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The Intersection of Federally Regulated Power Markets and State Energy and Environmental Goals

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THE INTERSECTION OF FEDERALLY REGULATED POWER MARKETS AND STATE ENERGY AND ENVIRONMENTAL GOALS

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I. INTRODUCTION

The Federal Energy Regulatory Commission ("FERC") shares jurisdiction with the states over matters that fundamentally affect investment in critical energy infrastructure.[1] In general, FERC's policies have favored investment in assets that have the lowest short-term incremental cost,[2] while state policies have tended to take a longer-term view and consider a variety of different factors, including fuel diversity, environmental impacts such as global warming emissions, security and sustainability of supply, economic development, stability of retail rates, and other public interest considerations.[3]

Significant conflicts between FERC policies and state priorities have, so far, been resolved in favor of FERC by the federal courts.[4]

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1. *See* Federal Power Act § 201, 16 U.S.C. § 824 (2012).
2. *See* discussion, *infra* Part V.B.
3. *See* discussion, *infra* Parts VI.A-VI.C.
4. *See* N.J. Bd. of Pub. Utils. v. F.E.R.C., 744 F.3d 74 (3d Cir. 2014); PPL EnergyPlus, LLC v. Nazarian, 753 F.3d 467 (4th Cir. 2014); PPL EnergyPlus, LLC v. Solomon, 766 F.3d 241 (3d Cir. 2014). *See also* Miss. Power & Light Co. v. Miss. ex rel. Moore, 487 U.S. 354, 372 (1988) ("States may not bar regulated utilities from passing through to retail consumers FERC-mandated wholesale rates. . . . When FERC sets a rate between a seller of power and a wholesaler-as-buyer, a State may not exercise its undoubted jurisdiction over retail sales to prevent the wholesaler-as-seller from recovering the costs of paying the FERC-approved rate.") (internal quotations omitted); Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953, 966 (1986) ("A State must rather give effect to Congress' desire to give FERC plenary authority over interstate wholesale rates, and to ensure that the States do not interfere with this authority.").

Courts have cited the Supremacy Clause of the U.S. Constitution,[5] which requires state policies to yield in areas where FERC has exclusive jurisdiction.[6]

However, federal law also preserves important responsibilities to the states.[7] To the extent that federal policy could impede the accomplishment of the states' legitimate objectives in areas traditionally reserved to them, a collaborative approach should be adopted. The November 2014 joint technical conference between FERC and the New York Public Service Commission ("NYPSC") to discuss issues of mutual interest and concern regarding wholesale markets and energy infrastructure in New York is a good example of the type of collaboration that may become increasingly necessary to reconcile sometimes conflicting federal and state regulatory priorities, provide market participants a reasonable degree of market stability, and minimize future litigation.[8]

II. GENERATION ASSETS ARE NOT FUNGIBLE.

There are different types of generation assets, each with its own potential risks, benefits, and challenges.[9] The different types of generation assets include, for example, coal, oil, natural gas, nuclear,

5. U.S. CONST. art. VI, cl. 2.

6. PPL Energyplus, LLC v. Nazarian, 974 F. Supp. 2d 790, 840 (D. Md. 2013), *aff'd*, 753 F.3d 467 (4th Cir. 2014); *Miss. Power & Light Co.*, 487 U.S. at 371 ("Our decision in *Nantahala* relied on fundamental principles concerning the pre-emptive impact of federal jurisdiction over wholesale rates on state regulation. . . . This principle binds both state and federal courts and is in the former respect mandated by the Supremacy Clause.").

7. *See* discussion, *infra* notes 36-38 and accompanying text.

8. *See* Notice of Joint Technical Conference, *Joint Technical Conference on N.Y. Mkts. & Infrastructure*, No. AD14-18-000 (F.E.R.C. Sept. 17, 2014), https://www.ferc.gov/EventCalendar/EventDetails.aspx?ID=7531&CalType =&CalendarID=116&Date=11/05/2014&View=Listview, *archived at* http://perma.cc/VS26-TMGQ.

9. *See generally* U.S. ENERGY INFO. ADMIN., ELECTRIC POWER MONTHLY: JAN. 2015; *e.g.*, TABLE ES1.A, *available at* http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_1_01, *archived at* http://perma.cc/KS42-2P4E (listing "Total Electric Power Industry Summary Statistics" for coal, petroleum, natural gas, nuclear, hydroelectric, wind, solar, biomass, geothermal).

cogeneration, geothermal, hydropower, biomass, wind, and solar.[10] Key differences among asset types include:

Total cost. The total cost of construction, operation, and maintenance can vary significantly by asset type.[11] Investment decisions necessarily rely upon estimates of future engineering, procurement, construction, operation, and maintenance costs. This introduces uncertainty and risk, particularly with respect to new or emerging technologies. There are many instances where substantial, and in some cases unforeseeable, variances between estimated and actual costs resulted in protracted litigation and controversy, most notably in the nuclear power industry.[12]

Fixed vs. variable costs. In general, the capital cost of an asset is considered a "fixed cost," meaning that the cost has been permanently and irrevocably incurred whether or not the asset is actually dispatched to generate electricity. Operation and maintenance expenses, including fuel, are "variable" and not fixed, meaning that if the asset is not used, the costs are avoidable.[13] The higher the fixed costs, the greater the economic loss if the asset is under-utilized. Thus, assets with high fixed costs may be riskier than

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10. *See id.*

11. U.S. ENERGY INFO. ADMIN., UPDATED CAPITAL COST ESTIMATES FOR UTILITY SCALE ELECTRICITY GENERATING PLANTS: APRIL 2013, at 6-7, http://www.eia.gov/forecasts/capitalcost/pdf/updated_capcost.pdf

12. *See* discussion *infra* Part VI.D; UNION OF CONCERNED SCIENTISTS, NUCLEAR LOAN GUARANTEES: ANOTHER TAXPAYER BAILOUT? (2009), *available at* http://www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear_power/nuclear-loan-guarantees-_fact-sheet_.pdf, *archived at* http://perma.cc/V8GW-Q3Q3; Anya Litvak, *Westinghouse Clashes with Georgia Power Over Nuclear Plant Cost Overruns*, PITTSBURGH POST-GAZETTE, Oct. 20, 2013, http://www.post-gazette.com/business/businessnews/2013/10/20/Westinghouse-clashes-with-Georgia-Power-over-nuclear-plant-cost-overruns/stories/201310200290, *archived at* http://perma.cc/EA6W-ENY9; Nick Woltman, *Xcel Energy Sued Over Prairie Island Cost Overruns*, TWINCITIES.COM, Nov. 14, 2014, http://www.twincities.com/business/ci_26940496/xcel-energy-sued-over-prairie-island-cost-overruns, *archived at* http://perma.cc/6QN6-HF7Q.

13. *See, e.g.*, *CNG Transmission Corp.*, 80 F.E.R.C. ¶ 61,092, at 61,322, n.12, Ordering Paragraphs (D), (P) (1997) (acknowledging operation and maintenance expenses and fuel as variable costs); *PacifiCorp*, 143 F.E.R.C. ¶ 61,167, at PP 4, 7 (2013) (referring to "variable costs (e.g., fuel and variable operation and maintenances expenses)"); *OREG 1, Inc.*, 138 F.E.R.C. ¶ 61,110, at P 19 (2012) (same).

assets with lower fixed costs, even if the total expected cost is similar.

Different asset types have different ratios of fixed vs. variable cost.[14] For example, renewable energy assets have relatively high fixed costs and low variable costs. Gas-fired generation has lower fixed costs but potentially significant variable costs, depending upon the price of fuel.[15] One benefit of gas-fired generation is that it can be economic even with relatively low utilization; this is one reason why gas-fired assets are widely used for "peaking" or "back-up" service.[16]

Cost volatility. Cost volatility may present cash flow and customer satisfaction issues.[17] Renewable energy assets generally have low cost volatility. Gas-fired assets can have relatively high cost volatility due to dramatic fluctuations in the price of fuel.[18] Rate

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14. U.S. ENERGY INFO. ADMIN., *supra* note 11 (listing varying "Overnight Capital Costs" and "Variable O&M Costs" for coal, natural gas, nuclear, biomass, wind, solar, geothermal, municipal solid waste, and hydroelectric generation).

