July 13, 2014), http://www.baltimoresun.com/business/bs-bz-maryland-power-plants-20130713-story.html.

Challengers claimed that these state laws were preempted by FERC's regulation of capacity markets, claims that the Third Circuit,[107] Fourth Circuit,[108] and Supreme Court accepted.[109] In both circuit cases, the courts acknowledged crossover between the separate jurisdictional spheres. The Third Circuit validated state action that has an incidental effect on interstate commerce while noting that FERC's authority over interstate rates "does not carry with it exclusive control over any and every force that influences interstate rates."[110] Irrespective of this acknowledgement, both circuit courts ruled in a way that reinforced the bright-line rules. The state initiatives "set[] a price of capacity," something that was outside of their jurisdictional box.[111] The Fourth Circuit emphasized its preemption ruling was "narrow," as the result otherwise "would thoroughly undermine precisely the division of the regulatory field that Congress went to so much trouble to establish."[112]

Although this decision provides a less-than-clear discussion of the merits of the bright-line jurisdictional approach, *Hughes* can be interpreted as another example of the limited utility of a bright-line rule where there are arguments for characterizing the challenged activity on both sides of the jurisdictional ledger. The state activity could be characterized as either affecting "generation" under state jurisdiction or "wholesale rates" under federal jurisdiction. As the Court noted, "[s]tates interfere with FERC's authority by disregarding interstate wholesale rates FERC has deemed just and reasonable, even when States exercise their traditional authority over retail rates or, as here, in-state generation."[113] The Court made a point to note its "limited" holding, but it suggests that federal power may trump state power

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107. In *Solomon*, the court held that the Federal Power Act preempted New Jersey's efforts to provide additional incentives for capacity that was needed to maintain reliability in the PJM region. *Solomon*, 766 F.3d at 250–51 ("Although the Federal Power Act speaks to interstate wholesales of electric energy, 'the wholesale price for capacity . . . is squarely, and indeed exclusively, within FERC's jurisdiction.' FERC has determined that 'maintaining adequate resources' bears 'a significant and direct effect on' wholesale rates. Therefore, FERC regulates interstate sales of electric capacity as part of its approach to regulating electric energy rates.").

108. In *PPL EnergyPlus, LLC v. Nazarian* (*Nazarian*), 753 F.3d 467, 471 (4th Cir. 2014), the Fourth Circuit held that the Federal Power Act preempted Maryland's efforts to set the rate a generator receives for its sales in the PJM auction.

109. *Hughes*, 136 S. Ct. 1288 at 1297–99.

110. *Solomon*, 766 F.3d at 255.

111. *Id.* at 254.

112. *Nazarian*, 753 F.3d at 479–80 (quoting N.W. Cent. Pipeline Corp. v. State Corp. Comm'n, 489 U.S. 493, 515 (1989)).

113. *Hughes*, 136 S. Ct. at 1299.

in cases of such mixed jurisdiction.[114] Notably, in her concurrence, Justice Sotomayor echoes Justice Kagan's remarks about the cooperative federalism scheme within the FPA. "[T]he Federal Power Act, like all collaborative federalism statutes, envisions a federal-state relationship marked by interdependence."[115] Instead of a bright-line divide, the Court may instead be continuing to set a new approach to jurisdictional conflicts that envisions a more muddled line.

It is too early to assess the full impact of these cases, as scholars are just beginning to analyze the implications of this jurisprudence.[116] At the very least, these cases are facilitating important dialogue about the legitimacy of bright lines rules in an ever-blurring world.[117] It is possible that these Supreme Court rulings merely reflect a tip in the balance between the tradeoffs of bright lines and case-by-case analysis. But another possibility, and one I am more inclined to adopt, is that these cases mark a new era of federalism jurisprudence. Professor Jim Rossi coined it a "brave new world" for energy jurisprudence.[118] Professor Rossi argues that the trio of Supreme Court cases discussed herein "abandon dual sovereignty as the primary organizing principle for resolution of federalism disputes under energy statutes" and characterizes the new regime as one of "concurrent" jurisdiction where federal and states actors exercise overlapping jurisdiction.[119] If these cases do reflect a turning point in energy federalism, the next Part explores what this new world will mean for the regulation of reliability.

III. EVOLVING FRAMEWORK FOR RELIABILITY JURISDICTION?

As with the rest of the FPA, Congress followed the same bright lines when it decided to address reliability, providing federal actors with authority over reliability of the bulk grid and state actors with authority over reliability of the distribution grid.[120] This Part provides a flavor for the way the FPA divides authority over reliability standards and then identifies a number of emerging energy areas where the jurisdictional lines are likely

114. *Id*.

115. *Id*. at 1300 (Sotomayor, J. concurring).

116. *See, e.g.*, Jim Rossi, *The Brave New Path of Energy Federalism*, 95 TEX. L. REV. 399, 427 (2016).

117. For instance, notably, future cases will be devoid of Justice Scalia's harsh dissents affirming bright line jurisdictional rules.

118. Rossi, *supra* note 116, at 403.

119. *Id.* at 403, 427.

120. *See supra* note 1 and accompanying text.

to be much more muddled. Once unmasked, it becomes clear that many of the new approaches to reliability have far-reaching effects beyond the jurisdictional boxes carved out for separate state and federal action, suggesting that this area may benefit from the less rigid jurisdictional approaches adopted by the Supreme Court.

A. Bright Lines for Reliability Regulation

For the first seventy years of the FPA, there was no mention of reliability. During this time, reliability was managed by a combination of state utilities and a voluntary reliability organization.[121] In 2005, however, prompted by a large blackout in the northeast United States., Congress amended the FPA to finally address reliability.[122] Adhering to the decades-old division between federal and state authority over rates and facilities, Congress provided a similar bright-line division of responsibility for reliability between federal and state actors. FERC made a point to adhere to this dual federalism model with respect to reliability, noting that its rules "will not affect or encroach upon state authority in such traditional areas as the authority over local service issues, including *reliability* of local service."[123] Such authority is viewed as distinct from reliability of interstate service, both of which are discussed below.

1. State Regulation of Reliability. Responsibility for reliability began with local utilities. In the late 19th century, the Supreme Court affirmed the ability of states to regulate entities "clothed with a public interest" and spawned the development of public utility law.[124] Most states developed statutes that regulated the rates charged by public utilities and often codified the common law principles that had developed surrounding such entities for public purpose. These common law principles included adequate service, monopoly power, fixed territory, technological limits, a duty to serve, and reasonable prices.[125] The implicit agreement between the utilities and the state became known as the

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121. *See* NERC, HISTORY OF NERC 1 (Aug. 2013), http://www.nerc.com/AboutNERC/Documents/History%20AUG13.pdf [https://perma.cc/DLJ7-82KS].

122. Energy Policy Act of 2005 § 1211, 16 U.S.C. § 824*o*.

123. New York v. FERC, 535 U.S. 1, 24, (2002) (emphasis added).

124. Munn v. Illinois, 94 U.S. 113, 126 (1876).

125. EISEN ET AL., ENERGY, ECONOMICS, AND THE ENVIRONMENT 46 (3rd ed. 2010); Peter W. Hanschen & Gordon P. Erspamer, *A Public Utility's Obligation to Serve: Saber or Double-Edged Sword?*, ELECTRICITY J., Dec. 2004, at 36 ("The utilities' obligation to serve customers is mandated by state law and is a fundamental element of the entire regulatory scheme under which the Commission regulates utilities pursuant to the Public Utilities Act.").

regulatory compact and often included an understanding that the utility would provide safe and reliable service, an often understated element of the compact.[126]

In fact, reliability was recognized as early as 1931 in Supreme Court jurisprudence surrounding public utilities. The Court indicated that a public utility commission may "take into consideration various matters bearing upon the applicant's previous operation and reliability."[127] Lower courts similarly reflected the importance for state public utility commissions to value the production of "electric energy at the lowest cost as well as insuring reliability of service."[128]

Though usually not a focus of the origins of the regulatory compact, modern state statutes contemplate imposing reliability requirements on the public utilities and/or the public utility commissions within their boundaries. Illinois' statutory code reflects a typical jurisdictional statement with regards to reliability:

> Each jurisdictional entity shall provide services and facilities that, in accordance with the Act and other applicable statutes, provide an adequate, efficient and reasonable *level of reliability* giving appropriate consideration to the costs and benefits of changing or maintaining the level of reliability.[129]

Similarly, Pennsylvania requires each public utility to "furnish and maintain adequate, efficient, safe and reasonable service and facilities . . . [which] shall be reasonably continuous and without unreasonable interruptions or delay."[130] In addition to the utilities, state statutes also impose a duty on the public service commissions of the state.[131] For instance, a Florida statute provides the state public service commission with "power over electric utilities . . . to require electric power conservation and reliability within a coordinated grid."[132] Most are "dedicated to serving the public interest by assuring safe, *reliable*, and reasonably priced services provided by public utilities."[133]

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126. *See, e.g.*, EISEN, *supra* note 125 (listing the six common law principles affecting public utilities and not mentioning reliability).

127. Smith v. Cahoon, 283 U.S. 553, 558 (1931) (assessing the Florida State Railroad Commission's evaluation of an application for a certificate of public convenience and necessity).

128. Pa. Water & Power Co. v. Consol. Gas, Elec. Light & Power Co., 184 F.2d 552, 565 (4th Cir. 1950).

129. ILL. ADMIN. CODE tit. 83, § 411.100(a) (2017) (emphasis added).

130. 66 PA. CONS. STAT. § 1501 (2016).

131. *See, e.g.*, 16 TEX. ADMIN CODE § 25.52 (2012) (listing substantive rules applicable to electric service providers which relate to reliability and continuity of service).

132. FLA. STAT. ANN. § 366.04 (West 2014).

133. *See, e.g.*, LA. PUB. SERV. COMMISSION, http://www.lpsc.louisiana.gov [https://perma.cc/K6N5-GTMZ] (emphasis added); N.C. UTILITIES COMMISSION, http://www.nc

In accordance with these statutory references to reliability, some states saw fit to develop reliability standards for the portion of the grid under their jurisdiction—the distribution grid. As in most state-regulated systems, fifty jurisdictions result in a wide disparity in distribution standards. This is complicated even further by municipal electric utilities and/or electric cooperative utilities that may also operate within a state and "are generally, but not always, exempt from state commission regulatory authority."[134]

Public utility commissions (PUCs) and public services commissions (PSCs) developed different approaches to regulating distribution reliability. Analysts determined that at least 35 state regulatory commissions in the U.S. require distributors to routinely report their reliability performance.[135] Some go further, with almost half of the states setting service targets for desired ranges of reliability performance.[136] Sixteen states even regulate utility reliability on the distribution level with performance-based regulations (PBR) that include "explicit penalties or rewards based on performance in reliability and/or quality of service."[137] Researchers indicated that "[a]ssessing the impact of performance-based regulation across U.S. distribution utilities is extremely difficult, in part because of this heterogeneity in standards, incentives, and performance reporting."[138]

As opposed to performance-based regulations that may seek to avoid reliability problems, a number of other states only regulate a utility's response to an outage. For instance, a Michigan statute requires its PSC to establish "service quality and reliability standards for the transmission, generation, and distribution systems of electric utilities" and authorizes the PSC to penalize a utility's failure to comply with established performance standards.[139] In response, the PSC issued a rule providing for automatic penalties in the form of a billing credit for

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uc.commerce.state.nc.us [https://perma.cc/GT2A-H92Q] ("Promote adequate, reliable, and economical utility service.").

134. BRATTLE GRP., APPROACHES TO SETTING ELECTRIC DISTRIBUTION RELIABILITY STANDARDS AND OUTCOMES 109 n.129 (2012), http://www.brattle.com/system/publications/pdfs/000/004/670/original/Approaches_to_Setting_Electric_Distribution_Reliability_Standards_and_Outcomes_Hesmondhalgh_Zarakas_Brown_Jan_2012.pdf?1378772119 [https://perma.cc/3M8H-NSMR].

135. *Id*. at 18–19.

136. *Id*. at 106.

137. MIT, THE FUTURE OF THE ELECTRIC GRID 186 (2011), https://energy.mit.edu/wp-content/uploads/2011/12/MITEI-The-Future-of-the-Electric-Grid.pdf [https://perma.cc/6B8N-GUNY].

138. *Id*.

139. MICH. COMP. LAWS §§ 460.10p(5), 460.10p(13) (West 2017).

a failure to restore service within a certain number of hours after an outage.[140] This focus on mitigation of outages may be explained in part by findings that "the overwhelming majority of customer service outages are due to failure of local, low-voltage distribution systems, usually caused by adverse weather conditions."[141] With this wide variability, it is not surprising that researchers find that "reliability standards for the distribution system in the U.S. are much less stringent [than federal standards] and not as well coordinated."[142]

Beyond reliability standards, states took a number of actions to address reliability. New York provides one of the most innovative examples, a program called Reforming the Energy Vision (REV), which promotes over forty initiatives focused on expanding the use of renewable technologies in an effort to strengthen reliability of the distribution grid.[143] California spearheaded seven recent reliability-driven projects representing an investment of about $352 million.[144] Maryland took steps to bolster the reliability of the state's distribution grid. Maryland's governor established a Grid Resiliency Task Force to evaluate "methods for improving the resiliency and reliability of Maryland's

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140. MICH. ADMIN. CODE r. 460.744–.746 (2017); *see also* Mich. Elec. Co-op. Ass'n v. Mich. Pub. Serv. Comm'n, 705 N.W.2d 709, 717–18 (Mich. Ct. App. 2005) (upholding the automatic penalties).

141. ELEC. MKTS. RESEARCH FOUND., ENSURING ADEQUATE POWER SUPPLIES FOR TOMORROW'S ELECTRICITY NEEDS 30 (2014), http://electricmarketsresearchfoundation.org/uploads/3/1/7/1/3171840/ensuring_adequate_power_supplies_6-3-14_for_emrf.pdf [https://perma.cc/UH8Z-GWJR].

142. GALVIN ELEC. INITIATIVE, ELECTRICITY RELIABILITY: PROBLEMS, PROGRESS AND POLICY SOLUTIONS 13 (2011), http://www.galvinpower.org/sites/default/files/Electricity_Reliability_031611.pdf [https://perma.cc/M2YH-E5Q8]; *see also* DAVIES CONSULTING, INC., STATE OF DISTRIBUTION RELIABILITY REGULATION IN THE UNITED STATES, EDISON ELECTRIC INST. (2005), https://legalectric.org/f/2010/04/stateofdistributionreliability-2005.pdf [https://perma.cc/AS84-2ZRJ].

143. *DPS—Reforming the Energy Vision: About the Initiative*, N.Y. ST. DEP'T PUB. SERV., http://www3.dps.ny.gov/W/PSCWeb.nsf/All/CC4F2EFA3A23551585257DEA007DCFE2?OpenDocument [https://perma.cc/4HFL-2YVM]. One REV initiative is the NY Prize, a $40 million competition helping communities that create micro-grids to protect against power outage events. *NY Prize: Powering a New Generation of Community Energy*, N.Y. ST. ENERGY RES. & DEV. AUTHORITY, http://www.nyserda.ny.gov/All-Programs/Programs/NY-Prize [https://perma.cc/2E8S-TEX5]; Morgen E. Peck, *A Microgrid Grows in Brooklyn*, SCI. AM. (Apr. 22, 2016), http://www.scientificamerican.com/article/a-microgrid-grows-in-brooklyn/ [https://perma.cc/D899-MXTL].

144. Robert Walton, *California ISO approves 2015 grid reliability plan*, UTILITY DIVE (Mar. 30, 2015), http://www.utilitydive.com/news/california-iso-approves-2015-grid-reliability-plan/380729/ [https://perma.cc/PM8C-DJ9T]. The California Public Utilities Commission's Distribution Resources Plan (DRP) was instituted in August 2014, and similar to REV, it seeks to promote "renewable generation resources, energy efficiency, energy storage, electric vehicles, and demand response technologies." *Distribution Resources Plan*, CAL. PUB. UTILITIES COMMISSION, http://www.cpuc.ca.gov/General.aspx?id=5071 [https://perma.cc/JU3U-T5X9].

electric distribution system and assessing 'what steps can be taken to strengthen Maryland's electric distribution to better withstand the stresses that come with severe weather events.'"[145] At the very least, most PUCs require energy companies to create distribution reliability reports for publication.[146] With states continuing to provide oversight of energy companies' distribution reliability and beginning to fund distribution reliability initiatives down to the local, individual home-owner level, states can increase their stake in this sector of the electric grid relative to that of the federal government.

2. Federal Regulation of Reliability. Federal reliability standards for the electric industry originated with voluntary compliance. In the aftermath of the 1965 blackout in the northeast United States, the electric industry voluntarily established the National Electric Reliability Council, a reliability organization that worked for many years to coordinate and provide standards for the growing bulk energy grid.[147] The bulk energy grid "refers to the network of interconnected generation and transmission lines, while the distribution system refers to the lower-voltage generally radial lines that deliver electricity to the final customer."[148]

In 2005, Congress moved the grid from voluntary to mandatory reliability standards with the passage of the Energy Policy Act of 2005 (EPAct 2005). The EPAct 2005 provided FERC with a new and important federal role in approving rules and enforcing reliability of the grid. The EPAct 2005 amended the FPA by adding Section 215(b)(1), which provides FERC with reliability jurisdiction over any user or owner or operator of the bulk power system.[149]

Despite the hope that bright lines would leave no space unregulated, this allocation brings with it some notable exclusions from federal authority.[150] "The current interpretation of 'bulk

145. Md. Office of People's Counsel v. Md. Pub. Serv. Comm'n, 127 A3d. 582, 587 (Md. App. 2015).

146. *See, e.g.*, *Electric Utility Distribution Reliability Reports*, FL. PUB. SERV. COMMISSION, http://www.psc.state.fl.us/ElectricNaturalGas/ElectricDistributionReliability [https://perma.cc/CJ5D-BX9T]; *Reliability*, PA. PUB. UTILITY COMMISSION, http://www.puc.state.pa.us/consumer_info/electricity/reliability.aspx. [https://perma.cc/CK5S-E74P].