15. *See id.* (listing the following Overnight Capital Costs – Onshore Wind: \$2,213/kW; Offshore Wind: \$6,230/kW; Solar: \$3,873-5,067/kW; Natural Gas (Conventional CC): \$917/kW; Natural Gas (Advanced CC): \$1,023/kW). *See also* INST. FOR ENERGY RESEARCH, *The Dilemma Caused by Low Cost Natural Gas* (Feb. 22, 2013), http://instituteforenergyresearch.org/analysis/the-dilemma-caused-by-low-cost-natural-gas/, *archived at* http://perma.cc/JB77-XB9Q ("Fixed costs for nuclear plants run about \$90,000 per megawatt compared to about \$15,000 per megawatt for new natural gas plants and about \$30,000 per megawatt for coal plants.").

16. ICF INT'L, FIRMING RENEWABLE ELECTRIC POWER GENERATORS: OPPORTUNITIES AND CHALLENGES FOR NATURAL GAS PIPELINES 4, 72-73 (Mar. 16, 2011), *available at* http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12641276, *archived at* http://perma.cc/63GM-XY5U. ("Historically, intermittent generation has been firmed by relying on various forms of back-up generation, most notably gas-fired generation. Gas-fired generation has been a reliable and cost-effective means of firming intermittent renewables generation. Therefore, it has been the most widely used means to back up intermittent generation to date.")

17. *See, e.g.*, Patti Domm, *Wild Ride For Natural Gas Signals Volatile Winter Ahead*, CNBC.COM, Nov. 10, 2014, http://www.cnbc.com/id/102169733#, *archived at* http://perma.cc/UFD9-AP29; Timothy Puko, *Natural Gas Takes Unseasonal Plunge*, WALL ST. J., Jan. 20, 2015, http://www.wsj.com/articles/natural-gas-takes-unseasonal-plunge-1421801045, *archived at* http://perma.cc/97UA-WB2X.

18. *See* U.S. ENERGY INFO. ADMIN., *supra* note 11, at 6 (listing variable O&M costs of solar, wind, and geothermal plants at \$0.00, and variable O&M costs of

volatility can cause significant hardship for retail customers, particularly residential load.[19]

Reliability. Different asset types may be more or less reliable in different conditions. Wind and solar assets are "variable" because they can only generate energy when the wind blows or the sun shines. While weather data can be used to create reasonable estimates of total output over a period of time, it is necessary to have other resources available to "back up" variable energy resources when their output drops.[20] Similarly, some assets do not perform well in extreme cold. Significant coal-fired generation in PJM Interconnection, L.L.C. ("PJM") became unavailable during the January 2014 "polar vortex" because coal piles froze.[21] In the same year, substantial gas-fired generation in the ISO New England, Inc. ("ISO-NE") region was off-line because the available fuel was needed for heating load which had priority on the natural gas pipeline transportation system.[22] Micro-grids and other distributed assets may increase the reliability of the grid because power is generated near

natural gas varying from $3.60-15.45/MWh); Domm, *supra* note 17; Puko, *supra* note 17.

19. *See infra* text accompanying notes 131-132.

20. *See Integration of Variable Energy Res.*, 139 F.E.R.C. ¶ 61,246, at P 1 n.1 (2012) ("Variable Energy Resource is a device for the production of electricity that is characterized by an energy source that: (1) is renewable; (2) cannot be stored by the facility owner or operator; and (3) has variability that is beyond the control of the facility owner or operator. This includes, for example, wind, solar thermal and photovoltaic, and hydrokinetic generating facilities."); ICF INT'L, *supra* note 16, at 4, 72-73.

21. *See* FED. ENERGY REGULATORY COMM'N, COMMISSION AND INDUSTRY ACTIONS RELEVANT TO WINTER 2013-14 WEATHER EVENTS 5, 15 (Oct. 16, 2014), http://www.ferc.gov/media/news-releases/2014/2014-4/10-16-14-A-4-presentation.pdf, *archived at* http://perma.cc/FRV6-ZNXD; PJM INTERCONNECTION, L.L.C., PJM CAPACITY PERFORMANCE PROPOSAL 5 (Aug. 20, 2014), http://www.pjm.com/~/media/documents/reports/20140820-pjm-capacity-performance-proposal.ashx, *archived at* http://perma.cc/U82S-KXAN ("[U]p to 22 percent of PJM capacity was unavailable due to cold weather-related problems."); PJM INTERCONNECTION, L.L.C., POLAR VORTEX 2014, at 6-8 (Apr. 1, 2014), http://www.ferc.gov/CalendarFiles/20140401084146-Kormos,%20PJM%20Slides.pdf, *archived at* http://perma.cc/D4C9-AVBF.

22. *See infra* text accompanying notes 105-110.

load, but some distribution systems are not currently designed to accommodate high penetration of distributed generation.[23]

Environmental impacts. Different asset types present different environmental challenges. The Three Mile Island, Chernobyl, and Fukushima incidents dramatically illustrate the potential risks of nuclear generation.[24] Coal, oil, and gas-fired generation assets release greenhouse gases and contribute to climate change.[25] Hydroelectric assets may have detrimental impacts on fish populations.[26] Wind assets may affect bird populations.[27] Some generation assets also impact water quality.[28]

Scalability. Some asset types are more scalable than others. Solar assets, for example, can be installed on a residential rooftop to support distributed generation goals, while coal-fired generation assets are generally feasible only as large, utility-scale projects.[29]

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23. *See* U.S. DEP'T OF ENERGY, THE POTENTIAL BENEFITS OF DISTRIBUTED GENERATION AND RATE-RELATED ISSUES THAT MAY IMPEDE THEIR EXPANSION (2007), *available at* http://www.ferc.gov/legal/fed-sta/exp-study.pdf, *archived at* http://perma.cc/2VKC-52U3.

24. Edward Moore Geist, *What Three Mile Island, Chernobyl, and Fukushima Can Teach About The Next One*, BULL. OF ATOMIC SCIENTISTS (Apr. 28, 2014), http://thebulletin.org/what-three-mile-island-chernobyl-and-fukushima-can-teach-about-next-one7104, *archived at* http://perma.cc/TAR8-HN94.

25. *See* U.S. Envtl. Prot. Agency, *Climate Change: Sources of Greenhouse Gas Emissions*, EPA.GOV, http://www.epa.gov/climatechange/ghgemissions/sources/electricity.html (last visited April 1, 2015), *archived at* http://perma.cc/2M2F-TETQ.

26. *See* FED. ENERGY REGULATORY COMM'N, EVALUATION OF MITIGATION EFFECTIVENESS AT HYDROPOWER PROJECTS: FISH PASSAGE, at ix, 10 (2004) ("Hydroelectric dams can be barriers to upstream-migrating fish and a source of mortality from turbine passage to downstream migrants.").

27. *See generally* FED. ENERGY REGULATORY COMM'N & U.S. FISH & WILDLIFE SERV., MEMORANDUM OF UNDERSTANDING REGARDING IMPLEMENTATION OF EXECUTIVE ORDER 13186, "RESPONSIBILITIES OF FEDERAL AGENCIES TO PROTECT MIGRATORY BIRDS" (Mar. 30, 2011), *available at* http://www.ferc.gov/legal/mou/mou-fws.pdf, *archived at* http://perma.cc/5AT7-HDHW; Robert Bryce, *Windmills Are Killing Our Birds*, WALL ST. J., Sept. 7, 2009, http://www.wsj.com/articles/SB10001424052970203706604574376543308399048, *archived at* http://perma.cc/FD8Y-QZPF.

28. *See, e.g.*, *FPL Energy Me. Hydro*, 111 F.E.R.C. ¶ 61,104 (2005) (FERC requiring state water quality certifications pursuant to Section 401 of the Clean Water Act in order for applicants to re-license hydroelectric projects).

29. *See* FRED BOSSELMAN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT: CASES AND MATERIALS 834 (3d ed. 2010) (discussing the

III. FUEL DIVERSITY IS IMPORTANT.

In order to provide safe, reliable, and reasonably priced electric service in an environmentally responsible manner, it is important to have a diverse portfolio of generation assets. "Fuel diversity" is important for a number of reasons.

Price volatility. Resource diversity helps mitigate price volatility. For example, the price of natural gas directly impacts the price of energy that is produced by gas-fired generation assets. Historically, the price of gas has been extremely volatile and unpredictable. This can cause retail rates to fluctuate unpredictably, creating cash flow issues and customer dissatisfaction. A diverse portfolio – particularly the deployment of renewable energy assets – can help smooth out retail rate fluctuations.

Reliability risk. Resource diversity is an important way to avoid potential catastrophic issues with a single class of generation. For example, during January 2014, gas-fired generation was highly constrained in some areas due to inadequate fuel delivery infrastructure.[30] The Public Utilities Commission of Ohio recently observed that "fuel diversity is extremely important" because with "a significant portion of the retiring megawatts being replaced by natural gas resources, we cannot afford to forget about protecting our current resources that help in hedging against any unforeseen natural gas curtailments."[31]

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adaptability of solar, including use as "small-scale generation facilities that might diversify the types of fuel used to generate electricity and reduce reliance on large, centralized power plants"); *Rooftop Solar Cost Competitive with the Grid in Much of the U.S.*, SCI. AM., Dec. 1, 2014, http://www.scientificamerican.com/article/rooftop-solar-cost-competitive-with-the-grid-in-much-of-the-u-s/, *archived at* http://perma.cc/EZ6W-4JTG (noting that "the cost of putting solar panels on a typical American house has fallen by some 70 percent over the last decade and a half"); DAVID FELDMAN (NREL), ET AL., PHOTOVOLTAIC SYSTEM PRICING TRENDS 22 (Sept. 22, 2014), *available at* http://www.nrel.gov/docs/fy14osti/62558.pdf, *archived at* http://perma.cc/B6K4-J5FC (same).

30. *See infra* text accompanying note 108.

31. Comments Submitted on Behalf of the Public Utilities Commission of Ohio at 7-8, *Technical Conference on Winter 2013-2014 Operations & Mkt. Performance in Reg'l Transmission Orgs. & Indep. Sys. Operators* (May 15, 2014) (F.E.R.C. Docket No. AD14-8-000), http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13546266, *archived at* http://perma.cc/2C2J-MRM3.

Environmental responsibility. Efforts to achieve sustainability, energy independence, and environmental responsibility call for increasing investment in renewable energy resources that can only produce power intermittently. Other assets, such as storage, dispatchable demand response, and conventional generation, are required to support increasing levels of investment in renewable energy.[32] Some assets are better suited than others to support the integration of new renewable energy resources.[33]

Distributed generation. Distributed generation can provide unique benefits such as customer empowerment, satisfaction, and engagement, and increased grid resiliency and security, but these investments consist in part of roof-top solar panels that must be backed-up with other assets.[34] In addition, in some areas, such as Hawaii, significant distribution system upgrades may be needed in order to support the integration of additional distributed assets.

IV. STATES HAVE A STRONG INTEREST IN ENSURING ADEQUATE INVESTMENT IN A DIVERSE PORTFOLIO OF GENERATION ASSETS.

States comprehensively regulate the delivery of electric service to retail customers.[35] States have "a legitimate interest and federally permissible role in securing an adequate supply of electric energy."[36] The Federal Power Act explicitly preserves state jurisdiction over certain areas of the electric industry, including (but not limited to) regulation of retail electric service and the siting and construction of physical facilities used for the generation, distribution, and

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32. *See* ICF INT'L, *supra* note 16, at 12 ("Demand response programs and energy storage technologies may become key renewable firming resources as DR programs grow and storage technologies mature and costs decline.").

33. *See* ICF INT'L, *supra* note 16.

34. *See generally* U.S. DEP'T OF ENERGY, THE POTENTIAL BENEFITS OF DISTRIBUTED GENERATION AND RATE-RELATED ISSUES THAT MAY IMPEDE THEIR EXPANSION (2007), *available at* http://www.ferc.gov/legal/fed-sta/exp-study.pdf, *archived at* http://perma.cc/7RTL-ZJX4.

35. *See* 16 U.S.C. § 824(b)(1) ("The Commission . . . shall not have jurisdiction . . . over facilities used for the generation of electric energy or over facilities used in local distribution or only for the transmission of electric energy in intrastate commerce . . . .").

36. PPL Energyplus, LLC v. Nazarian, 974 F. Supp. 2d 790, 829 (D. Md. 2013) (citing 16 U.S.C. § 824o(i); Md. Code Ann., Pub. Util. § 5-101(a)), *aff'd*, 753 F.3d 467 (4th Cir. 2014).

transmission of electric energy.[37] Among other things, states can: (1) take regulatory action to require existing generation facilities to retire; (2) limit the type or amount of generation facilities constructed in the state; (3) promote certain environmentally desired types of generation facilities; and (4) determine the siting or location of a new generation facility within the state.[38]

Across the nation, states have demonstrated strong leadership in creating and implementing policies, programs, and procedures to incentivize the development of a diverse portfolio of generation assets to serve retail electric load safely, reliably, responsibly, and at just and reasonable rates.[39] Policies and programs include renewable portfolio standards that require minimum percentages of retail load to be served with renewable energy assets,[40] market-based programs and CO2 emission performance standards that require CO2 emission

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37. New York v. F.E.R.C., 535 U.S. 1, 22-24 (2002). With the Federal Power Act, Congress placed "the transmission of electric energy in interstate commerce and the sale of such energy at wholesale in interstate commerce" under federal control. 16 U.S.C. § 824(a) (2012). Through the Act, Congress exercised its Commerce Clause prerogative to regulate matters of interstate commerce that the states could not. *Cf.* Pub. Utils. Comm'n of R.I. v. Attleboro Steam & Elec. Co., 273 U.S. 83, 89-90 (1927) (holding that the regulation of wholesale energy transactions that are "fundamentally interstate from beginning to end" may come only from the "exercise of the power vested in Congress."). Congress further extended federal authority to those electric energy matters indirectly related to interstate commerce that had previously been subject to state regulation. *See* New York v. F.E.R.C., 535 U.S. at 6. But Congress preserved state authority over many aspects of the electric energy industry. The Federal Power Act disclaimed any attempt to regulate "any other sale of electric energy" and declared that federal regulators "shall not have jurisdiction, except as specifically provided . . . over facilities used for the generation of electric energy or over facilities used in local distribution or only for the transmission of electric energy in intrastate commerce." 16 U.S.C. § 824(b)(1). FERC has no authority or power to order directly the siting, building, or construction of a generation facility generally or in any particular location within a state. So while the federal government has exclusive control over interstate rates and transmission, the "[n]eed for new power facilities, their economic feasibility, and rates and services, are areas that have been characteristically governed by the States." Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm'n, 461 U.S. 190, 205 (1983).

38. *Nazarian*, 974 F. Supp. 2d at 829.

39. *See* discussion, *infra* Part VI.

40. *See, e.g.*, DSIRE, *Renewable Portfolio Standard Policies* (2014), *available at* http://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2015/01/RPS_map.pdf, *archived at* http://perma.cc/T4U3-N6AC.

controls on new and existing generation assets,[41] energy efficiency standards and demand response programs that alter the number and mix of energy resources by reducing energy demand,[42] and integrated resource planning processes that require detailed, long-term planning and analysis of the relative risks and benefits of alternative supply options.[43]

States vary in their regulatory structures, electricity generation and usage patterns, physical access to fuel and transmission networks, and economic drivers, and they tailor their energy and environmental policies and programs accordingly. In some states, utilities are vertically integrated, meaning that one company is responsible for electricity generation, transmission, and distribution in a given geographic service territory.[44] In other states, where the electric power industry has been restructured, ownership of electric generation assets has been decoupled from operation of transmission and distribution assets, and retail customers have their choice of electricity suppliers.[45]

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41. *See, e.g.*, OR. DEP'T OF ENERGY, OREGON'S CARBON DIOXIDE EMISSION STANDARDS FOR NEW ENERGY FACILITIES (2010), *available at* http://www.oregon.gov/energy/Siting/docs/Reports/CO2Standard.pdf, *archived at* http://perma.cc/DU7X-QAEG; BOSSELMAN, *supra* note 29, at 810 (discussing MA and NH emissions reduction requirements for existing power plants, and OR and WA emissions requirements for new power plants).