147. *See History of NERC*, *supra* note 121.

148. NAT'L RENEWABLE ENERGY LAB., RENEWABLE ELECTRICITY FUTURES STUDY, BULK ELECTRIC POWER SYSTEMS: OPERATIONS AND TRANSMISSION PLANNING 22-1 (2012), http://www.nrel.gov/docs/fy12osti/52409-4.pdf [https://perma.cc/8FA6-7RQA].

149. Federal Power Act of 1935 § 215(b)(1), 16 U.S.C. § 824*o*(e) (2012).

150. "Congress passed the FPA precisely to eliminate vacuums of authority over the electricity markets." FERC v. EPSA, 136 S. Ct. 760, 780 (2016).

power system' also excludes some transmission and all local distribution facilities, including virtually all of the grid facilities in certain large cities such as New York."[151] Alaska, Hawaii, Guam, and Washington, D.C. are also excluded from federal reliability regulations.[152] The D.C. Circuit held that FERC has no jurisdiction over federal entities responsible for reliability.[153] And as more consumers become involved in the provision of energy, these residential and commercial customers may fall through the cracks of both federal and state reliability standards. For instance, "unlike generators, demand response providers are not subject to regional and NERC [North American Electric Reliability Corporation] mandatory reliability standards."[154] But similarly, as I point out elsewhere, those who provide "distributed reliability" services like rooftop solar or energy storage through Tesla's PowerWall, are largely left unregulated by the states.[155]

This means that penalties for violating NERC standards are imposed on users of the bulk power system, with limited repercussions for distribution entities. It also means that some facilities essential to reliability fall outside of FERC's reliability standard jurisdiction. The Second Circuit recently held that "'failure of [these] 100–200 kV facilities has caused cascading outages that would have been minimized or prevented' by compliance with proposed reliability standards."[156] FERC also identified "gaps in coverage that would defeat the Electricity Modernization Act's goal of ensuring a stable and reliable nationwide power grid."[157]

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151. *Protecting the Electric Grid: Hearing on H.R. 2165, the "Bulk Power System Protection Act of 2009," and H.R. 2195 Before the Subcomm. on Energy & Env't*, 111th Cong. 67 (2009) (statement of Joseph McClelland, Director, Office of Electric Reliability, Federal Energy Regulatory Commission).

152. Mandatory Reliability Standards for the Bulk-Power System, 118 FERC ¶ 61,218, para. 2 (Mar. 16, 2007) (discussing Alaska, Hawaii and Washington, D.C.) [hereinafter Order No. 693]; S. REP. NO. 111-331, at 2–3 (2010) (discussing Guam).

153. S.W. Power Admin. v. FERC, 763 F.3d. 27, 29 (D.C. Cir. 2014), (holding that "[n]either section 215(b) nor section 215(e), nor the two considered in combination, speaks with requisite clarity to waive the federal government's sovereign immunity from monetary penalties."). The proposed Grid Act, an effort to expand federal jurisdiction discussed *infra,* similarly carved out an exception for the federal utilities, the Tennessee Valley Authority and the Bonneville Power Authority. S. 2158, 113th Cong. (2014); N.W. Requirements Util. v. FERC, 798 F.3d 796, 801 (9th Cir. 2015).

154. Order No. 745, *supra* note 11, para. 36.

155. A. Stein, *Distributed Reliability*, 87 COLO. L. REV. 887, 925 (2016).

156. New York v. FERC, 783 F.3d 946, 959 (2d Cir. 2015) ("Facilities operating above a 100 kV threshold are generally part of the bulk system's interconnected transmission networks and are critical in maintaining the reliable functionality of the system as a whole.").

157. *Id*. at 950–51 (citing to Order No. 693, *supra* note 151, paras. 75–81).

EPAct 2005 also authorized the creation of an Electric Reliability Organization, to which FERC could delegate authority for developing and enforcing mandatory reliability standards, subject to FERC oversight. FERC certified the NERC as the nation's "electric reliability organization," (formerly known as the National Electric Reliability Council).[158] In response to this delegation, NERC established over 100 federally enforceable standards for planning, preparation, contingency, and operations of the bulk transmission system that FERC approved.[159] The law imposes a range of reliability requirements on utilities, including a mandate to set reserve margins for contingency reserves (often in the 15-20% range).[160] Most utilities also need to have non-spinning reserves and spinning reserves available to satisfy this requirement.[161] Notably, the electric power industry is "the only critical infrastructure sector with mandatory reliability standards."[162]

All bulk power system owners, operators, and users are required to register with NERC.[163] Registration triggers compliance with NERC's reliability standards, depending on the function provided by the registering entity. "For instance, the New York Independent System Operator has been registered in the Northeast Power Coordinating Council as a Reliability Coordinator, a Transmission Planner, a Resource Planner, a Planning Authority, a Balancing Authority, and a Transmission Operator."[164]

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158. *Id*.

159. *United States Mandatory Standards Subject to Enforcement*, N. AM. ELEC. RELIABILITY CORP., http://www.nerc.com/pa/stand/Pages/ReliabilityStandardsUnitedStates.aspx?jurisdiction=United%20States [https://perma.cc/GZH5-NGLL]; *see* Order No. 693, *supra* note 151, *order on reh'g*, Order No. 693-A, 120 FERC ¶ 61,053 (July 19, 2007); *see also* Alcoa, Inc. v. FERC, 564 F.3d 1342, 1344–45 (D.C. Cir. 2009).

160. BRENDAN KIRBY, ANCILLARY SERVICES: TECHNICAL AND COMMERCIAL INSIGHTS (July 2007), http://www.consultkirby.com/files/Ancillary_Services_-_Technical_And_Commercial_Insights_EXT_.pdf [https://perma.cc/RLY2-C2P7].

161. *Id.* at 17. Spinning reserves are synchronized online capacity that can respond within 10 minutes to system imbalance, and are the first type of resource used in such situations. DOE GLOBAL ENERGY STORAGE DATABASE, http://www.energystorageexchange.org/application/glossary [https://perma.cc/CFR6-L59M].

162. *Electric Grid Reliability: Hearing Before the Comm. on Energy & Nat. Res. U.S. S.*, 113th Cong. 23 (2014) (statement of Sue Kelly, President & CEO, American Public Power Association).

163. *Registration*, NERC, http://www.nerc.com/pa/comp/Pages/Registration-and-Certification.aspx [https://perma.cc/PXR6-BVRD]. FERC has held that neither NERC nor FERC may assess a penalty for the violation of a Reliability Standard against an entity that is not registered as the responsible party for complying with that standard. DOE GLOBAL ENERGY STORAGE DATABASE, *supra* note 161.

164. Order Providing Guidance on Recovery of Reliability Penalty Costs by Regional Transmission Organizations and Independent System Operators, 122 FERC ¶ 61,247, n.8

The federal regulation of reliability functions through a wide dispersion of authority. First, NERC delegates responsibility for reliability to eight regional reliability regions, each with its own reliability council that promulgates system planning and operating criteria to preserve bulk power system reliability.[165] Each regional entity is responsible for promoting and improving the reliability, adequacy, and critical infrastructure of their respective systems. To do this, each entity develops, updates, monitors, and enforces the reliability standards within their area. Section 215 provides FERC, NERC, and these NERC-delegated regional entities exclusive responsibility for enforcing the reliability standards, including responsibility over penalties for violations of the standards.[166] Such reliability requirements provide an important incentive for users. As Judge Posner has noted: "No electric-power company would spend billions of dollars just to improve reliability in the absence of reliability violations that required fixing."[167]

Second, FERC regulates electricity grid managers known as Independent System Operators (ISOs) or Regional Transmission Organizations (RTOs) (collectively, System Operators), regional networks that operate competitive wholesale markets, manage transmission lines, and that are responsible for ensuring electric reliability within their regions of responsibility.[168] These System Operators grew out of FERC Orders 888 and 889 suggesting the concept of an ISO as one way for existing tight power pools to satisfy the requirement of providing non-discriminatory access to transmission.[169] Subsequently, in FERC Order 2000, the

(Mar. 20, 2008).

165. CHRISTENSEN ASSOCS. ENERGY CONSULTING, ENSURING ADEQUATE POWER SUPPLIES FOR TOMORROW'S ELECTRICITY NEEDS 17–19 (2014), http://electricmarkets researchfoundation.org/uploads/3/1/7/1/3171840/ensuring_adequate_power_supplies_6-3-14_for_emrf.pdf [https://perma.cc/72YV-79V3]; *see* JULIE OSBORN & CORNELIA KAWANN, RELIABILITY OF THE U.S. ELECTRICITY SYSTEM: RECENT TRENDS AND CURRENT ISSUES 8 (2001), https://emp.lbl.gov/sites/default/files/report-lbnl-47043.pdf [https://perma.cc/568X-HYN5].

166. 16 U.S.C. § 824*o*(e) (2012). Congress required FERC, NERC, and the regional entities to ensure that any penalties imposed must bear a reasonable relation to the seriousness of the violation and must take into consideration the efforts of the party being penalized to remedy the violation in a timely manner. 16 U.S.C. § 24*o*(e)(6) (2012). Congress capped penalties for violations of the Federal Power Act at no more than $1 million a day. 16 U.S.C. § 825*o*-1 (2012).

167. Ill. Commerce Comm'n v. FERC, 756 F.3d 556, 564 (7th Cir. 2014).

168. Del. Dep't of Nat. Res. & Envtl. Control v. EPA, 785 F.3d 1, 11 (D.C. Cir. 2015) (citing Braintree Elec. Light Dep't v. FERC*,* 550 F.3d 6, 8–9 (D.C. Cir. 2008)) (describing history of RTOs).

169. FERC*, Regional Transmission Organizations (RTO)/Independent System Operators (ISO)*, FERC, http://www.ferc.gov/industries/electric/indus-act/rto.asp [https://perma.cc/QZ3B-QQWD]; *see also The Role of ISOs and RTOs*, ISO/RTO COUNCIL, http://www.isorto.org/about/Role [https://perma.cc/M7TS-4USU].

Commission encouraged the voluntary formation of RTOs to administer the transmission grid on a regional basis throughout North America (including Canada).[170] As a result of these federal initiatives, two-thirds of the nation's bulk energy grid and wholesale markets are managed by seven RTOs and ISOs, generating a regional layer of reliability responsibility.[171]

Balancing Authorities (BAs) provide further jurisdictional layering of responsibility for reliability, covering the entire country.[172] Every region is required to establish a Reliability Coordinator to provide the reliability assessment and emergency operations coordination for the BAs and Transmission Operators (TOPs) within the regions and across the regional boundaries.[173] "Every hour of every day, [BAs] undertake a delicate dance to ensure the generation, transmission and distribution systems are all working reliably" to meet an area's needs.[174] One of the System Operators, the Midcontinent Independent System Operator (MISO), serves as the Reliability Coordinator for its members and develops a reliability plan for the region.[175] Within MISO's Reliability Coordination Area alone, there are 40 different BAs.[176]

Third, section 202a(c) of the FPA provides the Department of Energy (DOE) with emergency authority to act when "an emergency exists by reason of a sudden increase in the demand for electric energy, or a shortage of electric energy or of facilities for the generation or transmission of electric energy, or of fuel or water for generating facilities, or other causes."[177] Where this type of finding is made, DOE has authority to require "temporary

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170. Regional Transmission Organizations, 89 FERC ¶ 61,285 (1999).

171. ISO/RTO COUNCIL, THE VALUE OF INDEPENDENT REGIONAL GRID OPERATORS (Nov. 2005), http://www.ercot.com/content/news/presentations/2005/IRC_White_Paper_Final_11112005.pdf [https://perma.cc/Y57B-VST5]. PJM is a "regional transmission organization approved by the Federal Energy Regulatory Commission (FERC) charged with ensuring the *reliability* of the electric utilities transmission system." Metro. Edison Co. v. Pa. Pub. Util. Comm'n, No. 11-CV-04474, 2013 WL 5429291, at *5 n.34 (E.D. Pa. Sept. 30, 2013) (emphasis added).

172. *See, e.g.,* FERC, MIDWEST ELECTRIC MARKET: OVERVIEW AND FOCAL POINTS 5 (Feb. 7, 2007), https://www.ferc.gov/market-oversight/mkt-electric/midwest/2007/01-2007-elec-mw-archive.pdf [https://perma.cc/5SRM-9LUX] (providing the list of coordinating councils and balancing authorities for the MISO region).

173. MISO, REGIONAL TRANSMISSION ORGANIZATION (RTO) RELIABILITY PLAN (June 1, 2014), https://www.misoenergy.org/Library/Repository/Procedure/MISO%20Reliability%20Plan.pdf [https://perma.cc/K82W-CSRP].

174. *Understanding Transmission—How You Get Your Electricity: Chapter 6*, TANC, http://www.tanc.us/chap6_picture.html. [https://perma.cc/8H89-3KMS].

175. MISO, *supra* note 173, at 6–7.

176. *Id.* at 26–27 app. B.

177. Federal Power Act of 1935, Pub. L. No. 74-333, § 202a(c), 49 Stat. 849 (codified as amended at 16 U.S.C. § 824a(c) (2012)).

connections of facilities and such generation, delivery, interchange, or transmission of electric energy as in its judgment will best meet the emergency and serve the public interest."[178] Congress added section 824*o*-1 in late 2015 which eases the possibility of liability in these events and interprets responses of owners and operators favorably except in cases of gross negligence.[179]

In short, efforts to fortify reliability through reliability standards have traditionally ended at the edge of the bulk energy grid, leaving states to regulate reliability as they please in their exclusive distribution sphere. States hit the same jurisdictional wall, with their efforts to fortify reliability ending at the edge of the distribution grid. It would be an enormous mistake, however, to think that reliability of the grid is only addressed through reliability standards. Beyond reliability standards, the law uses many tools to maintain reliability of the grid, including penalties, good business practices, and market incentives.[180] For instance, state, regional, and federal actors have engaged in a number of initiatives to bolster the reliability of the grid. As the next Section demonstrates, real-world reliability is much messier.

B. Real-World "Smudging" for Reliability

Despite these bright lines dividing authority over reliability, a number of emerging energy issues lie in the nether region where it is most difficult to maintain such neat lines. These issues occur in the grey jurisdictional area between state and federal jurisdiction, resulting in mounting pressure on the bright jurisdictional lines Congress established for reliability. Both states and FERC have engaged in a wide variety of rulemakings within each of their exclusive spheres to bolster reliability of the grid.

Notably, there are a number of activities occurring on the state-regulated distribution part of the electric grid that are of intense interest to the federal government. On the federal side of the ledger, reliability has been a critical hook for federal jurisdiction over a number of emerging crossover energy areas. For

178. *Id.*; *see also DOE's Use of Federal Power Act Emergency Authority*, U.S. DEP'T ENERGY, U.S. DEP'T ENERGY, http://energy.gov/oe/does-use-federal-power-act-emergency-authority [https://perma.cc/HB6Q-KSWY].

179. Federal Power Act of 1935 § 215A, 16 U.S.C. § 824*o*-1 (Supp. III 2016).

180. Essential reliability services includes (1) inertia; (2) regulation; (3) active power control; (4) reactive power and voltage control; (5) system disturbance resiliency; (6) modeling; and (7) load and generation forecasting. NERC, 2013 SPECIAL RELIABILITY ASSESSMENT 1, http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC-CAISO_VG_Assessment_Final.pdf [https://perma.cc/AZ6B-E5KW].

instance, FERC has moved from a regulated cost-of-service model for electricity to one where energy is procured through a competitive process.[181] As previously discussed, FERC encouraged the creation of RTOs to enhance reliability, and some of them in turn created capacity markets to ensure resources would be available three years in the future. FERC worked with each of the seven RTO regions to approve changes to market-based approaches to rapidly adapt to emerging reliability challenges.[182] Regions also relied on temporary, out-of- market options, such as Reliability Must Run contracts in cases when local authorities are concerned that market forces will not provide strong enough signals to specific capacity-providers.[183] As we saw in the Supreme Court cases previously discussed, FERC successfully invoked federal regulation of capacity markets and demand response, despite their impacts on the state-controlled distribution portion of the grid, discussed below.

This Section identifies four additional areas that pique the federal interest in system-wide reliability. First, the United States relies on more distributed resources, including rooftop solar, that lie on the distribution side of the grid but can impact the bulk grid. Second, the Obama Administration's United States Environmental Protection Agency released its first-ever regulation of existing power plants, a bold and controversial move that has the potential to upend the delicate regulatory balance between federal and state actors' efforts to maintain the reliability of the grid. Third, both state and federal governments are increasingly concerned about cyber-attacks on the grid, attacks that can occur on the distribution side of the grid. Lastly, energy storage lies at the straddle line between state and federal regulation, proving fertile battleground for the next jurisdictional challenge. All four of these activities reflect actions occurring on the state-regulated, distribution side of the grid that are likely to have an impact beyond the state's distinctive jurisdictional sphere.

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181. Severin Borenstein & James Bushnell, *The U.S. Electricity Industry after 20 Years of Restructuring* (Energy Inst. at Haas, Working Paper 252, 2014), https://ei.haas.berkeley.edu/research/papers/WP252.pdf [https://perma.cc/88EV-PWXM].

182. MISO, one of the largest RTO regions, is also exploring additional strategies to align state resource planning decisions in its footprint with grid reliability requirements, including its "Multi Value Project" program designed to "develop a comprehensive expansion plan that meets the reliability, policy, and economic needs of the system" that "delivers regional value while meeting near-term system needs;" the most recent review of this program shows that it has provided benefits in excess of costs. SUSAN TIERNEY, ERIC SVENSON & BRIAN PARSONS, ENSURING ELECTRIC GRID RELIABILITY UNDER THE CLEAN POWER PLAN 10 (Apr. 2015), https://www.eenews.net/assets/2015/04/20/document_gw_02.pdf [https://perma.cc/7QBP-DYE7].