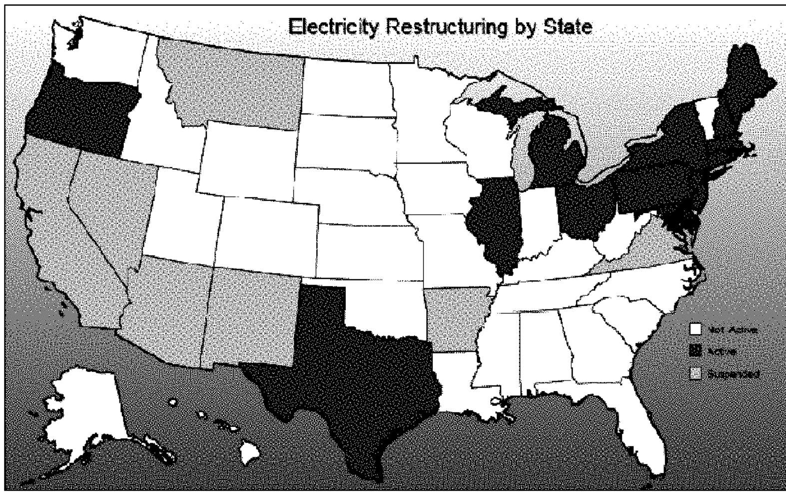
42. *See* Inst. for Bldg. Efficiency, *Smart Grids and Smart Buildings: Demand Response Programs Across the U.S.* (June 2011), http://www.institutebe.com/smart-grid-smart-building/demand-response-us.aspx, *archived at* http://perma.cc/5LG8-LX2C (containing interactive map of state-by-state demand response programs).

43. *See generally* RACHEL WILSON & PAUL PETERSON, SYNAPSE ENERGY ECON., INC., A BRIEF SURVEY OF STATE INTEGRATED RESOURCE PLANNING RULES AND REQUIREMENTS (Apr. 28, 2011).

44. *See* U.S. ENERGY INFO. ADMIN, STATUS OF ELECTRICITY RESTRUCTURING BY STATE (Sept. 2010), http://www.eia.gov/electricity/policies/restructuring/restructure_elect.html, *archived at* http://perma.cc/K98C-8DJ3.

45. *See id.*

Figure 1: Status of Electricity Restructuring by State



Source: "Status of Restructuring by State", U.S. Energy Information Administration, accessed March 19, 2014, http://www.eia.gov/electricity/policies/restructuring/restructure_elect.html.

Utilities in restructured states do not own generation assets and, therefore, must rely on wholesale energy markets to supply their full requirements. Although restructured states retain jurisdiction over retail service and the development, location, and type of power plants to be constructed within their borders, the FERC has exclusive jurisdiction over the prices, terms, and conditions of service in wholesale electric markets.[46] A federal court recently explained, "[w]hile there exist legitimate ways in which states may secure the development of generation facilities, states may not do so by dictating the ultimate price received by the generation facility for its actual wholesale energy and capacity sales in the [wholesale electric markets] without running afoul of the Supremacy Clause [of the U.S. Constitution]."[47]

46. *See, e.g.*, Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953, 966 (1986) ("FERC clearly has exclusive jurisdiction over the rates to be charged Nantahala's interstate wholesale customers. . . . Once FERC sets such a rate, a State may not conclude in setting retail rates that the FERC-approved wholesale rates are unreasonable. A State must rather give effect to Congress' desire to give FERC plenary authority over interstate wholesale rates, and to ensure that the States do not interfere with this authority.").

47. PPL Energyplus, LLC v. Nazarian, 974 F. Supp. 2d 790, 840 (D. Md. 2013), *aff'd*, 753 F.3d 467 (4th Cir. 2014).

In many restructured states, regulators no longer use traditional, long-term integrated resource planning processes to determine when it will be necessary to invest in additional infrastructure and what type of assets should be built; instead, those decisions are largely dictated by the FERC-regulated wholesale markets.[48] Thus, for example, under the New York Independent System Operator ("NYISO") market structure, "generation and other resources are not per se planned, but are intended to respond to market signals."[49]

Restructured states cannot meet their obligation to ensure safe and reliable retail service at just and reasonable rates unless the wholesale markets perform. Yet it is increasingly apparent that FERC-regulated wholesale markets are not structured in a manner that is designed to achieve all of the energy goals that, traditionally, have been important to the states, such as fuel diversity, generation diversity, limiting environmental externalities including global warming emissions, security and sustainability, economic development, retail rate stability, and other public policy considerations that are critical to the states.[50] The result has been an increasingly litigious relationship among federal regulators (who continue to place their faith in organized markets), state regulators (who are increasingly dissatisfied with wholesale market outcomes), and investors (who seek to preserve the value of existing assets by opposing targeted subsidies and incentives).

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48. RACHEL WILSON & BRUCE BIEWALD, SYNAPSE ENERGY ECON., INC., BEST PRACTICES IN ELECTRIC UTILITY INTEGRATED RESOURCE PLANNING, EXAMPLES OF STATE REGULATIONS AND RECENT UTILITY PLANS 3 (June 2013). Some states, such as New York, retained residual authority to order utilities to invest in reliability backstop projects in the event of market failure. However, the exercise of such power can be controversial due to potential market impacts. *See infra* Part VI.C.

49. Comments of Raymond P. Kinney, P.E., Director-Transmission NYSEG & RGE, on Behalf of the NY Investor Owned Utilities 4, *Joint Technical Conference on N.Y. Mkts & Infrastructure*, No. AD14-18-000 (F.E.R.C. Nov. 5, 2014).

50. *See* discussion, *infra* Part V.B.

V. STATES HAVE NOT BEEN ENTIRELY SATISFIED WITH THE OUTCOMES OF ORGANIZED WHOLESALE MARKETS.

A. FERC's wholesale rules significantly affect the resource portfolio that will be available, in the future, to satisfy retail load.

Independent system operators ("ISOs") and regional transmission organizations ("RTOs") were created to facilitate open access to the transmission grid and the development of competitive power markets.[51] Vertically integrated utilities were not economically motivated to interconnect competitive suppliers, who complained of undue discrimination.[52] ISOs and RTOs were created to operate the transmission grid in a non-discriminatory manner.[53] ISO/RTOs also facilitated economically efficient coordination among transmission owners in broad geographic regions.[54]

Currently, there are three single-state ISO/RTOs and four multi-state ISO/RTOs. The single-state ISO/RTOs are California Independent System Operator ("CAISO") in California; Electric Reliability Council of Texas ("ERCOT") in Texas; and NYISO in New York. The multi-state ISO/RTOs are PJM, Midcontinent Independent System Operator, Inc. ("MISO"), ISO-NE, and the Southwest Power Pool.