183. *Id*.

For many years, reliability took a back seat to other federalism debates. Instead of lurking in the background of nearly every decision related to the electric grid, reliability may be about to take center stage.

The Supreme Court made clear that merely because state actions can impact the bulk energy grid, it does not jeopardize the state's authority over the action.[184] As the Supreme Court noted in *ONEOK*, "[s]tates, of course, may regulate within the domain Congress assigned to them even when their laws incidentally affect areas within FERC's domain."[185] The key legal question for the future may be whether the growing impacts of distribution grid activity are merely "incidental" to the federally-regulated component of the grid.

1. Distributed Generation. The first category of distribution grid activity that can impact reliability of the bulk grid lies with distributed generation (DG). As discussed above, DG involves electricity that is generated close to its place of use. Since customers lie on the distribution grid, DG necessarily falls on the state-regulated part of the grid. Customers invest in DG for many reasons, including empowerment in being able to choose greener, environmental sources of electricity, increased independence from the local utility, and hope of eventual electricity cost-savings.

Increased DG impacts both the distribution and the transmission parts of our grid.[186] Recognizing the potential problem of a growing distributed base, NERC issued a special report on the "Potential Bulk System Reliability Impacts of Distributed Resources."[187] NERC recognized the growth of distributed energy resources (DER) and acknowledged that "[t]hese resources all have different characteristics which in large numbers may aggregately affect the bulk system."[188] The NERC

184. Hughes v. Talen Energy Mktg., LLC., 136 S. Ct. 1288, 1298–99 (2016).

185. *Id.*; *see also* PPL Energyplus, LLC v. Solomon, 766 F.3d 241, 255 (3rd Cir. 2014) ("When a state regulates within its sphere of authority, the regulation's incidental effect on interstate commerce does not render the regulation invalid."); PPL Energyplus, LLC v. Nazarian, 753 F.3d 467, 479 (4th Cir. 2014) ("[N]ot every state regulation that incidentally affects federal markets is preempted.").

186. CPUC, BIENNIAL REPORT ON DISTRIBUTED GENERATION I-5 (May 2013). Distribution system impacts include line losses, frequency and voltage regulation, peak demand reduction, and deferred system upgrades. Transmission system impacts include line losses, reversed power flow from the distribution system, and operational and voltage regulation. *Id.*

187. NERC, POTENTIAL BULK SYSTEM RELIABILITY IMPACTS OF DISTRIBUTED RESOURCES (Aug. 2011), http://www.nerc.com/docs/pc/ivgtf/IVGTF_TF-1-8_Reliability-Impact-Distributed-Resources_Final-Draft_2011.pdf [https://perma.cc/SXS6-682C].

188. *Id*. at 1.

report identified a number of potential reliability concerns due to the growth of distributed resources, including their increased variability, reduced responses to faults, lack of visibility and control of DER, impacts on forecasting, and reactive power and voltage control.[189] NERC noted that "NERC's existing scope does not extend to DER and there are potential legal considerations in expanding that scope."[190]

> Should DER penetration reach a sufficient market threshold, DER will impact resource management and transmission reliability, resulting in the need for more information to be provided to system and transmission operators. However, current practices in many areas do not require information to be provided from DER to the bulk system and therefore cannot be considered in either bulk planning or operations.[191]

As California research indicates, "[t]he expected impacts [of increased DER] would first occur on the distribution system because of the direct connection of DG to the distribution system."[192] These impacts may include reverse power flows if "excess energy from high amounts of PV on a . . . circuit can back-feed into the circuit, causing over-voltage and other power problems."[193] DG can also cause a loss of relay coordination, potential over-voltages, and complications with restoring service if DG is still running in islanding mode.[194] Hawaii is an important case study for analyzing the impacts of DG on the grid, where impacts are already being observed.[195] The more isolated nature of the grid due to the state's geography presents much less flexibility to handle issues arising from DG, leading the state's main utility to impose limits on additional solar installation.[196] Such policies are complicated by the parallel utility concerns that DG will "chip away" at utilities' monopoly for power distribution.[197]

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189. *Id*. at 2.

190. *Id*. at 3.

191. *Id*. at 4.

192. CPUC, *supra* note 186, at I-5.

193. Martin LaMonica, *Why Is Hawaii Scaling Back on Solar?*, GREENBIZ (Jan. 28, 2014, 5:15 AM), http://www.greenbiz.com/blog/2014/01/28/solar-hawaii-utilities-scaling-back [https://perma.cc/HQB5-XXDE] (discussing Hawaii).

194. Galina Antonova et al., Distributed Generation and Its Impact on Power Grids and Microgrids Protection (2012), https://www.eiseverywhere.com/file_uploads/7033cd282e2d665d28de7c0ea24d451a_ant_pap.pdf [https://perma.cc/N5ZS-LPB7].

195. LaMonica, *supra* note 193.

196. *Id*.

197. Martin LaMonica, *Inside the Utility-Renewables Power Play*, GREENBIZ (Nov. 25, 2013, 6:30 AM), http://www.greenbiz.com/blog/2013/11/25/utilities-distributed-energy-duke-not-bad-guys [https://perma.cc/LE2R-GHY3].

"[A]s the penetration of DG increases, the impacts will roll up to the [federally regulated] transmission system."[198] Impacts caused by high penetration levels of intermittent renewable DG can be complex and severe and may include similar problems with voltage fluctuation, frequency, and power quality.[199] Increased DG in an area can also raise the level of short circuit capacity and cause instability in the grid if there are no adjustments or improvements made for the DG.[200] Some commentators labeled the effects of DG as "cascading natural deregulation."[201]

Areas in Arizona already see impacts on the federal high voltage system due to state action on the distribution system.[202] Flagstaff sees tremendous increases in DG from localized wind turbines,[203] and the city is "serv[ing] as a laboratory of sorts" in determining how DG affects the broader grid.[204] Some argue that the transmission lines' "insuperable input impedance" will render it unlikely that there will be an upstream "commingling" between distribution and transmission-level energy.[205] But even these skeptics acknowledge that this commingling potential is more likely as distributed generation proliferates.[206]

All signs point to an increased proliferation of DG. New analyses indicate that DG is likely to double by 2023, and federal reports predict that increases in community solar alone can result

198. CPUC, *supra* note 186, at I-5 (noting that the distribution system impacts include line losses, frequency and voltage regulation, peak demand reduction, and deferred system upgrades and that transmission system impacts include line losses, reversed power flow from the distribution system, and operational and voltage regulation).

199. Lucian Ioan Dulău, Mihail Abrudean & Dorin Bică, *Effects of Distributed Generation on Electric Power Systems*, 12 PROCEDIA TECH. 681, 682 (2014); IEEE PES, IEEE REPORT TO DOE QER ON PRIORITY ISSUES (Sept. 5, 2014), http://www.ieee-pes.org/images/files/pdf/IEEE%20QER%20Report%20September%205%202014%20HQ.pdf [https://perma.cc/C7WL-NPP5].

200. Dulău et al., *supra* note 199, at 683–85.

201. *E.g.*, Devon Bass, *MicroGrids and Distributed Generation Will Change Our Energy Futures*, ENERGYBIZ (June 27, 2013), http://www.energycentral.com/c/um/microgrids-and-distributed-generation-will-change-our-energy-futures [https://perma.cc/V6ZK-C6S3].

202. *See* R. Thomas Beach & Patrick G. McGuire, *The Benefits and Costs of Solar Distributed Generation for Arizona Public Service*, CROSSBORDER ENERGY (May 8, 2013), http://www.seia.org/sites/default/files/resources/AZ-Distributed-Generation.pdf [https://perma.cc/3FXJ-CD63] (discussing the costs and benefits of solar DG in Arizona).

203. *See* DISTRIBUTED WIND ENERGY ASS'N, DWEA BRIEFING PAPER: WHAT IS DISTRIBUTED WIND? (Apr. 2014), http://distributedwind.org/wp-content/uploads/2014/04/DWEA_What_is_DW_Definition_Apr2014.pdf [https://perma.cc/83B8-PT9Q].

204. Press Release, Ariz. Corp. Comm'n, Commission Approves APS Solar Pilot Project in Flagstaff (Apr. 2, 2010), http://www.azcc.gov/Divisions/Administration/news/100401Flagstaff%20Pilot.pdf [https://perma.cc/Y6H3-SZLF].

205. Lindh, *supra* note 43, at 537.

206. *Id*.

in a doubling of the amount of distributed solar by 2020.[207] Similarly, states like Connecticut and New York launched microgrid programs on their distribution grids to help boost the reliability of their power grids after Superstorm Sandy in 2012.[208] California stands as the poster child for DG, sporting over 400,000 rooftop solar and other distributed energy installations providing more than 3000 MW.[209] Analysts predict that DG has the potential to improve reliability of the system, but where the DG is more variable, "the system can become significantly less robust with the risk of a [*sic*] large blackouts becoming larger."[210] NERC's most recent long-term reliability assessment indicates sufficient resources until 2025, but has targeted the "unprecedented change in the resource mix at an accelerated pace" as a cause for reliability concern.[211]

NERC finds that even though DERs are not directly connected to the BPS, "[v]isibility, controllability, and new forecasting methods of these resources are of paramount importance to plan and operate the BPS—particularly because the majority of DERs are intermittent in nature and outside the control of the System Operator."[212] NERC recommends a task force to focus on how to reliably accommodate high levels of DERs, and indicates that,

> As more DERs are integrated, the supply of control to System Operators can decrease. However, distribution-centric operations can reliably support the BPS with adequate planning, operating and forecasting analyses, coordination, and policies that are oriented to reliably interface with the

207. Richard Martin, *The Annual Installed Capacity of Distributed Generation is Expected to Double by 2023*, NAVIGANT RES. (Dec. 5, 2014), http://www.navigantresearch.com/newsroom/the-annual-installed-capacity-of-distributed-generation-is-expected-to-double-by-2023 [https://perma.cc/7JEM-QT59]; *Community and Shared Solar*, U.S. DEP'T ENERGY, https://energy.gov/eere/sunshot/community-and-shared-solar [https://perma.cc/F2RL-2PL9].

208. Peter Key, *6 Trends that Will Shape Utilities in 2016*, ENERGYBIZ (Dec. 17, 2015), http://www.energycentral.com/o/energybiz/6-trends-will-shape-electric-power-2016 [https://perma.cc/MS32-7L2E].

209. Erin Arson, *State Commission Findings Influence Ongoing Net Energy Metering Valuation Debate*, ENERKNOL (Feb. 6, 2016), https://enerknol.com/wp-content/uploads/2016/02/EKR-PU-Net-Metering-Policy-Debate-California-Nevada-2-8-2016.pdf [https://perma.cc/MD55-YFR3].

210. D.E. Newman et al., The Impact of Distributed Generation on Power Transmission Grid Dynamics (Jan. 2011) (unpublished paper presented at the 44th Hawaii International Conference on System Science), http://uc-ciee.org/downloads/newmanHICSS11.pdf [https://perma.cc/8XHW-92RF].

211. NERC, 2015 LONG-TERM RELIABILITY ASSESSMENT 1 (Dec. 2015), http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2015LTRA%20-%20Final%20Report.pdf [https://perma.cc/CU7X-7G9M] [hereinafter NERC LONG-TERM RELIABILITY ASSESSMENT].

212. *Id*.

> BPS. Coordinated and reliable integration of DERs into the BPS can also present opportunities to create a more robust and resilient system.[213]

Some of the more recent initiatives will further connect state-regulated DG and federally-regulated wholesale markets. Many jurisdictions are evaluating the impacts of allowing many small distributed resources to be aggregated into one bundle and bid into wholesale markets. CAISO in California,[214] PJM in the Northeast, and ERCOT in Texas[215] are all taking steps toward allowing these distributed resources into wholesale markets. California ISO recently approved a proposal to submit tariff changes to FERC that for the first time enable aggregated distributed energy resources, such as rooftop solar, to participate in the ISO-operated wholesale energy market.[216] California ISO's President has indicated that as DG grows, the "framework for integrating smaller renewable resources onto the high voltage grid demonstrates a significant step in re-designing our energy future with lower carbon emissions and helping California meet its clean energy goals."[217] DG is likely to present a scenario where state actions affect the reliability of the federally-regulated grid. The degree of federal stretch into this area likely depends on the states' successes in finding ways to manage the impacts in a way that keeps them "incidental."

2. Clean Power Plan. A second way in which distribution grid activity can impact reliability of the bulk grid stems from EPA's Clean Power Plan (CPP). On August 3, 2015, the Obama EPA issued its first rulemaking to regulate carbon dioxide

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213. *Id*.

214. CAL. ISO, ENERGY STORAGE AND AGGREGATED DISTRIBUTED ENERGY RESOURCES 13, 15 (Apr. 2015), http://www.caiso.com/Documents/Presentation-EnergyStorageandAggregatedDistributedEnergyResource-EducationalForum.pdf.

215. Dave Anders, *Distributed Energy Resources Special MRC Sessions*, PJM (Nov. 17, 2016), http://www.pjm.com/~/media/committees-groups/committees/mrc/20161122-special/20161122-item-01-special-mrc-distributed-energy-resources-report.ashx [https://perma.cc/79WF-ACPD]. ERCOT created its Aggregate Load Resource classification that allows individually metered demand-response sites to be aggregated for participation in the state's grid markets. Jeff St. John, *Texas Mulls New Grid Markets for Aggregated Distributed Energy Resources*, GREENTECH MEDIA (June 5, 2015), http://www.greentechmedia.com/articles/read/texas-looks-to-distributed-energy-resources-as-market-players [https://perma.cc/MM96-L8VF].

216. California ISO approves rules to let aggregated solar, storage into wholesale. Cal. Indep. Sys. Operator Corp., *ISO Board Approves Gateway to the Distributed Energy Future*, MARKET WIRED (July 16, 2015 2:18 PM), http://www.marketwired.com/press-release/iso-board-approves-gateway-to-the-distributed-energy-future-2039326.htm [https://perma.cc/A9JP-UJ44].

217. *Id*.

emissions from existing power plants.[218] This rulemaking established unique carbon emissions limits for each state and requires the state to develop a plan for compliance by September 2018.[219] The EPA based the emissions limits on three building blocks that states could feasibly implement to achieve the required limitations: (1) efficiency improvements at existing fossil-fuel plants; (2) shifts from coal to natural gas; and (3) expanded use of renewable energy.[220]

The CPP's basis for reducing carbon emissions would represent a significant change from our current electric grid, leading to widespread concern about its impacts to the reliability of the grid.[221] The CPP would accelerate the ongoing shift toward greater use of natural gas, which will require pipeline expansion to maintain a reliable source of fuel.[222] It would also increase dependence on renewable resources, driving additional transmission to access areas that have higher-grade wind and solar resources (generally located in remote areas).[223] As NERC explains, "[p]ipeline constraints and growing gas and electric interdependency challenges impede the electric industry's ability to obtain needed natural gas services, especially during high-use horizons."[224] Unsurprisingly, opponents of the rule were quick to claim that EPA's action "reduces reliability, while setting a dangerous precedent for future regulation."[225] Perhaps anticipating such challenges, the CPP references reliability 446 times.[226]

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218. Standards of Performance for Greenhouse Gas Emissions, 80 Fed. Reg. 64,510, 64,510, 64,648 (Oct. 23, 2015), (to be codified at 40 C.F.R. pts. 60, 70, 71, 98).

219. EPA, OVERVIEW OF THE CLEAN POWER PLAN 8 (2015), http://www.epa.gov/sites/production/files/2015-08/documents/fs-cpp-overview.pdf [https://perma.cc/CTF2-3WKQ].

220. Carbon Pollution Emission Guidelines for Existing Stationary Sources, 80 Fed. Reg. 64,667 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60).

221. *See, e.g.*, Marita Noon, *EPA's Clean Power Plan: A Recipe for Consumer Confusion, Cost Increases, and Confrontations*, CFACT (June 2, 2015), http://www.cfact.org/2015/06/02/epas-clean-power-plan-a-recipe-for-consumer-confusion-cost-increases-and-confrontations/ [https://perma.cc/UX65-UEMR].

222. EPA, FACT SHEET: CLEAN POWER PLAN KEY CHANGES AND IMPROVEMENTS 3 (2015), https://www.epa.gov/sites/production/files/2015-08/documents/fs-cpp-key-changes.pdf [https://perma.cc/RM9C-QH35].

223. NERC, FERC TECHNICAL CONFERENCE ON EPA'S CLEAN POWER PLAN—PANEL I: REMARKS OF GERRY CAULEY 3 (2015).

224. NERC, POTENTIAL RELIABILITY IMPACTS OF EPA'S PROPOSED CLEAN POWER PLAN: INITIAL RELIABILITY REVIEW 2 (2014), http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/Potential_Reliability_Impacts_of_EPA_Proposed_CPP_Final.pdf [https://perma.cc/QY5E-3JHG] [hereinafter NERC INITIAL RELIABILITY REVIEW].

225. Ellen M. Gilmer, *Clean Power Plan*, E&E NEWS (Oct. 26, 2015), http://www.eenews.net/stories/1060026891 [https://perma.cc/83E3-BU49].

226. *See* Standards of Performance for Greenhouse Gas Emissions, 80 Fed. Reg. 64,510, 64,510, 64,648 (Oct. 23, 2015) (to be codified at 40 C.F.R. pts. 60, 70, 71, 98).