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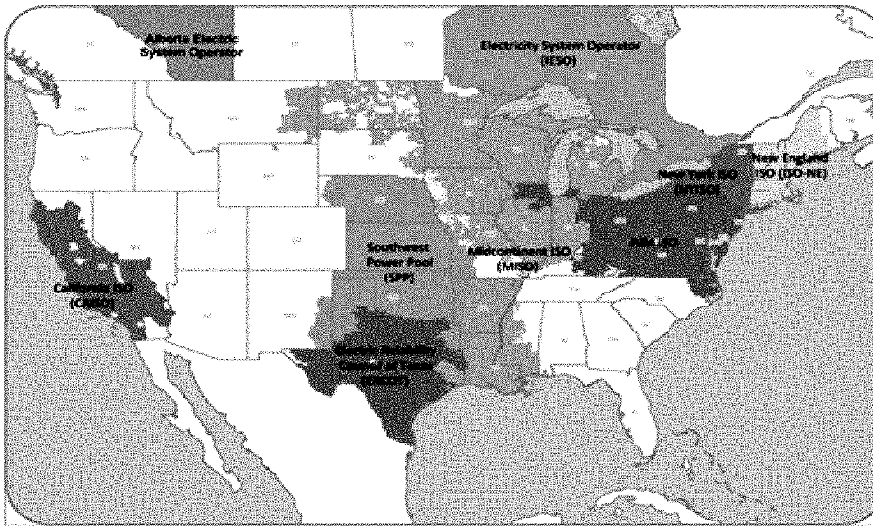
51. *See Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Servs. by Pub. Utils.; Recovery of Stranded Costs by Pub. Utils. &Transmitting Utils.*, Order No. 888, F.E.R.C. Stats. & Regs. ¶ 31,036, at 31,654-55 (1996) (discussing the "functional unbundling" of the wholesale generation and transmission services and that ISOs have "great potential . . . to facilitate economically efficient pricing"), *order on reh'g*, Order No. 888-A, F.E.R.C. Stats. & Regs. ¶ 31,048, *order on reh'g*, Order No. 888-B, 81 F.E.R.C. ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C, 82 F.E.R.C. ¶ 61,046 (1998), *aff'd in relevant part sub nom.* Transmission Access Policy Study Group v. F.E.R.C., 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom.* New York v. F.E.R.C., 535 U.S. 1 (2002).

52. *See id.* ("Following PURPA, . . . [M]any traditional vertically integrated utilities still did not provide open access to third parties and still favored their own generation if and when they provided transmission access to third parties, barriers continued to exist to cheaper, more efficient generation sources.").

53. *See Reg'l Transmission Orgs.*, Order No. 2000, 89 F.E.R.C. ¶ 61,285, slip. op. at 194 (1999), *available at* http://www.ferc.gov/legal/maj-ord-reg/land-docs/RM99-2A.pdf, *archived at* http://perma.cc/FQ7Y-495E.

54. *See id.*, slip op at 492-497 (discussing interregional coordination).

Figure 2 – FERC ISO/RTO Map[55]



FERC allows but does not require ISO/RTOs to operate power exchanges.[56] The form of the power exchange can differ from region to region.[57] In general, there are three types of exchanges: capacity, energy, and ancillary services. For purposes of this Article, capacity markets are the most relevant.

"Capacity" is a standby commitment made by a generation owner to produce electric energy if called upon by the ISO/RTO to do so.[58] A purchase of capacity is not a purchase of electric energy; rather, it is a purchase of a commitment that the unit will be available to produce electric energy if called upon.[59] The purchase and sale of capacity ensures that at any given time there should be adequate resources capable of supplying energy to serve forecasted load, as well as a reserve margin to meet exigent circumstances, such as an unexpectedly high demand or generation outages. In real time, the

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55. Fed. Energy Regulatory Comm'n, *Regional Transmission Organizations (RTO)/Independent System Operators (ISO)* (Jan. 5, 2015), http://www.ferc.gov/industries/electric/indus-act/rto.asp, *archived at* http://perma.cc/4RRP-TFFN.

56. *Reg'l Transmission Orgs.*, Order No. 2000, 89 F.E.R.C. ¶ 61,285, slip op. at 608 (1999).

57. *Id.*

58. *See* Conn. Dep't of Pub. Util. Control v. F.E.R.C., 569 F.3d 477, 479 (D.C. Cir. 2009).

59. *See id.*

system operator may elect to dispatch a cheaper resource that was not reserved through payment of a capacity charge, but the capacity product remains valuable to support reliability.

In addition to the general benefits of ensuring an adequate amount of capacity to satisfy load, capacity sales are a source of revenue for asset owners.[60] A generator that clears the capacity market in a year (for example, 2015) will have a fixed stream of revenue for a one-year period commencing up to three years in the future (for example, from 2018 to 2019).[61] This fixed stream of revenue can help the generator obtain current financing to fund new construction and/or operation and maintenance of existing assets.[62] The availability of this revenue stream also allows cleared capacity resources to offer lower prices in the real-time energy markets. As a practical matter, in ISO/RTOs that have them, it is challenging for a project proponent to operate economically if their asset does not clear the forward capacity market.[63] Thus, FERC's capacity market rules significantly affect the resource portfolio that is available to meet customer demand.

B. Organized capacity markets are not designed to value state policy goals

FERC did not dictate a standard design for capacity markets.[64] In general, all of the existing capacity markets are bid-based markets in which resources clear on the basis of price for a single delivery year commencing up to three years forward.[65] But as many states learned through years of experience in the integrated resource planning

60. PPL Energyplus, LLC v. Nazarian, 974 F. Supp. 2d 790, 807 (D. Md. 2013), *aff'd*, 753 F.3d 467 (4th Cir. 2014).

61. *See id.*

62. *See id.*

63. Some market participants have argued that it is difficult to obtain financing for new construction even if the asset *does* clear the forward capacity market. *See id.* at 818, 822 (discussing CPV and MD PSC concerns that the PJM Capacity Market is "too short-term, too volatile, and too fraught with continued regulatory uncertainty to provide lenders with anything close to the certainty of a fixed revenue stream required for financing").

64. *Reg'l Transmission Orgs.*, Order No. 2000, 89 F.E.R.C. ¶ 61,285, slip op. at 608 (1999) ("[W]e think that it is best to let market preferences dictate the form of any one or more regional power exchanges and whether the RTO should operate a power exchange.").

65. *See, e.g.*, *Nazarian*, 974 F. Supp. 2d at 805-06.

process, the option that is the cheapest for any single year may be more expensive than available alternatives over the twenty- or thirty-year life of a generation asset.[66] The cheapest option also may be too risky due to a lack of fuel diversity, lack of firm fuel supplies, or externalities such as environmental impacts. As a result, generation portfolios in jurisdictions with organized capacity markets may not align well with long-term state policy objectives that go beyond achieving the lowest short-term price.

1. Fuel Diversity

In general, FERC has attempted to develop policies that are "fuel neutral," meaning that the facility that offers the lowest price will clear the market regardless of technology type. FERC Commissioner Norman Bay has stated that "FERC policies should be fuel neutral while allowing non-discriminatory access to FERC-jurisdictional markets."[67] According to Commissioner Bay, there are not currently any FERC policies that promote one fuel type or energy source over another.[68]

As a practical matter, a significant amount of the new generation that has entered the market in recent years has been gas-fired generation. Though this result may not have been the intended result of FERC policies, it has significant long-term implications. The New York Public Service Commission ("NY PSC") observed that "the current market structure appears to limit the merchant generator

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66. For example, if gas prices are expected to rise, a natural gas facility may be the least cost alternative for the short term but not for the medium or long term.

67. *Hearing to Consider the Nominations of Ms. Cheryl A. LaFleur & Mr. Norman C. Bay, to Be Members of the Fed. Energy Regulatory Comm'n Before the S. Comm. On Energy & Natural Res.*, 113th Cong. (May 20, 2014) (responses to Questions for the Record of Norman Bay, nominee for Commissioner, Federal Energy Regulatory Commission).