In November 2014, NERC issued an "initial reliability review" of EPA's proposed rule where it identified elements of the CPP that could lead to reliability concerns.[227] NERC projects that overall generation capacity would be reduced by between 108 and 134 GW, and the rule contemplates a shift to more renewable sources that are both intermittent and not capable of producing on demand.[228] In April 2015, shortly before EPA issued its final rule, NERC issued its more detailed Phase I report.[229] In it, NERC developed a three-part reliability assessment that analyzes five potential market scenarios, estimates transmission and generation infrastructure adequacy, and reviews available studies on the CPP.[230] "NERC estimates that the U.S. will need nearly 100 GW more gas generation and 23 GW more wind by 2020 to comply with the CPP, along with the pipeline and transmission infrastructure to serve it."[231]

NERC expressed concern about a number of EPA assumptions, and it is not alone.[232] NERC worries that states will not be able to obtain "suitable replacement generation resources to maintain adequate reserve margin levels," that there may be an insufficient time period for implementation, and that heat rate improvements may be difficult to achieve.[233] NERC concluded that Essential Reliability Services, those required for load, voltage, and frequency support may be strained by the proposed CPP.[234]

In March of 2017, President Trump issued an executive order indicating his plans to dismantle the Obama Administration's CPP.[235] Specifically, President Trump is requiring the current EPA to review the CPP and "suspend, revise, or rescind the guidance, or public for notice and comment proposed rules

227. NERC INITIAL RELIABILITY REVIEW, *supra* note 224, at 1.

228. *Id*. at 2.

229. *Id.* at 3.

230. *Id.* at 10.

231. Herman K. Trabish, *Why NERC Thinks the EPA Clean Power Plan Could Threaten Grid Reliability*, UTILITY DIVE (Apr. 28, 2015), http://www.utilitydive.com/news/why-nerc-thinks-the-epa-clean-power-plan-could-threaten-grid-reliability/390966/ [https://perma.cc/V776-TZKW]; *accord* NERC INITIAL RELIABILITY REVIEW, *supra* note 224, at 16.

232. TIERNEY ET. AL., *supra* note 182, at 5; SUSAN TIERNEY, PAUL HIBBARD & CRAIG AUBUCHON, ELECTRIC SYSTEM RELIABILITY AND EPA'S CLEAN POWER PLAN: TOOLS AND PRACTICES ES-1, 8 (Feb. 2015); JURGEN WEISS ET AL., EPA'S CLEAN POWER PLAN AND RELIABILITY: ASSESSING NERC'S INITIAL RELIABILITY REVIEW iii, 1 (Feb. 2015); AMELIA REIVER SCHLUSSER, RENEWABLE, RELIABLE, RESILIENT: POLICY APPROACHES FOR MAINTAINING RELIABILITY IN THE WESTERN GRID UNDER THE CLEAN POWER PLAN i (Oct. 2015).

233. NERC INITIAL RELIABILITY REVIEW, *supra* note 229, at 3.

234. *Id.* at vii.

235. Exec. Order No. 13783, 82 Fed. Reg. 16,093 (Mar. 28, 2017).

suspending, revising, or rescinding those rules."[236] Such dismantling will take time, however, since Trump EPA actions will be subject to notice and comment rulemaking timetables and the Trump EPA will be required to find an alternative means to regulate greenhouse gases. States were given wide latitude in how to comply with the CPP requirements[237], and any alternative also is likely to allow states significant flexibility in how they address any federal greenhouse gas regulation. Regardless of how the new administration regulates greenhouses gases, state activities will have the potential for enormous impact on the bulk energy grid and FERC and NERC are likely to become even more invested in ensuring that any state actions that do occur do not jeopardize reliability of the system-wide grid.[238]

3. Physical and Cybersecurity. A third area where activities on the distribution grid have the potential to impact the federally regulated grid lies in grid security. The electric utility industry operates as an integrated system of generation, transmission, and distribution facilities to deliver electric power to consumers. In the United States, this system consists of over 9,000 electric generating units connected to over 200,000 miles of high-voltage transmission lines.[239] This system is interspersed with hundreds of large electric power transformers functioning to adjust electric voltage as needed to move power across the network.[240] As with the other parts of the system, impacts of physical or cyber-attacks on the grid will generally not be isolated between jurisdictional boundaries. Bolstering reliability through grid protection efforts will take both federal and state action.

Cyber-attacks are increasingly being addressed at a federal level. Concerns generally focus on three forms of attack:

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236. *Id.*

237. *See generally* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64661 (Oct. 23, 2015).

238. "FERC has a role to play in protecting grid reliability as new environmental regulations are developed and implemented." *Electric Grid Reliability: Hearing on Keeping the Lights On—Are We Doing Enough to Ensure the Reliability and Security of the U.S. Electric Grid? Before the Comm. on Energy & Nat. Res.*, 113th Cong. 11 (2014) (statement of Cheryl A. LaFleur, Acting Chairman, Federal Energy Regulatory Commission).

239. PAUL W. PARFOMAK, CONG. RESEARCH SERV., R43604, PHYSICAL SECURITY OF THE U.S. POWER GRID: HIGH-VOLTAGE TRANSFORMER SUBSTATIONS 1 (2014).

240. *Id.*

(1) hacking the system;[241] (2) naturally occurring solar storms;[242] and (3) malicious electromagnetic pulse (EMP).[243] Approximately once every four days, a part of America's electrical power grid is subject to a physical or cyber-attack.[244] In fact, "[m]ore often than once a week, the physical and computerized security mechanisms intended to protect Americans from widespread power outages are affected by attacks, with less severe cyber-attacks happening even more often."[245] According to the Department of Homeland Security (DHS), these attacks appear to be increasingly common.[246] In 2011, DHS recorded 31 cyber-attacks "on the energy sector;" DHS recorded 161 of these cyber-attacks in 2014.[247]

According to a report published by Lloyd's, "[a] major cyber-attack on the U.S. electric grid could cause over a $1 trillion in economic impact and roughly $71.1 billion in insurance claims."[248] Although such an attack in the U.S. has not been successful, "the interconnected nature of the grid and its reliance on communications protocols that predate modern cybersecurity

241. In late 2015, a Ukraine utility suffered what has been labeled a coordinated electric system cyber-attack. A Russian group remotely switched the circuit breakers, installed malware to prevent detection, and swamped the call center so customers could not report the problem, activities that kept the power out for six hours. *Cyberattack that Crippled Ukrainian Power Grid was Highly Coordinated*, CBC NEWS (Jan 11, 2016, 12:17 PM), http://www.cbc.ca/news/technology/ukraine-cyber-attack-1.3398492.

242. "[A] naturally occurring phenomenon where the sun releases solar flares, energetic particles and/or coronal mass ejections. When solar storms are directed toward Earth, they can produce geo-magnetically inducted currents (GICs) in the ground, which can impact the electric grid and potentially cause permanent damage to critical grid components, such as high-voltage power transformers." Importantly, "there is limited capability to forecast GIC impacts on a local level," rendering the distribution grid vulnerable. *Solar Storm Mitigation*, DEP'T HOMELAND SECURITY, http://www.dhs.gov/science-and-technology/solar-storm-mitigation [https://perma.cc/R76E-STZZ].

243. EMP is a burst of electromagnetic radiation that results from certain types of high-energy explosions or from a suddenly fluctuating magnetic field. *See* JOHN S. FOSTER ET AL., JR., REPORT OF THE COMMISSION TO ASSESS THE THREAT TO THE UNITED STATES FROM ELECTROMAGNETIC PULSE (EMP) ATTACK 1 (Apr. 2008).

244. Steve Reilly, *Bracing for a Big Power Grid Attack: 'One is Too Many'*, USA TODAY (Mar. 24, 2015), http://www.usatoday.com/story/news/2015/03/24/power-grid-physical-and-cyber-attacks-concern-security-experts/24892471/.

245. *Id.*

246. Sabrina Toppa, *The National Power Grid Is Under Almost Continuous Attack, Report Says*, TIME (Mar. 25, 2015), http://time.com/3757513/electricity-power-grid-attack-energy-security/.

247. *Id.*

248. Ucilia Wang, *Report: The Trillion-Dollar Risk A Cyber-attack On U.S. Power Grid*, FORBES (Aug. 7, 2015, 4:31 PM), http://www.forbes.com/sites/uciliawang/2015/07/08/report-the-trillion-dollar-risk-of-a-cyber-attack-on-u-s-power-grid/ (summarizing LLOYD'S, EMERGING RISK REPORT: BUSINESS BLACKOUT 4 (2015), https://www.lloyds.com/~/media/files/news%20and%20insight/risk%20insight/2015/business%20blackout/business%20blackout20150708.pdf).

problems are considered cause for concern by security experts."[249] In 2007, the DOE's Idaho National Laboratory conducted a simulated cyber-attack on the facility; the simulated attack "exploited a vulnerability at the facility by altering the timing of a diesel generator's circuit breakers, causing thick smoke to rise from the plant."[250] To prevent these cyber-attacks, "critical elements of the electricity industry's infrastructure [need to be] completely disconnected from the internet to keep them insulated from adversaries," a problematic suggestion as the smart grid initiatives seek to further interconnect the grid.[251]

Physical attacks often focus on substations. Transmission substations (that step up the voltage for a long-distance journey) fall under federal jurisdiction but power substations (that step down the voltage) fall under state jurisdiction.[252] One high-profile attack occurred at PG&E's Metcalf facility in California on a federally-regulated transmission substation. Gunmen opened fire on an electrical substation for approximately nineteen minutes.[253] The attack "surgically knocked out 17 giant transformers that funnel power to Silicon Valley."[254] "PG&E's electric system contains significant redundancies that allow the company to reroute and shift electric load when equipment is damaged" so no customers lost power.[255] However, the attack resulted in over $15 million of damage.[256]

Federal efforts to maintain reliability of the grid in the wake of a cyber-attack include Congress' passage of the Cybersecurity Act of 2015.[257] The Act grants legal protection to private companies and government agencies sharing what they know about digital security risks and potential attacks.[258] Under the law, companies are exempt from antitrust scrutiny and other forms of liability for

249. Reilly, *supra* note 244.

250. *Id*.

251. *Id*.

252. Order Granting Petition for Declaratory Order at 2, No. EL04-92-000 (FERC June 2, 2004); *see also* Marshall Brain, *How Power Grids Work,* CLARK SCI. CTR. SMITH C., http://www.science.smith.edu/~jcardell/Courses/EGR220/ElecPwr_HSW.html [https://perma.cc/Y6N4-AXBN].

253. Rebecca Smith, *Assault on California Power Station Raises Alarm on Potential for Terrorism*, WALL ST. J. (Feb. 5, 2014), http://www.wsj.com/articles/SB10001424052702304851104579359141941621778.

254. *Id*.

255. Evan Halper & Marc Lifsher, *Attack on Electric Grid Raises Alarm*, L.A. TIMES (Feb. 6, 2014) http://articles.latimes.com/print/2014/feb/06/business/la-fi-grid-terror-20140207.

256. Toppa, *supra* note 246.

257. David J. Bender, *Congress Passes the Cybersecurity Act of 2015,* NAT'L L. REV. (Dec. 20, 2015), http://www.natlawreview.com/article/congress-passes-cybersecurity-act-2015.

258. *Id*.

working together to share threat information.[259] In 2014, NERC promulgated critical infrastructure protection guidelines referred to as CIP V5, which became binding in July 2016.[260] The Congressional Research Service categorized FERC's regulatory role as "potentially be[ing] a conflict of interest" and others criticize FERC for essentially allowing "an industry to write its own rules."[261] President Obama further addressed cybersecurity issues with Presidential Policy Directive/PPD-41 issued in July 2016, which sets forth broad governmental policies and coordination strategies to implement in the event of a cyber incident.[262]

Inklings of a further jurisdictional reach are evident in Congress. The U.S. Senate recently proposed the "Grid Act," a bill that sought to expand FERC's authority over emergency situations by eliminating procedural barriers that hinder swift responses to emergencies.[263] Prompted largely by cybersecurity concerns, the proposed amendment would allow FERC to issues orders for emergency measures where there is an "imminent grid security threat."[264] American Public Power argued the powers were overbroad as they would "allow FERC to rewrite the entire mandatory and enforceable standards the electric utility industry has worked on for nearly eight years."[265] But it demonstrates that

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259. *Id.*

260. NERC, CYBER SECURITY RELIABILITY STANDARDS CIP V5 TRANSITION GUIDANCE 1–2 (Aug. 12, 2014), http://www.nerc.com/pa/CI/Documents/V3-V5%20Transition%20Guidance%20FINAL.pdf; *Mandatory Standards Subject to Enforcement*, NERC (2011), http://www.nerc.net/standardsreports/standardssummary.aspx [https://perma.cc/94AR-Z6AZ]; *CIP V5 Transition Program*, NERC, http://www.nerc.com/pa/CI/Pages/Transition-Program.aspx [https://perma.cc/C6L8-SFWF]. NERC has also issued a CIP V6 to address market manipulation. NERC, CIP-006-6, CYBER SECURITY—PHYSICAL SECURITY OF BES CYBER SYSTEMS, http://www.nerc.com/_layouts/PrintStandard.aspx?standardnumber=CIP-006-6&title=Cyber%20Security%20Physical%20Security$20of%20BES%20Cyber%20Systems&jurisdiction=null [https://perma.cc/F7ZN-TVLR].

261. RICHARD J. CAMPBELL, CONG. RESEARCH SERV., R41886, THE SMART GRID AND CYBERSECURITY—REGULATORY POLICY AND ISSUES 2 (2011); *see* Reilly, *supra* note 244 ("The number of enforcement actions taken by NERC against utilities for failing to follow critical infrastructure protection guidelines decreased 30% from 1,230 in 2013 to 860 in 2014." These statistics have been the subject of debate—NERC proposes that "decreasing fines point to increased compliance, rather than decreasing enforcement.").

262. ADMIN. OF BARACK OBAMA, PPD-41, UNITED STATES CYBER INCIDENT COORDINATION 1 (July 26, 2016).

263. S. 2158, 113th Cong. (as introduced to the Senate, Mar. 26, 2014).

264. *Id.* at § 2 (defining a grid security threat as "a malicious act using electronic communication or an electromagnetic pulse, or a geomagnetic storm event . . . [or] a direct physical attack on the bulk-power system or on defense critical electric infrastructure . . . [with] significant adverse impacts on the reliability of the bulk-power system or of defense critical electric infrastructure").

265. Kate Rowland, *FERC Versus NERC: A Cyber Security Showdown?*, ENERGYCENTRAL (Aug. 2011), http://energycentral.net/magazine/article/230725/ferc-versus-nerc.

there can be a reallocation of responsibility over reliability up or down the chain of players on the grid.

In light of the Metcalf attack, FERC promulgated new rules "to enhance physical security measures for the most critical Bulk-Power System facilities and thereby lessen the overall vulnerability of the Bulk-Power System against physical attacks."[266] The rules defer to the industry to determine which facilities are critical.[267] For instance, following the Metcalf attack, PG&E increased its security efforts.[268] PG&E focused on improving substation security by employing 24-hour security personnel and increasing law enforcement presence on the premises.[269] Moreover, PG&E attempted to eliminate hiding places in the surrounding areas from which another attack could be launched, and PG&E "installed temporary measures . . . to shield equipment, enhance lighting and obstruct views into the facility while more permanent measures are being designed and engineered."[270]

Similar to the way the federal government only issues reliability standards for the bulk energy grid, federal efforts to maintain reliability from physical attacks generally focus on the transmission substations. High voltage (HV) transformer units are generally deemed to be the most critical elements of the nation's electric power grid.[271] These federally regulated HV transformers fall under FERC jurisdiction, yet outages have ripple effects for the rest of the distribution grid. These HV transformers make up less than 3% of transformers in U.S. power substations, but they carry 60%-70% of the nation's electricity.[272] "According to press accounts, a FERC power flow analysis in 2013 identified thirty such critical HV transformer substations across the continental United States; disabling as few as nine of these substations during a time of peak electricity demand reportedly could cause a 'coast-to-coast blackout.'"[273]

Although federal regulation that protects these HV transformers makes sense from an efficiency perspective, it leaves the numerous distribution grid components susceptible to attack.

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266. Order No. 802, 149 FERC ¶ 61,140 (2014) (codified at 18 C.F.R. § 40).

267. Reilly, *supra* note 244.

268. Ted Goldberg, *State and Federal Regulators Looking into Second PG&E Substation Breach*, KQED NEWS (Sept. 5, 2014), https://ww2.kqed.org/news/2014/09/05/state-federal-regulators-looking-into-second-pge-substation-breach/.

269. *Id*.

270. *Id*.

271. Parfomak, *supra* note 239, at 1.

272. *Id*.

273. *Id*. at 6.

Although most of the physical attacks thus far occurred on the transmission substations that fall under federal jurisdiction,[274] power substations that lie on the distribution grid are also vulnerable. A distribution grid substation near Colorado Springs has been attacked, as well as a substation in Florida.[275]

In the absence of any federal regulation that extends to the distribution grid, states and individual utilities are stepping in. Since 2013, five states have passed EMP or solar-storm related legislation, most of which requires emergency planning agencies to assess potential threats and the state's preparedness.[276] States may have the authority to go even further, requiring utilities to install blocking devices to protect transformers. Even without a state mandate, American Transmission Company in Wisconsin installed a geomagnetic blocker on a substation in northeastern Wisconsin that is supposed to protect the grid against solar storms. The company spent $500,000 on the device, engineering and installation.[277]

But few, if any, state regulations are in place to protect against physical attacks. In 2011, the Pedernales Electric Cooperative, "a non-profit utility that serves about 200,000 customers across a vast agrarian region of Texas," was the victim of an attack.[278] The utility noted that "[i]t's obvious . . . that some of the regulatory bodies are not well-equipped to accept these and follow up."[279] Similarly, Thomas Popik of the Foundation for Resilient Societies remarked that the regulatory system "is so badly broken . . . [f]or physical protection, the standards are very weak."[280]

In short, both physical and cyber-attacks on one component of the electric grid have impacts beyond the jurisdictional boundaries. While attacks on critical transmission infrastructure are likely to have far-reaching ripple effects on the distribution

274. Richard A. Serrano, *Sophisticated but Low-Tech Power Grid Attack Baffles Authorities,* LA TIMES (Feb. 11, 2014), http://www.latimes.com/nation/la-na-grid-attack-20140211-story.html#page=1 (documenting the rifle attack on PG&E's Metcalf Transmission Substation in 2013).

275. Reilly, *supra* note 244; *see* Parfomak, *supra* note 239, at 7. ("In 2005, at a Progress Energy substation in Florida, a rifle attack ruptured a transformer oil tank, ultimately causing an explosion and local blackout.").

276. Jenni Bergal, *States Work to Protect the Electric Grid,* PEW CHARITABLE TR: STATELINE (Feb. 27, 2015), http://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2015/2/27/states-work-to-protect-electric-grid [https://perma.cc/8V73-WUM3] (identifying state efforts in Louisiana, Arizona, Kentucky, and Virginia).

277. *Id*.

278. Reilly, *supra* note 244.

279. *Id*.

280. *Id*.

grid, attacks on the distribution grid have the potential to impact the overall reliability of the entire system. As Edison Electric Institute has recommended, "[t]he nation's critical infrastructure sectors are highly interdependent, and cybersecurity legislation should include all of these sectors to be most effective. The electric grid cannot be considered 'secure' unless the critical infrastructure the industry depends on also is protected."[281]

4. Energy Storage. A last area rife with federalism controversy is energy storage. Federal actions to address reliability with storage are starting to blur into the state spheres. FERC defines an energy storage asset as "a resource capable of receiving electric energy from the grid and storing it for later injection of electricity back to the grid regardless of where the resource is located on the electrical system."[282] Within our current grid, electricity must be used instantaneously, meaning there is tremendous pressure on our nation's grid operators to ensure that the demand (or load) is constantly in equal balance with the supply.[283] Energy storage, which would allow grid operators to store electrical energy for later use, albeit at a high cost, is one of the many ways that grid operators are striving to minimize that constraint. Once the electric grid is no longer limited to instantaneous electricity use, the market and regulatory dynamics will shift drastically, allowing populations to capitalize on the near zero marginal costs associated with renewable sources of electricity.

For purposes of this Article, energy storage provides yet another example of a new energy technology that straddles jurisdictional lines. There is great legal uncertainty surrounding how to classify energy storage among the three traditional categories of assets—generation, transmission, or distribution—uncertainty that is leading to less than optimal use of this critical resource and is creating more jurisdictional tensions.[284] As I have

281. ELECTRIC SECTOR PRIORITIES IN CYBERSECURITY LEGISLATION, EDISON ELEC. INST. (Mar. 2015), http://www.eei.org/issuesandpolicy/cybersecurity/Documents/EEI%20Cybersecurity%20Legislative%20Priorities.pdf [https://perma.cc/H97Q-AY65].

282. Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators, 157 FERC ¶ 61,121, n.1 (Nov. 17, 2016).

283. UNDERSTANDING THE GRID, NERC (Dec. 2012), http://www.nerc.com/About NERC/Documents/Understanding%20the%20Grid%20DEC12.pdf [https://perma.cc/ZV77-EH83] ("Unlike water or gas, electricity cannot be stored in large quantities. It must be generated at the instant it is used, which requires supply be kept in constant balance with demand.").

284. A familiar refrain within the literature on this issue references the efficiencies associated with benefits-stacking and the inefficiencies that exist when stakeholders are unable to capture the full value streams of energy storage. Stein, *supra* note 18, at 713–14, 718.

indicated elsewhere, "energy storage is a particularly sticky problem because of its ability to perform more than one of these traditional energy functions."[285]

Federal actors have begun to regulate energy storage within their jurisdictional boundaries. FERC issued Order 755 to provide premium payments for energy storage, and then issued Order 784 to allow energy storage to play on a level playing field in the wholesale markets.[286] Order 784 now requires each public utility transmission provider to take into account the speed and accuracy of regulation resources in its determination of reserve requirements, two parameters where energy storage excels.[287] It also amends a historical restriction to now allow energy storage to provide ancillary services to transmission providers at market-based rates where appropriate.[288]

At the same time, states are taking their own approach to enhance reliability of their distribution grids with energy storage technologies. Three states now have energy storage mandates that require utilities in those states to procure a certain amount of storage as part of their portfolios,[289] and other states provide financial incentives or projects to deploy storage.[290] Five states

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285. *Id*. at 718.

286. Frequency Regulation Compensation in the Organized Wholesale Power Markets, 137 FERC ¶ 61,064 (Oct. 20, 2011) (codified at 18 C.F.R. pt. 35) [hereinafter Order No. 755]; Order No. 784, *supra* note 15, para. 1.

287. Order No. 784, *supra* note 15, para. 1.

288. *Id*. paras. 9, 13.

289. *See* Peter Maloney, *Bay State Storage: New Law Could Give Massachusetts 3rd US Energy Storage Mandate*, UTILITYDIVE (Aug. 9, 2016) http://www.utilitydive.com/news/bay-state-storage-new-law-could-give-massachusetts-3rd-us-energy-storage-m/424060/ [https://perma.cc/C39T-XZKH]; Seth Mullendore, *State Energy Storage Legislation: A Look Back at 2015*, CLEAN ENERGY GROUP (Jan. 4, 2016), http://www.cleanegroup.org/state-energy-storage-legislation-a-look-back-at-2015/ (explaining that California, Oregon, and Massachusetts all have energy storage mandates) [https://perma.cc/R6VB-3ZCT].

290. Bill Acker, *ConEdison and NYSERDA Propose Major Energy Storage Program*, N.Y. BATTERY & ENERGY STORAGE TECH. CONSORTIUM (Feb. 3, 2014), https://www.ny-best.org/blog-entry/conedison-and-nyserda-propose-major-energy-storage-program [https://perma.cc/HQ74-Z787] (discussing how New York State Energy Research and Development Authority teamed up with Consolidated Edison, a power system company, to create the Demand Management Program that provides Consolidated Edison customers up to $2,600/kW incentive for thermal storage and $2,100/kW for battery storage.); ERIN CARSON & JANIS KREILLIS, ENERKNOL RES., UTAH LAW EXPANDS ENERGY STORAGE MARKETS TO MEET GROWTH OF RENEWABLES 3 (Apr. 11, 2016), https://enerknol.com/wp-content/uploads/2016/04/EKR-PU-Energy-Storage-Renewable-Integration-4-11-2016.pdf [https://perma.cc/C7K8-8BFD] (discussing Utah enacting SB 115, the Sustainable Transportation and Energy Plan (STEP) Act—a five-year pilot that provides the Utah Public Service Commission (UT PSC) with discretionary authority to approve up to $3.4 million annual investment in battery storage and solar incentives.); *id*. at 5 (explaining that New York introduced its Grid Modernization Act (A 2371) with provisions to deploy storage and peak-shaving technologies); *SunSmart E-Shelters Program*, FLA. SOLAR ENERGY CTR., http://www.fsec.ucf.edu/En/education/sunsmart/index.html [https://perma.cc/Z75B-6KRS]

passed legislation promoting renewable energy projects that include energy storage technologies.[291] As with the other emerging energy issues, the blurred lines of storage will continue to create jurisdictional controversies between state and federal actors, adding to the mounting pressure on FERC to address broader system-wide reliability.

IV. A LESS RIGID APPROACH TO FEDERAL REGULATION OF RELIABILITY?

By identifying areas where state distribution activities are likely to impact reliability of the larger bulk grid, we can gauge the level of federal interest in issues that may fall beyond their strict jurisdictional box. Questions remain about how far the federal government will go in expanding its reach over system-wide reliability, particularly in light of the new Trump administration. With respect to each of these emerging reliability issues, many states are taking a proactive role to address them within their jurisdictional boundaries. In 2015, for instance, sixteen states took action on disaster preparedness, almost half the states are working on microgrid development, and seventeen states sought to address cybersecurity.[292] Some states even took steps to minimize the negative impact of their distributed actions on the transmission grid. For instance, utilities like SoCal Edison worked with their states to configure their lower voltage transmission facilities to operate in parallel with the integrated higher voltage transmission network, "an important design feature" that reduces the likelihood of power flowing "back onto the transmission network, and thus prevents the local distribution facilities from negatively affecting the reliability of the integrated transmission network."[293] But what of the states that are not proactively addressing reliability within their boundaries, let alone trying to coordinate with the larger regional and national grids?

The situation may be changed by a judiciary that is supportive of more flexible interpretations of the federal–state relationship and increased state activities that affect the bulk grid. In that

("The Florida Department of Agriculture and Consumer Services installed more than 115 schools with solar PV systems with battery storage.").

291. *See* Mullendore, *supra* note 289.

292. DANIEL SHEA, NCSL STATE EFFORTS TO PROTECT THE ELECTRIC GRID 3, 5, 10 (Apr. 2016), http://www.ncsl.org/Portals/1/Documents/energy/ENERGY_SECURITY_REPORT_FINAL_April2016.pdf [https://perma.cc/5UHP-GQRP].

293. Order on Local Distribution Determination, 153 FERC ¶ 61,384, para. 9, (Dec. 31, 2015).

case, FERC may become more interested in testing its jurisdictional limits to explore ways to ensure system-wide reliability of the grid. Contemplating expanded federal authority under the Federal Power Act is not to be taken lightly. It is important to both commit to the thought process required to articulate the motivations and goals for the expanded authority, ensure that they cannot be achieved through less intrusive means, and evaluate its appropriateness through a number of different lenses. This Part assesses possible rationales that FERC may use to bolster its authority over reliability of a larger swath of the electric grid, and assesses legal avenues it may consider in its efforts.

A. Justifications for Increased Federal Reliability Authority

In addition to the practical underpinnings prompting a shift in federal control over reliability of the entire grid, this section highlights a few of the theoretical rationales that FERC may set forth to strengthen its claims over system-wide reliability. First, it can be argued that limiting federal authority over reliability is inconsistent with federalism principles. Second, network effects theories suggest that stakeholders may benefit from efficiencies of regulating reliability on a system-wide basis. Third, centralizing more authority over system-wide reliability in one actor may enhance accountability. Lastly, explicitly augmenting authority over reliability may increase its legitimacy, as compared to current, more convoluted legal gymnastics that need to occur to get similar results.

1. Improve Consistency with Federalism Principles. Many federalism scholars assessed the merits behind strong national systems and strong state systems by developing some qualitative factors to apply to any given regulatory situation.[294] Professor Barry Friedman, for example, focused on five key reasons why federalism, and specifically why retaining some authority in the states might matter: (1) public participation in democracy; (2) accountability; (3) states as laboratories for experimentation; (4) protecting citizens' health, safety, and welfare; (5) cultural and local diversity; and (6) diffusing power to protect liberty.[295] He also provides four reasons why an enhanced national role might be

294. *See, e.g.,* Barry Friedman, *Valuing Federalism*, 82 MINN. L. REV. 317, 389 (1997). For an overview of federal and state regulations, see Robert L. Glicksman, *From Cooperative to Inoperative Federalism: The Perverse Mutation of Environmental Law and Policy*, 41 WAKE FOREST L. REV. 719, 721 (2006).

295. Friedman*, supra* note 294, at 389–405.

appropriate in the balance of power: (1) public goods; (2) externalities; (3) race to the bottom; and (4) uniformity.[296] Although federalism discussions often focus on the enumerated federal powers provided by the Framers in the Constitution and the powers reserved to the states, an alternative strain of federalism analyzes statutory allocations of power, as is the focus here. [297]

Although some scholars opined that "dual federalism is dead," it lives on in some unlikely places.[298] One of those places is the FPA. This is an unlikely place given one would be hard pressed to identify a more quintessential example of an interconnected, multi-state system that justifies the involvement of a uniform, national regulatory body. When Congress split the baby and established separate spheres for the state and federal regulators, it made a valiant attempt to provide the federal government with those parts of the grid that were interstate in nature. Fast-forward eighty years and it is becoming increasingly difficult to identify a portion of the grid that is not interconnected with the interstate grid.

While federalism scholars continue to debate the contours of federal and state power, they are missing the fertile field for federalism analyses provided by governance of reliability across networked industries like electricity.[299] It could be argued, quite convincingly, that if Congress were to regulate reliability of the electric grid today, the entire system would fit under exclusive federal authority. States do not regulate reliability standards for

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296. *Id*. at 406–09.

297. *See* Abbe R. Gluck, *Federalism from Federal Statutes: Health Reform, Medicaid, and the Old-Fashioned Federalists' Gamble*, 81 FORDHAM L. REV. 1749, 1749 (2013) ("[F]ederal statutes may now be the primary way in which state power is created and protected."); Erin Ryan, *Negotiating Federalism*, 52 B.C. L. REV. 1, 24–74 (2011) (focusing "on opportunities for federalism bargaining within the structure of specific constitutional and statutory laws").

298. Norman R. Williams, *The Commerce Clause and the Myth of Dual Federalism*, 54 UCLA L. REV. 1847, 1923 (2007).

299. Hannah J. Wiseman, *Evolving Energy Federalism: Current Authority Allocations and the Need for Inclusive Governance*, *in* THE LAW AND POLICY OF ENVIRONMENTAL FEDERALISM: A COMPARATIVE ANALYSIS 114 (Kalyani Robbins ed., 2015); Jessica Bulman-Pozen, *Partisan Federalism*, 127 HARV. L. REV. 1077, 1078 (2014); Aziz Z. Huq, *Does the Logic of Collective Action Explain Federalism Doctrine?,* 66 STAN. L. REV. 217 (2014); Alison L. LaCroix, *The Interbellum Constitution: Federalism in the Long Founding Moment*, 67 STAN. L. REV. 397 (2015); David B. Spence, *Federalism, Regulatory Lags, and the Political Economy of Energy Production*, 161 U. PA. L. REV. 431, 431 (2013); Jim Rossi, *The Brave New Path of Energy Federalism,* 95 TEX. L. REV. 399 (forthcoming 2017); Hannah J. Wiseman, *Moving Past Dual Federalism to Achieve Electric Grid Neutrality*, 100 IOWA L. REV. BULL. 97 (2015).

the internet,[300] cable,[301] or a host of other interconnected areas. The internet runs into many homes and businesses, acting with equal "traditionally local" force as the distribution lines that run along the same path.[302] So why is it that we have seen fit to make the federal government a robust "air traffic controller" for those other regimes, but not for electricity? The answer may no longer be able to rest in the status quo.

Many of the traditional justifications for federal authority are present with respect to reliability. These justifications include actions or activities that cross interstate, can benefit from uniformity, or are characterized as public goods. The Supreme Court indicated that: "It is difficult to conceive of a more basic element of interstate commerce than electric energy, a product that is used in virtually every home and every commercial or manufacturing facility. No state relies solely on its own resources in this respect."[303] Nevertheless, the courts upheld Congress' reservation of power to the states.[304] This is despite the fact that there may be an even stronger interest in abolishing the bright line divide over reliability than there is in rates, assets, or facilities. Unlike wholesale and retail rates or jurisdiction over access, reliability is an attribute of the grid, not a transaction or physical presence. Not only is it an attribute, but it is an attribute that extends to all parts of the grid, both the state-regulated distribution grid and the federally-regulated transmission grid. The entire system needs to be reliable, and this system-wide approach needs to be applied to jurisdictional conflicts as well.

Uniformity arguments also have traction with respect to reliability. Given the number of states without reliability standards, federal reliability standards for distribution systems would provide necessary uniformity.[305] There are numerous other areas that could benefit from uniformity, as is seen by FERC's approval of standardized offer caps, and smart grid standards.[306]

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300. *See* Mike Sherling, Note, *The Likely Regulators? An Analysis of FCC Jurisdiction over Cybersecurity*, 66 FED. COMM. L.J. 567, 595–97 (2014); *Cyber Security and Network Reliability*, FCC, https://www.fcc.gov/general/cyber-security-and-network-reliability [https://perma.cc/RE6D-9SCD].

301. *See* 47 C.F.R. § 76.1 (2016); *Cable Television*, FCC, https://www.fcc.gov/media/engineering/cable-television [https://perma.cc/ZBD2-DGRN].

302. Jose Pagliery, *Comcast is Turning Your Home Router into a Public Wi-Fi Hotspot*, CNNMONEY (June 16, 2014 11:08AM), http://money.cnn.com/2014/06/16/technology/security/comcast-wifi-hotspot/; Brain, *supra* note 252.

303. FERC v. Mississippi, 456 U.S. 742, 757 (1982).

304. FERC v. EPSA, 136 S. Ct. 760, 767–68 (2016).

305. *See supra* Part II.

306. Offer Caps in Markets Operated by Regional Transmission Organizations and Independent System Operators, 154 FERC ¶ 61,038, para. 38 (Jan. 21, 2016) (to be codified

Similarly, reliability can be viewed as a public good justifying increased federal involvement. In economics terms, "a pure public good is characterized by nonexclusiveness and nonrivalry."[307] Under most circumstances, "private incentives for provision of public goods" are inefficient; instead, the provision of public goods needs some form of central authority.[308] Scholars debate whether reliability truly fits this definition. There are competing views as to whether it is available to everyone and whether congestion on the grid renders it rivalrous.[309] The growing difficulties the U.S. is experiencing in ensuring sufficient capacity and reserve margins may be just one indication that reliability exhibits characteristics of a public good.

Of course, expanded federal authority over reliability would have to be balanced with the degree of intrusion into states' authority. Courts repeatedly affirm the "important responsibility" of the states in regulating within their part of the energy sphere.[310] "Unless and until Congress determines otherwise, the states maintain a regulatory role in the nation's electric energy markets."[311] It would be nice to claim that enhanced federal control over reliability would not upset the delicate balance between the federal and state actors. But it would not be true. Indeed, providing the federal government with authority to maintain and enhance the reliability of the entire system, as opposed to just its part of the grid, would necessarily encroach on some state initiatives.