68. *See id.* (response to Question 8 of Senator Joe Manchin). FERC approved two winter reliability programs in ISO New England that specifically sought to achieve fuel diversity to mitigate the risks associated with inadequate natural gas delivery infrastructure. *ISO New England Inc.*, 148 F.E.R.C. ¶ 61,179 (2014) (accepting 2014-2015 Winter Reliability Program); *ISO New England, Inc.*, 144 F.E.R.C. ¶ 61,204 (2013) (accepting 2013-2014 Winter Reliability Program). Nuclear and coal-based assets are ineligible for the incentive even though they have (and pay for) long-term firm fuel and fuel transportation, but the Commission found that this did not render the program "unduly discriminatory." *ISO New England Inc.*, 148 F.E.R.C. ¶ 61,179, at P 43 (2014). *See also infra* note 139.

options being chosen to natural gas-fired,"[69] even though that option may not be in the long-term best interests of the public:

> The lower initial investment and faster pay-back of natural gas fired units may explain why gas generation appears to be the market's choice. However, investing in nothing but non-renewable natural gas-fired generation for the next decade might result in a significant increase in fuel risk, an increase in wholesale price volatility, and a decrease in fuel diversity. There is no current forum where such questions are being considered.[70]

The NY PSC concluded:

> [T]he investment risks or above-market costs of new, more expensive technologies that provide environmental, hedging, fuel diversity, or other benefits are high enough that financial markets seem unwilling to accept them on a pure merchant basis. An energy policy that calls for a more diversified portfolio of generation fuel than strictly natural gas is not expected to succeed if left to today's market structure.[71]

Under the current market rules,

> The units that will be retired by the market will be the least efficient and most costly to operate, hence the least profitable, while the public might be better served by retiring the unit with the greatest pollution or the unit that presents the greatest risks to the safety of the surrounding community.[72]

69. Order Initiating Electricity Reliability and Infrastructure Planning at 11, *Proceeding on Motion of the Comm'n to Establish Long-Range Elec. Res. Plan & Infrastructure Planning Process*, Case 07-E-1507 (NY PSC Dec 24, 2007).

70. *Id.* at 11.

71. *Id.* at 22-23.

72. *Id.* at 11.

NYISO's President and Chief Executive Officer has acknowledged that "there is a great deal of concern about fuel diversity."[73]

2. Long-Term Investment in Natural Gas Delivery Infrastructure

According to NYISO's independent market monitor, "in an ideal market, market requirements should be fully consistent with the reliability requirements of the system," but in reality "no market today sets prices that fully reflect all system needs."[74] To maintain reliability, ISO/RTO tariffs permit out-of-market payments to incentivize new construction,[75] delay mothballing or shut-down of existing units,[76] and/or provide emergency service when outages occur.[77] However, to date, there is no tariff or market mechanism to support financing of long-term investments in natural gas delivery infrastructure that is needed to support reliability in regions that are heavily dependent on natural gas-fired generation.

Recently, significant reliability threats and cost increases have occurred due to inadequate natural gas supply arrangements,

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73. Introductory Comments of Stephen G. Whitley, President and CEO, New York Independent System Operator, Inc. at 5, *Joint Tech. Conference on N.Y. Mkts. & Infrastructure*, No. AD14-18-000 (F.E.R.C. Nov. 5, 2014).

74. Answer of New York Independent System Operator, Inc. at 12, *Indep. Power Producers of N.Y., Inc. v. N.Y. Indep. Sys. Operator, Inc.*, F.E.R.C. Docket No. EL13-62 (May 30, 2013) (internal citations and quotations omitted), http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13270787, *archived at* http://perma.cc/9GWQ-7MRH.

75. *See, e.g.*, N.Y. Indep. Sys. Operator, Inc., F.E.R.C Open Access Transmission Tariff, Attachment Y — NYISO Comprehensive Planning Process for Reliability Needs §§ 31.2.4 (Development of Solutions to Reliability Needs), 31.5 (Cost Allocation and Cost Recovery).

76. Order Deciding Reliability Issues and Addressing Cost Allocation and Recovery at 2-3, *Petition of Dunkirk Power LLC & NRG Energy, Inc. for Waiver of Generator Retirement Requirements*, No. 12-E-0136, (NY PSC Aug. 16, 2012); Order Deciding Reliability Issues and Addressing Cost Allocation and Recovery at 15-16, 20r, *Petition of Cayuga Operating Co., LLC to Mothball Generating Units 1 & 2*, No. 12-E-0400 (NY PSC Dec. 17, 2012); *see also* PJM Open Access Transmission Tariff § V.113-114 (permitting either cost of service recovery or a Deactivation Avoidable Cost Credit for generation that continues operating beyond its desired Deactivation Date).

77. *See, e.g.*, PJM Open Access Transmission Tariff, Attachment K – Appendix §§ 2.2(d), 2.5(d) (discussing shortage pricing in the event of reserve shortages and emergency conditions).

particularly in New England.[78] Following two technical conferences regarding poor generator performance during the January 2014 "polar vortex," FERC explained:

> As currently designed, the eastern capacity market auctions establish capacity prices based on economic bids of sellers, but do not directly take into account generator type, fuel supply arrangements, or operational characteristics. The Midcontinent Independent System Operator, Inc.'s (MISO) resource adequacy construct operates similarly in that it does not directly account for fuel assurance concerns. Additionally, experiences in RTO/ISO regions without centralized capacity markets, such as the California Independent System Operator Corporation (CAISO) and the Southwest Power Pool, Inc. (SPP) suggest that similar fuel assurance concerns may exist in those regions.[79]

The Maine Public Utilities Commission ("MePUC") concluded that (1) the market rules do not provide incentives to generators to make the investment in natural gas delivery infrastructure that is needed for reliability; and/or (2) a mismatch exists between the nature of the required commitment to acquire pipeline capacity, which is long-term, and the nature of a generator's revenue stream, which is relatively much shorter term, and thereby precludes a generator from being a credit-worthy counterparty to support long-term investments in natural gas delivery infrastructure.[80]

The New England States Committee on Electricity ("NESCOE") expressed concern regarding the lack of investment in natural gas delivery infrastructure:

> The majority of proposed electric power generators in New England are to be fueled by natural gas. However, to date,

78. ISO NEW ENGLAND, 2014 REGIONAL ELECTRICITY OUTLOOK 7, 30 (2014) ("In 2013, New England had the highest natural gas prices in the country, primarily because of insufficient pipeline capacity."). *See also infra* note 108.

79. *Centralized Capacity Mkts. in Reg'l Transmission Orgs. & Indep. Sys. Operators*, 149 F.E.R.C. ¶ 61,145, at P 6 (2014) (footnotes omitted).

80. Order – Phase 1, at 21, *Me. Pub. Utils. Comm'n Investigation of Parameters for Exercising Auth. Pursuant to the Me. Energy Cost Reduction Act*, No. 2014-00071 (Me PUC Nov. 13, 2014).

> New England's electricity markets have not resulted in infrastructure to meet current gas-fired generators' needs. For example, there is no evidence that any electric power generator in New England has signed a long-term firm contract with a natural gas pipeline based on the current or expected market rules.[81]

NESCOE has proposed tariff changes intended to address the need for long-term investment in natural gas delivery infrastructure, but those proposals appear to be stalled.[82] The North American Electric Reliability Council ("NERC") recently stated that, "in New England, a large natural gas-fired generation portfolio has created challenges in ensuring that natural gas can be supplied and transported to all generators that are needed to maintain electric reliability."[83]

3. Long-Term Investment in New Generation

The CEO of American Electric Power recently testified, "From my perspective, the current structure of the capacity markets is not attracting a mix of new generating resources that will keep the lights on, nor providing the correct pricing signals for the existing fleet."[84] Two studies by the American Public Power Association found that nearly all of the generation capacity that came on-line during the study periods (2011 and 2013) was supported by long-term bilateral contracts, and was not built to make speculative sales into organized markets.[85] A company that was proposing a new generation project in PJM explained:

81. Press Release, New England States Comm. on Elec., Observations on New England Power Generators Association's Advice to New England Electricity Consumers and View of Status Quo 2 (Nov. 14, 2014).

82. *See* discussion *infra* note 119.

83. N. AM. ELEC. RELIABILITY CORP., 2014 SUMMER RELIABILITY ASSESSMENT: MAY 2014 1 (2014).

84. *Hearing on the Impact of Generation Retirements on Elec. Reliability Before the S. Comm. on Energy & Natural Resources* (Apr. 10, 2014) (testimony of Nicholas K. Akins, Chairman, President, and CEO, American Electric Power).