2. Capitalize on Network Effects Efficiencies. Network effects theories further support the regulation of the electric grid in a more integrated fashion. "Network effects (or network benefits) are demand-side economies of scale—the phenomenon that the utility to a user of a good or service increases as additional

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18 C.F.R. 35); CAMPBELL, *supra* note 261, at 10.

307. Lynne Kiesling & Michael Giberson, Electric Network Reliability as a Public Good 2 (2004), https://www.ece.cmu.edu/~electriconf/2004/Kiesling_Giberson_pubgood%20 2004%20Dec.ppt.pdf [https://perma.cc/X9KE-FKM5].

308. WILLIAM SCHULZE ET. AL., POWER SYS. ENG'G RESEARCH CTR., RELIABILITY, ELECTRIC POWER AND PUBLIC VS. PRIVATE GOODS: A NEW LOOK AT THE ROLE MARKETS 38 (July 2008), https://pserc.wisc.edu/documents/publications/reports/2008_reports/M-12_Fin al-Report_July-2008.pdf [https://perma.cc/YD3X-XCAC].

309. *See, e.g.*, Malcom Abbott, *Is the Security of Electricity Supply a Public Good?*, 14 ELEC. J. 31, 33 (2001) (questioning whether the security of electricity supply should be considered a public good); Kiesling & Giberson, *supra* note 307, at 6–7 ("[T]he private good aspects of reliability may make the public good characteristics an irrelevant externality.").

310. PPL Energyplus v. Solomon, 766 F.3d 241, 255 (3rd Cir. 2014).

311. *Id*.

people use it."[312] The importance of network effects has been evaluated in the areas of telecommunications, broadband, internet, and computer operating systems.[313] In many respects, the electric grid may be the epitome of what scholars envision when discussing network effects. While a full treatment is beyond the scope of this analysis here, this section merely outlines factors that are likely to emerge in an analysis of federal-state allocations of power.

Network effects have a range of social welfare implications, all of which are applicable to the electric grid. Many would argue that the electric grid becomes more reliable, and hence more valuable, as more people use it and it interconnects with other sources.[314] This drives much of the development of new transmission lines and pipelines. Similarly, advocates of RTOs recognized the additional benefits of being able to rely on other generators.[315] The grid is more reliable through its interconnection with many other users.

On the other hand, some may argue that there are network defects associated with the electric grid.[316] First, more users can cause congestion or forgo unique advantages of one system or another to ensure compatibility. There is a limited amount of capacity on transmission lines and in pipelines and for some aspects of the grid, more users may displace other users, reducing their utility instead of enhancing it. Second, "the connectivity that enables the flow of positive externalities also enables the flow of negative externalities."[317] For example, for all the advancements and connections made to the electric grid, many analysts point to precisely this connectivity that made it more vulnerable to cyber attacks.[318] Third, "facilitating compatibility has various costs" and

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312. Avitai Aviram, *Regulation by Networks*, 2003 B.Y.U. L. REV. 1179, 1182. *But see* Christopher S. Yoo & Daniel F. Spulber, *Antitrust, the Internet, and the Economics of Networks, in* 1 OXFORD HANDBOOK OF INTERNATIONAL ANTITRUST ECONOMICS 380, 387 (Roger D. Blair & D. Daniel Sokol eds., Oxford University Press 2014) (arguing that literature suggesting network benefits are demand-side economies of scale is too simplistic and fails to consider countervailing factors and effects).

313. United States v. Microsoft, 253 F.3d 34 (2001).

314. *See, e.g.*, MIT, *supra* note 137, at xi–xii; BIPARTISAN POLICY CTR., CAPITALIZING ON THE EVOLVING POWER SECTOR: POLICIES FOR A MODERN AND RELIABLE U.S. ELECTRIC GRID 7–8 (2013), http://bipartisanpolicy.org/wp-content/uploads/sites/default/files/Energy_Grid_Report[1].pdf [https://perma.cc/HU74-RVFX].

315. ISO/RTO COUNCIL, *supra* note 171, at 30.

316. Aviram, *supra* note 312, at 1201 (describing "'network defects'—net disutility from an increase in the number or volume of users of the network good").

317. *Id.*

318. *See, e.g.*, Evan Halper, *Security Holes in Power Grid Have Federal Officials Scrambling*, L.A. TIMES (Apr. 7, 2014), http://articles.latimes.com/2014/apr/07/nation/la-na-grid-security-20140407.

we need to assess whether the benefits of compatibility on reliability exceed the costs.[319]

Regardless, the comparative advantages of networked entities compared to similarly situated non-networked entities apply with persuasive force to parts of the electric grid. These advantages include a better mechanism for sharing information, excluding uncooperative members, using centralized control for better monitoring, and mitigating damages caused by opportunistic behavior.[320] These network benefits can be seen clearly for the two-thirds of the population that participate in the RTOs and ISOs. These users have a mechanism for sharing information, including regularly scheduled meetings and platforms shared by all the members.[321] They also use centralized control of the transmission grid and wholesale markets to facilitate transactions and mitigate against market manipulation.

In stark contrast, those on the distribution grid can find it difficult to capitalize on these network effects. Each of the distribution grids acts independently, often functions in a radial, one-way direction, and is decentralized and diffuse in its functioning. Communication between the different distribution grid operators is uncoordinated, and there is no centralized control to facilitate coordinated operations.[322] Stakeholders like former FERC Chairman Wellinghoff seek to enhance coordination on the distribution grid with proposals for a distribution grid operator.[323]

Most relevant for this inquiry, analyses of network effects provide further support for a more integrated approach to regulating reliability of the grid. Without uniform federal regulation of reliability, the ability to capture the full value of the network effects may be limited. For instance, smart grid improvements are limited due to a lack of uniform inoperability standards. "Network effects are derived from compatibility, which allows several people to use the same network. Compatibility may

319. Aviram, *supra* note 312, at 1202.

320. *Id*. at 1209–10.

321. ISO/RTO COUNCIL, *supra* note 171, at 13–14.

322. Availability of Certain North American Electric Reliability Corporation Databases to the Commission, 155 FERC ¶ 61,275 (June 16, 2016) [hereinafter Order No. 824] (to be codified at 18 C.F.R. pt. 39) (citing NERC comments). Even within the bulk grid, there are communications limitations. NERC was concerned that reliance only on reliability-related data that industry only shares "in response to mandatory data requests that provide a narrow window into the web of complex information necessary to ensure reliability." *Id.* para. 35.

323. Herman K. Trabish, *Jon Wellinghoff: Utilities Should Not Operate the Distribution Grid,* UTILITYDIVE (Aug. 15, 2014), http://www.utilitydive.com/news/jon-wellinghoff-utilities-should-not-operate-the-distribution-grid/298286/ [https://perma.cc/ZP4G-BV2E].

be achieved by joint decision (e.g., coordinated acceptance of a standard) or unilaterally by a single firm constructing an 'adapter' that makes its product compatible with another."[324]

Similarly, artificially dividing responsibility over reliability into segments may severely constrain efforts to fortify reliability of the grid, resulting in avoidable inefficiencies. For instance, limiting actors to responsibility for only a certain portion of the grid can lead to segmentation and siloing. Where an interconnected grid is concerned, more than ever, coordination is the gold standard. However, silos can elicit entrenchment on the part of the state and federal actors instead of fostering cooperation. Actors may even strive to enhance reliability of their small piece of the pie without sufficient concern for how their seemingly beneficial actions may negatively impact or counteract the work of others. For example, local government initiatives to encourage the use of electric vehicles combined with socio-economic issues can lead to clustering on individual feeders for reasons outside of the utility's control. "Clustering density is relative to the distribution system's functional connectivity, not just geographic proximity," and may adversely impact the system.[325] Expanded federal regulation of reliability may allow stakeholders to more fully benefit from the cooperative benefits and mitigate the effects of silos. In short, network effects may provide yet another justification for expanded federal jurisdiction over reliability.

3. Increase Accountability. Limiting responsibility to only certain portions of the grid also leaves the entire system without any overarching "air traffic controller." For the same reasons we do not have separate people in charge of each of the different airlines navigating an airport, it does not make sense to have separate governmental units each coordinating different reliability efforts. While having one "air traffic controller" sounds like a good plan in theory, the logical conclusion leads to a broader role for FERC on reliability.[326]

Nowhere is the need for coordination more acute than when dealing with an interconnected system. That is why it is

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324. Aviram, *supra* note 312, at 1198 (citing Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 AM. ECON. REV. 424, 434–39 (1985)).

325. *Distributed Generation is Destabilizing the Electric Grid*, ENERGY SKEPTIC (Jan. 10, 2015), http://energyskeptic.com/2015/distributed-generation-destabilizing-electric-grid/ [https://perma.cc/362D-39LC].

326. *See generally* Ashira Ostrow, *Grid Governance: The Role of a National Network Coordinator*, 35 CARDOZO L. REV. 1993 (2014) (advocating for an enhanced federal role to coordinate interstate siting).

particularly troublesome that one of the more interconnected and complicated machines in the world does not have one coordinator with ultimate authority. The electric grid system, more than many others, is in desperate need of one actor that can take the ten-thousand-foot view, the long-term perspective, and accept the monumental job of ensuring consistency and coordination of all components of the grid.

Accountability in the midst of fragmentation of ownership and authority remains a challenge, and no less so when responsibility for reliability is discussed. Efforts to maintain accountability may in fact be the primary justification for the continued responsibilities for reliability imposed upon utilities. Where so many entities have a hand in ensuring the reliability of the system,[327] it is increasingly difficult to isolate blame in the event of reliability deficiencies. New York provides a vivid example of the diffusion of responsibility in both federal and state agencies, where the resource adequacy component of reliability depends on the rules for six different regulatory entities.[328] Since restructuring, scholars have noted the dilution in accountability associated with organization changes.

> Potentially important structural changes may include vertical deintegration, the formation of RTOs, growth of existing wholesale markets, and direct access of final customers to non-utility suppliers. All of them make operations more complex and possibly riskier, but there is no clear way to apportion the causation of outages among them.[329]

The more entities that are involved in both authority and ownership, the more difficult it is to apportion responsibility. The IRC, the council that represents RTOs and ISOs, states that its members work with companies in their regions to better identify the division of responsibilities for various reliability standards.[330] It is working to "ensure that those with key reliability responsibilities are held accountable through the requirements of

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327. *See supra* Section III.B.

328. MATHEW J. MOREY ET AL., ENSURING ADEQUATE POWER SUPPLIES FOR TOMORROW'S ELECTRICITY NEEDS 16 (June 3, 2014), http://electricmarketsresearchfoundation.org/uploads/3/1/7/1/3171840/ensuring_adequate_power_supplies_6-3-14_for_emrf.pdf [https://perma.cc/83DS-5EVN].

329. Robert J. Michaels, *Vertical Integration and the Restructuring of the U.S. Electricity Industry*, CATO INST. POL'Y ANALYSIS, No. 572, July 13, 2006, at 15.

330. Order Providing Guidance on Recovery of Reliability Penalty Costs by Regional Transmission Organizations and Independent System Operators, 122 FERC ¶ 61,247, para. 12 (Mar. 20, 2008).

every standard, and, in so doing improve reliability."[331] By holding the correct entities accountable, it will provide the right incentives for individuals to contract appropriately.[332] Even FERC and NERC engage in accountability disputes. When FERC recently requested access to the reliability databases maintained by NERC, NERC expressed concern that "the proposed rule would 'operate in tension' with section 215 of the FPA and would 'chill industry collaboration with the ERO and undermine the regulatory framework for reliability.'"[333]

Similarly, it is difficult to parse out how the activities of one state actor impacts the reliability of another part of the grid. Imagine if one state-regulated area in California finds itself with too many electric vehicles in a particular cluster on one substation. If that reduces the reliability of other portions of the grid, will it be possible to trace the source of the voltage or frequency deviations to that particular substation? In a cost-sharing dispute for the cost of transmission lines within a multi-state RTO region, Judge Posner noted the difficulties of trying to parse out reliability: "Nowhere does Commonwealth Edison, in its pursuit of reliability, request a strengthening of *some part* of the grid, but apparently relies on the reliability that the entire grid provides."[334]

4. Enhance Legitimacy of Reliability Authority. Lastly, bright line statutory rules in an era of blurred realities place industry, regulators, and courts in uncomfortable positions, increasing the likelihood of unprincipled uses of reliability. Reliability is used to justify nearly every action by federal,[335] regional,[336] state,[337] and local[338] regulators as they strive to

331. *Id.*

332. *Id.* para. 13. By holding RTOs liable, FERC wanted to set the right incentives. It is therefore important for the RTOs and ISOs to include provisions regarding the appropriate responsibility for reliability-related monetary penalties in their contracts with their members and customers and/or in their tariffs, including provisions regarding the appropriate responsibility for such penalties on the ISOs and RTOs.

333. Order No. 824, *supra* note 322, para. 25 (citing NERC comments).

334. Ill. Com. Comm'n v. FERC, 756 F.3d 556, 566–67 (7th Cir. 2014).

335. *See, e.g.*, Order No. 745, *supra* note 11, para. 36.

336. *See, e.g.*, TransCanada Power Mktg. Ltd. v. Fed. Energy Regulatory Comm'n, 811 F.3d 1, 2 (D.C. Cir. 2015) (providing background on ISO New England's Winter Reliability Program "to maintain specified supplies of oil and to provide energy when system conditions [are] stressed").

337. *See, e.g.*, *Governor Cuomo Announces $3.3 Million in New Projects to Improve Resiliency and Efficiency to State Electric Grid*, N.Y. ST. (July 23, 2014), https://www.governor.ny.gov/news/governor-cuomo-announces-33-million-new-projects-improve-resiliency-and-efficiency-state [https://perma.cc/26Q4-Q732].

338. *See, e.g.*, CITY OF BOULDER, RELIABILITY INFORMATION SHEET 1 (2013); GREG ROUSE & JOHN KELLY, GALVIN ELEC. INITIATIVE, ELECTRICITY RELIABILITY: PROBLEMS,

balance both regulated regimes and competitive markets. Yet because statutory bright lines may bind useful initiatives, stakeholders may find themselves faced with a limited number of unattractive options.

A first option is to use the politically neutral justification of "reliability" to justify a host of initiatives. In reality, however, nearly every action can be justified as a "reliability" determination. States make decisions about transmissions lines and new generators, decisions that impact reliability of the grid. But the federal government makes decisions about rates and resources that can play in the federal wholesale markets, and capacity markets, decisions that impact reliability of the grid. If everything is tied to reliability, then reliability no longer becomes useful to justify jurisdiction, effectively negating any persuasive power associated with it. Just as the federal actors can justify their actions "in the name of reliability," so can the states. In the end, overuse of reliability can even undermine the credibility of all the parties.

EPA provides but one example. Despite the 433 references to reliability in the Obama CPP mentioned above, EPA is an agency without any expertise in reliability of the grid.[339] Knowing that its rule had the potential to greatly impact the reliability of the grid, EPA attempted to use reliability assurances as a justification for its assertion of authority. The Supreme Court entered the jurisdictional battle over the CPP in *West Virginia v. EPA*, granting a motion to stay implementation of the EPA's landmark regulation of carbon emissions from power plants.[340] Petitioners challenged the rule on many grounds, including its federal intrusion into an area of electricity occupied by the states.[341]

Reliability justifications caused EPA trouble in the past as well. In refusing to defer to EPA on issues of grid reliability with respect to emissions exemptions for back-up generators, the D.C. Circuit chastised that "EPA cannot have it both ways it cannot simultaneously rely on reliability concerns and then brush off comments about those concerns as beyond its purview."[342] Similar concerns about the misuse of reliability were at issue in *Hughes v. Talen*. As was discussed in Part II, the case involved a

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PROGRESS AND POLICY SOLUTIONS 7–9 (2010).

339. *See* Texas v. U.S. EPA, 829 F.3d 405, 432 (5th Cir. 2016); Standards of Performance for Greenhouse Gas Emissions, 80 Fed. Reg. 64,510, 64,510, 64,648 (Oct. 23, 2015) (to be codified at 40 C.F.R. pts. 60, 70, 71, 98).

340. West Virginia v. EPA, 136 S. Ct. 1000 (2016) (mem.).

341. West Virginia v. EPA, No. 15-1363, slip op. at 23–24 (D.C. Cir. Feb. 9, 2015).

342. Delaware Dep't of Nat. Res. & Envtl. Control v. EPA, 785 F.3d 1, 18 (D.C. Cir. 2015).

jurisdictional conflict over state subsidies designed specifically to move the local utilities into the wholesale auction, an area clearly under federal jurisdictional territory.[343] Challengers alleged that the true motivation for these subsidies lies in a concern that PJM's rates were too high, indicating a protectionist approach as opposed to one truly concerned with reliability.[344]

A second option is to mask the true purposes of reliability initiatives due to a lack of a statutory hook for system-wide reliability. Stakeholders can be seen twisting their reliability efforts to successfully squeeze them into their discreet jurisdictional boxes instead of being able to justify the actions as important for the reliability of the entire system. For instance, FERC had to perform some impressive statutory gymnastics to squeeze its reliability initiatives related to demand response into its authorized jurisdictional box. Congress chose to categorize our jurisdictional energy universe into assets and rates, facilities and sales. This left attributes of the grid, like reliability and environmental properties, to flounder within the jurisdictional ether.

Other scholars have articulated the limitations of markets to optimize competing objectives of cost, reliability and environmental value.[345] In developing a framework for assessing values in electricity markets, for instance, Professors Emily Hammond and David Spence recognize the difficulties of valuing reliability, even proposing a reliability "adder" to capture its value in the wholesale markets.[346] The intangible nature of reliability renders it similarly difficult to neatly label reliability activities, leading stakeholders to use it to justify most every action. If we continue down this path of indiscriminately invoking reliability for all actions, we may lose our ability to differentiate between legitimate and illegitimate uses of reliability. Explicitly augmenting federal authority over system-wide reliability may be just what is needed to increase its legitimacy.

In short, FERC can look to federalism principles surrounding interstate issues, the need for uniformity, public goods, network

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343. Brief for Respondents at 1–2, Hughes v. Talen Energy Mktg., LLC (Jan. 12, 2016) (Nos. 14-614, 14-623). After FERC approval of extensive RTO market mechanisms to assist the RTO in securing sufficient capacity to meet reliability requirements, Maryland unilaterally offered state subsidies. Keith Goldberg, *High Court Backs Invalidation of Md. Power Plant Subsidy*, LAW360, (Apr. 19, 2016, 10:14 AM), https://www.law360.com/articles/772053.

344. Brief for Respondents, *supra* note 343, at 17.

345. *See e.g.*, Emily Hammond & David B. Spence, *The Regulatory Contract in the Marketplace*, 69 VAND. L. REV. 141, 144–46 (2016).

346. *Id*. at 198–99.

benefits of greater connectivity, greater accountability, and enhanced legitimacy to support an argument to augment its reliability authority to include the entire electric system.

B. Avenues for Federal Intervention

Congress left jurisdiction over the electric grid largely unchanged for eighty years, relying upon the Executive and Judicial branches to interpret and bend the static statute to the changing times. This Section proceeds on the assumption that Congress will continue to do little to adjust the jurisdictional framework and instead explores the ability of the Executive agencies (with a little help from judicial branch precedent) to do the heavy lifting of adjusting the jurisdictional lines over reliability.[347] The struggle lies in how to approach reliability of the electric grid in a principled manner without a complete overhaul of the Federal Power Act and how to identify the best mechanism to accomplish this incredibly important task. Instead of trying to find some artificial dividing line for where jurisdiction over-reliability begins and ends, this section explore ways to liberate FERC to make decisions that enhance reliability of the entire grid.

It analyzes three legal avenues for federal intervention. First, FERC can adjust its definition of "bulk power system." Second, FERC can use its existing authority to require more coordination. Third, FERC can draw upon the recent Supreme Court precedent discussed in Part II to explore the limits and applicability of "incidental" and "direct" effects to loosen the rigid lines governing reliability. Each of these scenarios envisions different formulations of the federal-state relationship governing authority over reliability. Some suggest a shared cooperative federalism authority and some suggest a form of enhanced federal power. But they all suggest a new formulation of the federal-state energy relationship moving forward—something that transcends the bright line dual federalism relationship of the past.

1. Expand Definition of Bulk Energy Grid. The simplest way to expand federal authority over reliability without a statutory amendment is to reinterpret the definition of the "bulk power system." Congress defined the term by statute in the Federal Power Act as follows:

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347. I query whether Congress would still be so slow to step in and expand federal control over reliability if state actions started to more conclusively jeopardize reliability of the entire system.

> (A) facilities and control systems necessary for operating an interconnected electric energy transmission network (or any portion thereof); and
>
> (B) electric energy from generation facilities needed to maintain transmission system reliability.[348]

The FPA specifies that the bulk power system "does not include facilities used in the local distribution of electric energy."[349] As courts noted, however, "the statute neither defines 'facilities used in . . . local distribution' nor instructs as to how such facilities should be identified."[350] To help fill this interpretive gap, FERC provided a seven-factor test in Order 888 for deciding whether a facility is a "local distribution facility" subject to FERC jurisdiction[351] and indicated that it would defer to state commissions on such classifications that are consistent with the statute.[352] These seven factors focus on the direction of power flows and the proximity of the facilities to the consumer.[353] Classifications were still difficult to make, however, and utilities often seek a declaratory order from FERC to provide clarity.[354]

This would not be the first time that a clarification in a NERC definition was suggested. FERC previously required NERC to revise the definition of "bulk electric system" to eliminate regional discretion and establish a uniform set of rules based on an

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348. 16 U.S.C. § 824*o* (2012); NERC GLOSSARY OF TERMS, *supra* note 5 (defining "Bulk Power System").

349. 16 U.S.C. § 824*o*(a)(1).

350. New York v. FERC, 783 F.3d 946, 950 (2d Cir. 2015); *see also* FPC v. S. Cal. Edison Co., 376 U.S. 205, 210 n.6 (1964) (stating whether facilities are used in local distribution is a question of fact to be decided by the Commission).

351. The indicators of local distribution in the Commission's seven-factor test are: (1) local distribution facilities are normally in close proximity to retail customers; (2) local distribution facilities are primarily radial in character; (3) power flows into local distribution systems, and rarely, if ever flows out; (4) when power enters a local distribution system, it is not reconsigned or transported on to some other market; (5) power entering a local distribution system is consumed in a comparatively restricted geographic area; (6) meters are based at the transmission/local distribution interface to measure flow into the local distribution system; and (7) local distribution systems will be of reduced voltage. *See* Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, Order No. 888, 75 FERC ¶ 61,080 (Apr. 24, 1996) [hereinafter Order No. 888], *order on reh'g*, Order No. 888-A, 78 FERC ¶ 61,220 (Mar. 4, 1997), *order on reh'g*, Order No. 888-B, 81 FERC ¶ 61,248 (Nov. 25, 1997), *order on reh'g*, Order No. 888-C, 82 FERC ¶ 61,046 (Jan. 20, 1998), *aff'd in relevant part sub nom.* Transmission Access Policy Study Grp. v. FERC, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom.* New York v. FERC, 535 U.S. 1 (2002).

352. *See* Order No. 888, *supra* note 351; *see also* Detroit Edison Co., 105 FERC ¶ 61,209, para. 30 (Nov. 17, 2003).

353. *See* Order No. 888, *supra* note 351.

354. *See, e.g.*, Order Granting Petition for Declarative Order, 107 F.E.R.C. ¶ 61,246, para. 1, (June 2, 2004).

operating voltage level.[355] The "bulk electric system," alternatively, is not a statutory definition, but a NERC definition, and refers to a narrower class that identifies who must comply with reliability standards.[356] "Stated differently, the BES is a subset of the BPS."[357]

Almost twenty years later, FERC issued Order 773, approving modifications to NERC's definition of the "bulk electric system," complete with a number of inclusions and exclusions to help identify what resources fit within NERC jurisdiction.[358] In lieu of the seven-part test that NERC relied upon for its classifications, FERC approved a bright-line rule that includes all facilities operated at or above 100 kV as part of the federally regulated "bulk electric system."[359] Nevertheless, operating facilities at or above 100 kV that are used only in local distribution may petition for one of four exclusions, but the seven-factor test is still relevant for assessing some exclusions.[360] States argued that this exceeded FERC's authority, since it would necessarily sweep some facilities traditionally considered on the distribution grid within FERC jurisdiction.[361] FERC pointed to its escape route for such facilities that would fit within the bulk energy grid definition but could still qualify for the local distribution exclusion. The Second Circuit affirmed FERC's authority to adjust this definition, rejecting arbitrary and capricious and Chevron challenges.[362]

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355. *Id*. paras. 5–8.

356. BULK POWER VERSUS BULK ELECTRIC, *supra* note 5.

357. *Id.*

358. Revisions to Electric Reliability Organization Definition of Bulk Electric System and Rules of Procedure, Order No. 773, 141 FERC ¶ 61,236 (Dec. 20, 2012) [hereinafter Order No. 773], *order on reh'g*, Order No. 773-A, 143 FERC ¶ 61,053 (Apr. 18, 2013), *order on reh'g and clarification*, 144 FERC ¶ 61,174 (2013), *aff'd sub nom*. N.Y. & Pub. Serv. Comm'n of N.Y. v. FERC, 783 F.3d 946 (2d. Cir. 2015); *see also See* NERC GLOSSARY OF TERMS, *supra* note 5 (providing the prior definition of "Bulk Electric System": "As Defined by the Regional Reliability Organization, the electrical generation resources, transmission lines, interconnections with neighboring systems, and associated equipment, generally operated at voltages of 100 kV or higher. Radial transmission facilities serving only load with one transmission source are generally not included in this definition" and providing the new definition of "Bulk Electric System": "Unless modified by the lists shown below, all Transmission Elements operated at 100 kV or higher and Real Power and Reactive Power resources connected at 100 kV or higher. This does not include facilities used in the local distribution of electric energy.")

359. "Unless modified by the lists shown below, all Transmission Elements operated at 100 kV or higher and Real Power and Reactive Power resources connected at 100 kV or higher. This does not include facilities used in the local distribution of electric energy." Order No. 773, *supra* note 358.

360. Order on Local Distribution Determination, *supra* note 293, para 18 (rejecting some states' request to be classified as "local distribution" and exempt from reliability standards under the seven-part test).

361. New York v. FERC, 783 F.3d 946, 951, 953 (2d Cir. 2015).

362. *Id*. at 960.

FERC's treatment of "dual use" facilities may also be instructive. As the name implies, this refers to facilities that can be used "both for sales subject to FERC jurisdiction and for sales subject to state jurisdiction."[363] FERC effectively split the baby, holding that where the distribution facilities have a dual use, i.e., the facilities are used for both wholesale sales and retail sales, "the Final Rule applies to interconnections to these facilities only for the purpose of making sales of electric energy for resale in interstate commerce."[364] FERC tried to respect the state's jurisdictional domain, declining to extend its interconnection authority to "behind the meter interconnections or to other intrastate transactions that did not impact the interstate transmission system."[365]

With respect to reliability, FERC and NERC could offer some sort of similar clarification on terms used within this statutory definition. For instance, they could further clarify what it means to be a facility "used in the local distribution of electric energy."[366] In its Order 743, FERC seemed to make a point of holding open its ability to define a broader jurisdictional reach referred to as the "bulk power system." FERC noted that it "believes that the Bulk-Power System reaches farther [*sic*] than those facilities that are included in NERC's definition of the bulk electric system, but we have not definitively defined the extent of the facilities covered by the Bulk-Power System, and we are not doing so here."[367]

A further reinterpretation of "bulk power grid" would have the most far-reaching implications, but would also be the most controversial. The ripple effects would be gigantic, as most every FERC order since its inception has reference to the "bulk energy grid" as its limiting principle. The Supreme Court in *National Cable & Telecommunications Ass'n v. Brand X Internet Services* recognized Chevron deference even where there is agency inconsistency, as may be claimed if FERC reinterpreted "bulk power grid" so soon after its 2012 Order.[368] The Court noted that

363. MIKE MICHAUD, A WHITE PAPER ON UNTANGLING FERC & STATE JURISDICTION INTERCONNECTION ISSUES AND OPPORTUNITIES FOR DISPERSED GENERATION 6 (Nov. 2007), https://www.comrent.com/wp-content/uploads/2016/05/Jurisdiction_White_Paper_2007-11-16.pdf [https://perma.cc/Z5UM-MN2X].

364. Standardization of Generator Interconnection Agreements and Procedures, 104 FERC ¶ 61,103, para. 804 (July 24, 2003).

365. *See* MICHAUD, *supra* note 363, at 4.

366. For one such clarification and exemption, see Malcom McLellan & Gabriel Tabak, *FERC Applies Order No. 773 To Exempt "Facilities Used in Local Distribution" from Mandatory Electric Reliability Standards*, VAN NESS FELDMAN (Jan. 8, 2016) http://www.vnf.com/ferc-applies-order-no-773-to-exempt-facilities [https://perma.cc/2773-EFKQ].

367. *See* BULK POWER VERSUS BULK ELECTRIC, *supra* note 5, at 2 (citing Order No. 743).

368. 545 U.S. 967, 981, 997 (2005).

"if the agency adequately explains the reasons for a reversal of policy, 'change is not invalidating, since the whole point of Chevron is to leave the discretion provided by the ambiguities of a statute with the implementing agency.'"[369] Nevertheless, such a change would generate extreme uncertainties regarding the extent of its retroactive effect, if any. Lastly, it would be difficult to revise the definition of bulk energy grid to include efforts to maintain reliability of the entire system without running afoul of the statutory local distribution exclusion. One possibility would be for FERC and NERC to define local distribution facilities as only including the distribution lines and substations, but not the distributed generators. A broader reading of bulk energy systems could significantly expand FERC's authority.

2. Require Regional and Local Reliability Assessments. A second way FERC can expand its authority over reliability is to capitalize on its less-used statutory authorities. One of the more important system-wide grid needs is an "air traffic controller." "While the mandatory standards protect the electric grid against known threats, it is close coordination across the electric utility sector and government counterparts that allows utilities to maintain a high level of reliability against new, changing and evolving threats."[370]

The FPA already has a number of provisions addressing the need for coordination between the federal, state, and private actors, with the bulk of the Federal Power Act's reliability provisions found in Section 202. Congress requires FERC to conduct a reliability study,[371] the DOE to consult with FERC to request reliability reports from the reliability councils,[372] and for DOE to provide annual reports to FERC regarding reliability standards.[373] The FPA also allows FERC to preempt state law that gets in the way of voluntary coordination of electric utilities or could jeopardize reliability.[374] "Section 202(a) encourages such voluntary interconnection and coordination of electricity generating facilities in order to achieve economies of scale."[375]

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369. *Id*. at 981 (quoting Smiley v. Citibank, 517 U.S. 735, 742 (1996)).

370. EEI, FREQUENTLY ASKED QUESTIONS ABOUT CYBERSECURITY AND THE ELECTRIC POWER INDUSTRY (Oct. 2015), http://www.eei.org/issuesandpolicy/cybersecurity/documents/cybersecurity_faq.pdf [https://perma.cc/RP9S-K4Q8].

371. 16 U.S.C. § 824a-2(a) (2012).

372. *Id.* § 824a-2(b).

373. *Id.* § 824a-2(c).

374. *Id.* § 824a-1(a). The state laws may not be preempted if they are required by federal law or are designed to protect the environment or mitigate fuel shortages. *Id.*

375. N.E. Util. Serv. Co. v. FERC, 993 F.2d 937, 948 (1st Cir. 1993); *see also* 16 U.S.C.

Section 202(a) on pooling, for instance, provides that FERC can exempt utilities from any state law "which prohibits or prevents the voluntary coordination of electric utilities, including any agreement for central dispatch, if the Commission determines that such voluntary coordination is designed to obtain economical utilization of facilities and resources in any area."[376] It also mandates FERC to develop a pooling study to assess the opportunities for conservation, efficiency, and "increased reliability."[377]

"Sections 210, 211, and 212 of the FPA were enacted to give [FERC] authority to order interconnections where they will enhance the reliability of the nation's electric power systems and optimize the use of its generating capacity."[378] "In response to concerns about the reliability of the country's aging transmission system, Section 219 of the FPA required FERC to promulgate a rule establishing incentive-based rate treatments for qualifying projects to spur infrastructure investment."[379] Congress also limits FERC's interconnection authority unless the agency can demonstrate the order would encourage conservation, efficiency, or "improve the reliability of any electric utility system."[380]

These provisions may already provide FERC with sufficient authority to elicit the needed regional and local reliability assessments. Fueled by major transitions in the energy industry, increasing intensity of weather events, aging infrastructure, and new environmental rulemakings impacting power plants, grid operators are modeling and researching grid reliability now more than ever.[381] The anticipated changes in the resource mix and new dispatching protocols will require comprehensive reliability assessments to identify changes in power flows and essential reliability services.[382] "While NERC does not have authority to set

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§ 824(a) (2012); 16 U.S.C. § 824a-1 (2012) (regarding pooling agreements).

376. 16 U.S.C. § 824a-1(a) (2012). For instance, NEPOOL, which establishes a "comprehensive interconnection and coordination arrangement" among its members in order "to achieve greater reliability and economies in the production of electricity." *See* N.E. Util. Serv. Co., 993 F.2d at 948.

377. 16 U.S.C. § 824a-1(b)(1).

378. Am. Paper Inst., Inc. v. Am. Elec. Power Serv. Corp., 461 U.S. 402, 422 n.12 (1983).

379. N.C. Util. Comm'n v. FERC, 741 F.3d 439, 443 (4th Cir. 2014) (citing 16 U.S.C. § 824s(c) (2012)).

380. 16 U.S.C. § 824i(c) (2012).

381. *E.g.*, FED. ENERGY REGULATORY COMM'N & N. AM. ELEC. RELIABILITY CORP., REPORT ON THE FERC-NERC-REGIONAL ENTITY JOINT REVIEW OF RESTORATION AND RECOVERY PLANS (2016), http://www.ferc.gov/legal/staff-reports/2016/01-29-16-FERC-NERC-Report.pdf [https://perma.cc/2YM7-ZJQH]; NERC, STATE OF RELIABILITY (2015), http://www.nerc.com/pa/RAPA/PA/Performance%20Analysis%20DL/2015%20State%20of%20Reliability.pdf [https://perma.cc/5J99-QBEW].

382. NERC INITIAL RELIABILITY REVIEW, *supra* note 224, at vii.

Reliability Standards for resource adequacy (e.g., Reserve Margin criteria) or to order the construction of resources or transmission, NERC can independently assess where reliability issues may arise and identify emerging risks."[383]

The various federal agencies involved in reliability have already acknowledged the need for better coordination. For example, the same day the final Obama Clean Power Plan was released, FERC posted a letter indicating FERC, DOE, and EPA would meet no less than quarterly to ensure reliability of the grid.[384] Similar coordination needs to take place between federal and state entities. FERC's CPP letter indicates that "FERC will also stay informed about the development of state plans so that it will be able to respond to Bulk-Power System reliability issues that might arise."[385] FERC may be able to use its Section 202 authority to take this coordination a step further, developing a federal-state reliability council. Such a council could be modeled off of the federal-state Security Council developed for the electric grid.

Expanded federal authority in this situation may look more like the "cooperative" regime envisioned by Justices Kagan and Sotomayor. NERC indicated:

> [I]t may be feasible to address these issues through non-NERC avenues (such as through market rules, vertically integrated operations, or state programs), it is recommended that NERC work with the affected entities in the different regions, including state agencies having jurisdiction over DER, RTOs, and vertically integrated utilities, to develop appropriate guidelines, practices, and requirements to address issues impacting the reliability of the BES resulting from DER.[386]

With proper coordination, state and federal actors may be able to agree that all that is needed from the federal side is the missing air traffic controller. In that case, one possible path forward may require adopting cooperative federalism concepts in a way that allows for a more integrated analysis of reliability.