85. AM. PUB. POWER ASS'N, POWER PLANTS ARE NOT BUILT ON SPEC: 2014 UPDATE 6 (2014).

> RPM's[[86]] conditional three-year commitment period is simply insufficient to allow new baseload generation to be financed [because] the RPM is too short-term, too volatile, and too fraught with continued regulatory uncertainty to provide lenders with anything close to the certainty of a fixed revenue stream required for financing.[87]

NERC identified near-term reliability concerns in markets overseen by MISO and NYISO, where anticipated reserve margins are projected to fall below target levels in 2016 and 2017, respectively.[88] NERC said the most immediate reliability problems loom in MISO, where anticipated power reserve margins will drop below the target level of 14.8 percent in 2016 and decline to a razor-thin 5.23 percent by 2024.[89] NERC said the problem is driven by coal plant retirements, a failure to build or plan new baseload generation, and increased power exports to PJM.[90] NERC also identified reliability issues in four regions of New York.[91] Capacity additions are needed to alleviate such resource adequacy concerns.

The Maryland Public Service Commission ("MdPSC") concluded that the state could no longer rely on the organized capacity market to deliver long-term investment in new generation needed to serve retail load:

> [O]f critical importance, we cannot rely on PJM's Reliability Pricing Model to deliver new generation to

86. The Reliability Pricing Model ("RPM") is PJM's capacity market model. Under the RPM, PJM conducts one base residual auction and up to three incremental auctions per delivery year (June 1 – May 31). The base residual auction occurs three years before the commitment period, and the incremental auctions occur two years, one year, and just before the commitment period. The capacity auctions under the RPM obtain the remaining capacity that is needed after market participants have committed the resources they will supply themselves or provide through bilateral contracts.

87. PPL Energyplus, LLC v. Nazarian, 974 F. Supp. 2d 790, 818 (D. Md. 2013) (quoting 2009 CPV motion for a long-term contract in MD PSC Case 9117), *aff'd*, 753 F.3d 467 (4th Cir. 2014).

88. N. AM. ELEC. RELIABILITY CORP., 2014 LONG-TERM RELIABILITY ASSESSMENT 5-6 (2014).

89. *Id.* at 5.

90. *Id.* at 39.

91. *Id.* at 6.

> Maryland. . . . Since its inception in 2007, RPM has brought no new generation to Maryland, in spite of the fact that clearing prices for capacity in [PJM's] SWMAAC [zone] have averaged almost double those of the non-constrained portions of PJM. . . . Despite these exorbitant capacity charges, which have increased energy costs to Maryland ratepayers by hundreds of millions of dollars, *no* new base load generation was bid into the [PJM base residual auction] during the 2012-2014 delivery period. Zero. The simple fact is that the one year signal, three years into the future has not provided sufficient certainty for prospective generation suppliers to secure financing in the current economic climate. And we do not find it reasonable to require us . . . to entrust the reliability of our State's electricity supply entirely to the operation of a capacity market that, by design, seeks to incent long-term assets solely through short-term price signals.[92]

The New Jersey legislature similarly found that PJM's capacity market "has not resulted in large additions of peaking facilities or any additions of intermediate or base load resources available to the region and the State."[93] As discussed below, both states took bold action to support investment in new generation capacity, but those efforts were nixed by the federal courts under the Supremacy Clause.[94]

4. Environmental Impacts

The NYPSC found that organized wholesale markets are "not designed to consider a number of public policy concerns," including carbon emissions.[95] "No matter how well designed or operated,

92. Order No. 84815, at 22-23, *In re Whether New Generating Facilities are Needed to Meet Long-Term Demand for Standard Offer Serv.*, No. 9214 (Apr. 12, 2012).

93. N.J. Stat. § 48:3-98.2(b), *invalidated by* PPL Energyplus v. Solomon, 766 F.3d 241 (3d Cir. 2014).

94. *See infra* Parts VI.B.i, VI.B.ii.

95. Order Initiating Electricity Reliability and Infrastructure Planning at 9-10, *Proceeding on Motion of the Comm'n to Establish Long-Range Elec. Res. Plan & Infrastructure Planning Process*, Nos. 07-E-1507, *et al.* (NYPSC Dec 24, 2007) (footnote omitted).

markets can only respond to internalized costs, and many of the State's concerns and goals are not internalized in the wholesale market."[96]

Some of the ISO/RTOs' recent efforts to address reliability have been counterproductive from the perspective of environmental justice. For example, ISO New England implemented "winter reliability programs" for 2013-2014 and 2014-2015[97] and is implementing a new "Pay for Performance"[98] program that incentivize the use of fuel oil as a back-up fuel source. NESCOE stated that "fuel oil costs about five times what natural gas costs" and "has a dirtier emissions profile: its increase[d] use will reverse progress on New England's environmental objectives."[99]

VI. THOUGH THEY HAVE IMPORTANT INTERESTS AT STAKE, STATES HAVE LIMITED POWER TO AVOID THE COSTS OR MITIGATE THE RISKS THAT CAPACITY MARKET OUTCOMES IMPOSE ON RETAIL CUSTOMERS

Capacity market outcomes significantly impact important state interests. NYPSC Chair Audrey Zibelman recently stated:

> [T]he [NYPSC] is interested in discussing how New York's capacity market could be improved to help attract investments to help meet public policy objectives, including providing affordable and resilient energy services. Given the fact that more than $2.6 billion flows through the capacity market annually, it is critically important that it reflects the State's policy objectives and the needs of consumers in the State.[100]

96. *Id.* at 10.

97. *ISO New England, Inc.*, 148 F.E.R.C. ¶ 61,179 (2014) (accepting 2014-2015 Winter Reliability Program); *ISO New England, Inc.*, 144 F.E.R.C. ¶ 61,204 (2013) (accepting 2013-2014 Winter Reliability Program).

98. *ISO New England, Inc.*, 147 F.E.R.C. ¶ 61,172 (2014).

99. Press Release, New England States Comm. on Elec., Observations on New England Power Generators Association's Advice to New England Electricity Consumers and View of Status Quo 2 (Nov. 14, 2014).

100. Press Release, N.Y. State Pub. Serv. Comm'n & Fed. Energy Regulatory Comm'n, PSC and FERC to Hold Joint Technical Conference 1 (Nov. 30, 2014).

Several of the states with organized capacity markets have concluded in recent years that it would not be prudent to rely entirely on capacity market outcomes to ensure that load serving entities will have access to safe, reliable, reasonably priced and environmentally responsibile energy supplies to serve retail load. State initiatives aimed at addressing state policy concerns have resulted in a steady stream of litigation, some of which is still pending.[101] In general, the federal courts have sided with FERC, finding that, under the Supremacy Clause of the U.S. Constitution, state policies must yield to FERC's market design, however flawed it might be.[102]

A. New England

In states with traditional integrated resource planning, utilities are generally required, when they propose to construct new gas-fired generation resources, to secure firm, long-term gas transportation capacity to ensure that fuel will be available when the plant is called upon to dispatch.[103] But in organized capacity markets, owners of gas-fired generation assets have been permitted to rely on cheaper, interruptible gas transportation capacity, which may not be available during extreme weather conditions when heating load has priority service.[104] In January 2014, gas-fired generators in ISO New England had a capacity supply obligation of 11,000 MW, but they only produced 3,000 MW during the peak hour because their fuel supplies were interrupted.[105]

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101. *See infra* notes Part VI.B.

102. *See, e.g.*, PPL EnergyPlus, LLC v. Nazarian, 753 F.3d 467 (4th Cir. 2014); PPL EnergyPlus, LLC v. Solomon, 766 F.3d 241 (3d Cir. 2014).

103. *E.g.*, Nev. Power Co., No. 08-08030, 2008 WL 5484408, at *81-88 (NPUC Dec. 29, 2008) (order approving 2009 Nev. Power Co. Energy Supply Plan update); Nev. Power Co., No. 08-05014, 2008 WL 4492841, at *26-28 (NPUC Oct. 1, 2008) (order accepting Nev. Power Co. application); Sierra Pac. Power Co., No. 05-8004, 247 P.U.R.4th 469, at *242 (NPUC Dec. 14, 2005) (order accepting Sierra Pac. Power Co. application).