3. Regulate Reliability Practices "Directly Affecting" Wholesale Rates. The about-face in Supreme Court energy federalism jurisprudence discussed in Part II may have far-reaching implications, but at the very least, these cases

383. NERC LONG-TERM RELIABILITY ASSESSMENT, *supra* note 211, at 1.

384. EPA, EPA-DOE-FERC COORDINATION ON IMPLEMENTATION OF THE CLEAN POWER PLAN 3–4 (Aug. 3, 2015), https://www.epa.gov/sites/production/files/2016-10/documents/cpp-epa-doe-ferc-coordination.pdf [https://perma.cc/3NMG-V77B].

385. *Id*. at 4.

386. NERC, *supra* note 187, at 4.

encourage dialogue about alternative ways to approach the bright lines in the FPA. This section demonstrates how FERC may try to extend the Supreme Court precedent to reliability practices and reframe its approach to include the entire system.

Unfortunately, decades of cultural adherence to distinct roles for federal and state actors do not change in tandem with the precedent. One of the key questions moving forward is how much room there is between state action that "incidentally" affects the federally-regulated grid that does not jeopardize state power and state action that "directly affects" federally-regulated rates that may justify federal regulation.

In the wake of *FERC v EPSA*, Professor Eisen identified four areas where FERC jurisdiction is appropriate: (1) direct participants in wholesale markets; (2) quantity of inputs to markets; (3) market-wide features to remedy discrimination between resources; and (4) conduct that directly and significantly affects wholesale rates.[387] Even though FPA Sections 205 and 206 do not directly reference reliability, this section explores whether FERC could connect reliability practices to wholesale markets in a legitimate way. This section first demonstrates how the new era of functional jurisdictional evaluation can be applied to various FERC actions regarding reliability. The second subsection section explores how to best interpret the "direct" component of the test, analyzing whether a proximate cause interpretation of practices that "directly affect" wholesale rates could broaden activities that fall within FERC's jurisdiction.

a. Linking Reliability to Wholesale Markets. According to new Supreme Court precedent, FERC has the ability to regulate

387. Eisen, *supra* note 22, at 1835–41. Although Professor Eisen's focus is on the origin and implications of the "practices," the Prior Notice he refers to in the contractual context suggests that a similar argument could be made for federal jurisdiction over actions that directly affect "service." FERC specifically stated that its jurisdiction depends on "whether the contract affects or relates to such rates or service." Prior Notice and Filing Requirements under Part II of the Federal Power Act, 64 FERC ¶ 61,139, 61,990, 61,992 (June 30, 1993), *order on reh'g*, 65 FERC ¶ 61,081 (Oct. 19, 1993). Electric service is further defined by regulation to mean the transmission of electricity in interstate commerce or the sale of wholesale electricity. *See* New York v. FERC, 535 U.S. 1, 6–7 (2002). If this logic is extended to practices that directly affect service (including transmission), then reliability is surely in play. This suggests that service may be a critical jurisdictional hook for reliability. Further inquiry is needed into whether service could be interpreted to include reliability of the grid, and whether that may provide an additional hook for FERC to assert jurisdiction over practices that "directly affect" system-wide reliability. Such an expansive interpretation would be rejected by many, given that almost any action could affect system-wide reliability. But a counterargument may be that practices that "directly affect" system-wide reliability provides a limiting principle that strikes a balance between the federal interest in reliability and state actions without such system-wide impacts.

practices "directly affecting rates" and FERC's bright line limits may be more malleable than prior precedent suggested.[388] Between the regulation of practices indirectly affecting rates (that were rejected as exceeding FERC jurisdiction), and the regulation of practices directly affecting rates (that were sanctioned as falling within FERC jurisdiction), there is a wide range of questionable practices. [389] This subsection lays the initial groundwork for an exploration into whether federal action to enhance system-wide reliability can comfortably fit within this range.

It is possible that these new developments are merely narrow holdings specific to demand response and natural gas pricing. The more interesting alternative, in my view, is that a less rigid and more functional, common-sense approach to jurisdiction has tiptoed back into our jurisprudence and could be applied in a different area: the interaction of state regulation with reliability of the electric grid. For instance, the Court noted that FERC's regulation of "wholesale demand response programs meet that standard *with room to spare*."[390] Imagining the spectrum of FERC jurisdiction, this suggests that there are other activities that would fall short of the degree of direct effects found in FERC's regulation of wholesale demand response programs, but whose impacts are nevertheless direct enough to satisfy the *FERC v. EPSA* test. This section explores that "room to spare," and whether regulation of reliability may fit within that extra jurisdictional space. If wholesale demand response directly affects wholesale rates, then it is possible that reliability activities can directly affect wholesale rates too.[391]

The implications for expanding FERC jurisdiction over reliability of the entire grid are striking. In some respects, Justice Kagan's opinion suggests that the Court affirmed FERC's jurisdiction, at least in part, based on their duty to enhance

388. *See supra* Part III.A.

389. FERC v. EPSA, 136 S. Ct. 760, 772–74, 780 (2016) (rejecting indirectly affecting rates over directly affecting rates); Cal. Indep. Sys. Operator v. FERC, 372 F.3d 395, 403 (D.C. Cir. 2004) ("[N]ot all those remote things beyond the rate structure that might in some sense indirectly or ultimately do so.").

390. *EPSA*, 136 S. Ct. at 774 (emphasis added).

391. This approach may run in to *Chevron* problems, however. Opponents would distinguish FERC's assertion of authority over demand response in wholesale markets (whose jurisdiction is not explicitly addressed in the FPA except through a policy statement) from a FERC assertion of authority over system-wide reliability (whose jurisdiction is explicit in § 215). They may argue that such a FERC interpretation of "practices affecting rates" is in conflict with the clear Congressional intent to limit federal authority to the bulk energy grid, failing at Chevron Step One. Notably, however, if FERC can connect the activity it regulates to the reliability of the bulk grid, it may look much more consistent with its statutory purpose.

reliability: "The FPA should not be read, against its clear terms, to halt a practice that so evidently enables FERC to fulfill its statutory duties of holding down prices and enhancing *reliability* in the wholesale energy market."[392] Similarly, Justice Kagan characterized FERC's actions in promoting demand response as doing "no more than follow[ing] the dictates of its regulatory mission to improve the competitiveness, efficiency, and *reliability* of the wholesale market."[393] But the Supreme Court went even further, recognizing the need for federal jurisdiction to more effectively manage *system-wide* reliability:

> [A]ccording to both the Commission and market participants, state-level programs cannot offer nearly the same benefits as wholesale demand response because individual utilities lack the regional scope and real-time information needed to identify when demand response will lower prices and *ensure reliability system-wide*.[394]

Acknowledging a broader role for FERC with respect to reliability is also consistent with the real-world blurring established in Part III.B. As FERC's counsel indicated, challenger's "argument about hermetically-sealed-off retail and wholesale spheres really has nothing to do with the real world."[395] Just as FERC endeavored to provide a remedy for current compensation levels that inhibited meaningful demand-response participation, FERC may endeavor to provide a remedy for current compensation levels that inhibit reliability of the grid.[396] In evaluating FERC's authority over market inputs, Professor Eisen has even noted precedent that acknowledges that "reasonable concerns about system adequacy . . . [are] within the heartland of the Commission's section 206 jurisdiction."[397] Activities that could hinder competition for resources that aid in system-wide reliability could take a number of forms.

First, FERC may be able to use this authority to prohibit states from unduly discriminating against renewable energy resources.[398] At least four states worked with their utilities to block third-party solar generators from entering a specific market,

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392. *EPSA*, 136 S. Ct. at 764 (emphasis added).

393. *Id*. at 779 (emphasis added).

394. *Id*. at 781 n.11.

395. Transcript of Oral Argument at 55, FERC v. EPSA, 135 S. Ct. 2049 (2015) (No. 14-840).

396. Order No. 745, *supra* note 11.

397. Eisen, *supra* note 22, at 1838 (citing Conn. Dept. of Pub. Util. Ctrl. v. FERC, 569 F.3d 477, 482 (D.C. Cir. 2009)).

398. 16 U.S.C. § 824d (2012) (allowing FERC to remedy "undue preference or advantage").

claiming that such third-parties are intruding upon the exclusive service territory of the utility.[399] FERC's argument could proceed as follows: More solar on the distribution grid would enhance the overall reliability of the entire system. More sources of generation with near zero marginal cost would decrease wholesale rates, rendering the state's practices of prohibiting these third-party power purchasing agreements as having a "direct effect" on wholesale rates. Therefore, FERC orders mandating access for third-party solar providers may be a "practice directly affecting" wholesale rates.

Second, FERC may be able to stop protectionist utilities through its undue discrimination obligations. As Professor Eisen explains, FERC adopted a broad interpretation of undue discrimination that reached conduct preventing equal access to facilities.[400] The major utilities in Georgia and Alabama received regulatory approval to establish subsidiaries to provide third-party solar services to customers in the unregulated markets.[401] These utilities are in direct competition with the non-utility third-party solar providers, suggesting possible claims of undue discrimination. In this situation, FERC's argument would allege that the utilities are using their competitive advantage to box new entrants out of the system, the type of practice FERC largely condemned in other situations.[402]

Third, FERC may be able to exert its jurisdictional muscle over reliability through aggregated distributed generation resources. As discussed earlier, at least three RTO/ISOs are evaluating the impacts of allowing distributed resources to bid into wholesale markets.[403] As part of their administration of these markets, RTOs and ISOs must, pursuant to the FPA, obtain FERC's approval of proposed rules and regulations affecting wholesale rates, and FERC must ensure that these rules and regulations are "just and reasonable" and result in "just and reasonable" rates.[404] FERC will have the authority to approve or

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399. U.S. DEP'T ENERGY, THIRD-PARTY SOLAR POWER PURCHASE AGREEMENT POLICIES (July 2016), http://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2014/11/3rd-Party-PPA.pdf [https://perma.cc/MCE6-2BGP].

400. Eisen, *supra* note 22, at 1812, 1815.

401. *See* Herman K. Trabish, *Updated: Georgia Power Moving into Rooftop Solar Market This Summer*, UTILITYDIVE, (Feb. 09, 2017, 1:15 PM), http://www.utilitydive.com/news/inside-georgia-powers-move-into-the-residential-solar-market/400562/ [https://perma.cc/2WU6-L9NC].

402. *See* Michael Wara, *Competition at the Grid Edge: Innovation and Antitrust Law in the Electricity Sector*, 25 N.Y.U. ENVTL. L.J. (forthcoming 2017).

403. *See supra* notes 214–17.

404. Cent. Hudson Gas & Elec. Corp. v. FERC, 783 F.3d 92, 98 (2d Cir. 2015) (citing 16 U.S.C. § 824d (2012)).

disapprove these rules for aggregated DERs in the wholesale markets, rules that "directly affect" wholesale markets.[405] With a specific eye towards reliability issues, FERC could arguably also impose a reliability requirement prior to allowing these resources to bid into the market. Extending this reasoning to reliability, FERC could require DERs that bid into the wholesale markets to meet minimum reliability requirements. This may even fall under Professor Eisen's first category of "direct participants in the markets," depending on whether FERC would impose reliability requirements on the aggregators or the individual generators themselves. Should FERC embark on efforts to regulate system-wide reliability through Section 206, it will be essential that it establish some limiting principle so as not to produce the "staggering" implications of an overly broad jurisdictional position that has been denounced by the courts.[406]

b. Interpretation of Direct. A second approach would be to urge a further nuanced exploration into what is meant by "direct" effects. Professor Eisen suggested that "FERC cannot use its breadth to regulate activities unconnected to the markets," but he also asks "how close must that connection be" between market operations and wholesale rates.[407] It may be possible to broaden the definition of "direct" in accordance with proximate cause theories.

In the energy context, Professor Eisen notes that "directness" in contractual terms reflected a document that contained a charge folded directly into wholesale rates.[408] Looking to treatment of "direct effects" language in other contexts, the circuit splits over its interpretation in the Foreign Trade Antitrust Improvements Act (FTAIA) may prove instructive.[409] The FTAIA serves to limit the reach of U.S. antitrust laws with respect to certain anticompetitive conduct occurring overseas.[410] It fulfills this purpose by requiring that alleged foreign anticompetitive conduct have a *direct*, *substantial*, and *reasonably foreseeable* effect on U.S. commerce before the conduct is deemed actionable.[411]

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405. FERC v. EPSA, 136 S. Ct. 760, 774 (2016) (citing Cal. Indep. Sys. Operator Corp. v. FERC, 372 F.3d 395, 403 (2004)).

406. Cal. Indep. Sys. Operator v. FERC, 372 F.3d 395, 403 (2004).

407. Eisen, *supra* note 22, at 1794, 1830.

408. *Id*. at 1821–22.

409. Lauren Giudice, *What Effects Are "Direct" Enough to Satisfy the FTAIA: An Analysis of 2014 FTAIA Decisions*, B.U. INT'L L.J. (Apr. 29, 2015), http://www.bu.edu/ilj/2015/04/29/what-effects-are-direct-enough-to-satisfy-the-ftaia-an-analysis-of-2014-ftaia-decisions/#_ednref7 [https://perma.cc/7XM5-4J9H].

410. *Id*.

411. *Id*.

In an analysis of the circuit split on the definition of "direct effect," analysts noted that the Ninth Circuit has interpreted "direct" to require that the conduct have an "immediate consequence" on the defendant's commerce, a "but for" interpretation.[412] The Second and Seventh Circuits, on the other hand, adopted a less stringent interpretation of "direct" that is satisfied even if the conduct is not close in time or space, so long as it is substantial and foreseeable, a "proximate cause" interpretation.[413]

If Congress' inclusion of the term "direct" in the FPA serves a similar purpose, then a proximate cause interpretation of "practices directly affecting" may provide a similar reframing of reliability. Professor Eisen's assessment of the Prior Notice even acknowledges this possibility, noting that the connection "need not be immediate", but could happen later in time.[414] He later notes that "[r]equiring an effect to be proximately connected with rates is central to 'directness.'"[415] By interpreting FERC's jurisdiction to include "practices that '*directly* affect the [wholesale] rate," a court could find that state practices directly affect the wholesale rates even where they are not close in time or space, so long as the impact was substantial and foreseeable. The limits of such a proposal need to be more fully explored, including an exploration into whether FERC could use this power to quash certain state initiatives that hinder reliability or to mandate states to take additional steps that enhance reliability.

V. CONCLUSION

As Seventh Circuit Judge, Richard Posner, has noted, "Reliability is not a middling concern."[416] In fact, it is a pressing concern and one that the current legal regime is ill-equipped to handle. Reliability of the electric grid is in jeopardy. The grid is being forced to deal with new EPA regulations, extreme weather events, and a changing resource mix from centralized fossil fuels to incorporate cleaner and more distributed sources of energy. There are many ways to bolster the reliability of the grid

412. United States v. LSL Biotechnologies, 379 F.3d 672, 680 (9th Cir. 2004); *see also* United States v. Hui Hsiung, 778 F.3d 738, 758–59 (9th Cir. 2014) (adopting term "direct" as used in the Foreign Sovereign Immunities Act).

413. Lotes Co. v. Hon Hai Precision Indus., 753 F.3d 395, 410 (2d Cir. 2014); Minn-Chem Inc. v. Agrium Inc., 683 F.3d 845, 856–57 (7th Cir. 2012).

414. Eisen, *supra* note 22, at 1829.

415. *Id.* at 1842.

416. Ill. Comm. Comm'n v. Fed. Energy Regulatory Comm'n, 756 F.3d 556, 568 n.3 (7th Cir. 2014).

in ways to adapt to the changing pressures, including innovations being explored by jurisdictions like New York, adjustments to the market mechanisms in place, and even escape hatches in federal law to be used if reliability is threatened.[417] But these approaches are limited by a legal regime that clings to distinct jurisdictional lines dividing responsibility for reliability.

Adhering to this antiquated dual federalism concept is not doing anyone any favors. On the contrary, the status quo is fostering risks associated with entrenchment, accountability, efficiency, and a less reliable overall system. Instead, federalism justifications, network effects theories, and the real-world blurring of reliability across these artificial jurisdictional lines all point toward a new, more integrated analysis of reliability. This approach necessarily leaves some uncomfortable as the logical conclusion is increased federal control. One of the goals of this Article is to ensure that reliability solutions are not based on what is the most "comfortable" for the regulatory regime, but what is the most effective. The solution should be effective in the sense that it makes economical, technological, and political sense.

To this effect, this Article demonstrates why strict adherence to eighty-year-old line-drawing will fail to yield the most effective solutions. This Article demonstrates how FERC, with the support of recent Supreme Court federalism jurisprudence, is already expanding its federal reach into the exclusive state sphere to address system-wide reliability. The exact implications of these cases are not yet clear, but they suggest possible pathways forward that suggest less rigid jurisdictional lines may apply to the regulation of reliability and that there may be room for FERC to regulate system-wide reliability practices that directly affect wholesale rates. Should FERC continue to expand its role in regulating reliability, it may need to explore flexible cooperative federalism concepts in a way that allows for a more functional analysis of reliability as opposed to an analysis based solely on its ability to fit into one of its prescribed categories. The need for a reliable grid is non-negotiable, but the boundaries of authority over it may prove capable of some adjustment.

417. Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,662 (Oct. 23, 2015) (codified at 40 C.F.R. pt. 60); Peter Behr & Rod Kuckro *Obama Rule Adds 'Safety Valve' for Grid Emergencies*, E&E NEWS (Aug. 4, 2015), http://www.eenews.net/stories/1060022947 [https://perma.cc/6FX4-XRKH].