104. Under ISO New England's tariff, capacity resources may not take outages based on economic decisions not to procure fuel or fuel transportation, but they are not required to procure firm gas transportation in order to participate in the capacity auction. *New England Power Generators Ass'n Inc. v. ISO New England Inc.*, 144 F.E.R.C. ¶ 61,157, at P 47 (2013).

105. Peter Brandien, Vice President, System Operations, ISO NEW ENGLAND INC., Cold Weather Operations at 15, *Winter 2013-2014 Operations & Mkt.*

When outages occur, the system operator is forced to dispatch less economic units to maintain service.[106] In this situation, the uneconomic resource does not set the market-clearing price but may be entitled to an "uplift" payment (on top of the market clearing price) to compensate the owner for following the operator's dispatch order.[107] ISO New England paid $73 million in uplift in January 2014, largely because of uneconomic dispatch that resulted from gas-fired generators' reliance on interruptible fuel delivery services.[108] ISO-NE estimates that New England consumers paid $3 billion more for electricity during December, January, and February of 2013-14 than they would have paid if adequate pipeline capacity from the south existed.[109] Maine's Office of Public Advocate ("MeOPA") has stated that winter pipeline constraints increased Maine electricity costs by more than $180 million in the winter of 2012-13, and even more in 2013-14, and that pipeline capacity constraints are having significant but less easily quantified impacts on Maine's economy and environment.[110]

According to a study by Concentric Energy Advisors, ISO New England could save hundreds of millions of dollars by investing in incremental natural gas delivery infrastructure,[111] but gas-fired generators have no economic incentive to sign up for long-term firm gas transportation service, and pipeline owners will not construct the facilities without long-term firm contracts to finance their investment.[112] According to the MeOPA, "there is a market failure

Performance in Reg'l Transmission Orgs. & Indep. Sys. Operators, No. AD14-8-000 (F.E.R.C. Apr. 1, 2014).

106. FED. ENERGY REGULATORY COMM'N, STAFF ANALYSIS OF UPLIFT IN RTO AND ISO MARKETS: AUGUST 2014 at 1, 4.

107. *See generally id.*

108. *Winter 2013-2014 by the Numbers*, RTO INSIDER (Apr. 3, 2014), http://www.rtoinsider.com/winter-2013-14-numbers/, *archived at* http://perma.cc/4RRP-TFFN.

109. Order – Phase 1, at 15, *Me. Pub. Utils. Comm'n Investigation of Parameters for Exercising Auth. Pursuant to the Me. Energy Cost Reduction Act*, No. 2014-00071 (Me PUC Nov. 13, 2014).

110. *Id.* at 8.

111. CONCENTRIC ENERGY ADVISORS, NEW ENGLAND COST SAVINGS ASSOCIATED WITH NEW NATURAL GAS SUPPLY AND INFRASTRUCTURE 6-7 (May 2012).

112. Press Release, New England States Comm. on Elec., Observations on New England Power Generators Association's Advice to New England Electricity Consumers and View of Status Quo 2 (Nov. 14, 2014) ("For example, there is no

that is preventing private entities from addressing pipeline capacity constraints."[113]

As a "temporary," "stopgap" measure,[114] ISO New England implemented a "winter reliability program" for 2014-2015 that provides out-of-market payments to some dual-fuel generators and for a limited amount of oil and LNG inventory.[115] ISO-NE also adopted market rule changes known as Pay for Performance ("PFP") in an effort to incentivize generators to "firm up" their fuel commitments, and thus eliminate the need for the Winter Reliability Program and similar measures.[116] The MePUC concluded that the PFP is not likely to cause generators to invest in new natural gas delivery infrastructure.[117] According to the MePUC:

> [R]ule changes, increased efficiency in electric and gas usage, demand response, and better gas/electric market coordination may have some impact on the margin, but we find that those activities, even taken together, are not sufficiently likely, or likely to be of sufficient scale, to match the likely benefits of substantial additional gas pipeline capacity.[118]

NESCOE reached a similar conclusion:

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evidence that any electric power generator in New England has signed a long-term firm contract with a natural gas pipeline based on the current or expected market rules. Indeed, Spectra Energy Corp had to downsize its proposed Algonquin Incremental Market project from the size it initially proposed because only local gas distribution companies – and no merchant electric power generators – signed up for service.").

113. Order – Phase 1, at 8, *Me. Pub. Utils. Comm'n Investigation of Parameters for Exercising Auth. Pursuant to the Me. Energy Cost Reduction Act,* No. 2014-00071 (Me PUC Nov. 13, 2014).

114. *ISO New England Inc.*, 148 F.E.R.C. ¶ 61,179, at PP 2, 24, 41 (2014).

115. *Id.* (order accepting 2014-2015 Winter Reliability Program); *see also ISO New England, Inc.*, 144 F.E.R.C. ¶ 61,204 (2013) (order accepting 2013-2014 Winter Reliability Program).

116. *ISO New England Inc.*, 148 F.E.R.C. ¶ 61,179, at P 5 n.7 (2014) (citing *ISO New England Inc.*, 147 F.E.R.C. ¶ 61,172 (2014)).

117. Order – Phase 1, at 32, *Me. Pub. Utils. Comm'n Investigation of Parameters for Exercising Auth. Pursuant to the Me. Energy Cost Reduction Act*, No. 2014-00071 (Me PUC Nov. 13, 2014).

118. *Id.* at 32.

> Despite many years of conversation about reforming market mechanisms to address infrastructure inadequacies, not one has been proposed that is expected to solve the region's natural gas constraints. According to ISO-New England's consultant, the latest capacity market reforms approved by the Federal Energy Regulatory Commission, referred to as Pay-for-Performance, are likely to result in greater use of fuel oil as a back-up fuel source when they are in place a few years from now. At least currently, fuel oil costs about five times what natural gas costs. Fuel oil also has a dirtier emissions profile: its increase use will reverse progress on New England's environmental objectives.
>
> Indeed, for the second consecutive winter in the context of an emergency program, ISO-New England is investing consumer dollars predominantly in stand-by oil to make sure power generators can operate when needed, even when they cannot access natural gas. The strategy has emissions implications and requires consumers to pay above and beyond market prices, but it may be only a short-term way to help maintain power system stability.[119]

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119. Press Release, New England States Comm. on Elec., Observations on New England Power Generators Association's Advice to New England Electricity Consumers and View of Status Quo 2-3 (Nov. 14, 2014). On December 5, 2013, the New England Governors issued a letter in which they committed to work together, in coordination with ISO-NE and through NESCOE, to advance regional energy infrastructure expansion. Press Release, New England Governors' Commitment to Regional Cooperation on Energy Infrastructure Issues (Dec. 5, 2013). The NESCOE initiative identified two primary goals: (1) expand pipeline capacity to increase natural gas supply into New England, reducing supply constraints and associated energy price volatility, and (2) expand electric transmission to facilitate utility-scale development and delivery of no-to-low carbon energy resources. *See* NEW ENGLAND STATES COMM. ON ELEC., UPDATE ON THE NEW ENGLAND GOVERNORS' PROPOSAL TO INVEST IN STRATEGIC INFRASTRUCTURE AND ADDRESS PRICE DISPARITIES 12 (Sept. 25, 2014). On June 20, 2014, NESCOE presented to NEPOOL a proposal on the tariff approaches for incremental transmission and natural gas pipeline capacity with the intent of a vote on the proposal in September 2014. *Id.* at 20. However, on July 31, 2014, the Massachusetts Legislature adjourned without acting on a bill to enable that State to procure levels of no- and/or low-carbon power, and as a result, NESCOE sought an

During its 2013 session, the Maine Legislature enacted The Maine Energy Cost Reduction Act,[120] authorizing the MePUC, in consultation with the Maine Office of the Consumer Advocate and the Governor's Energy Office, to enter into, or direct one or more transmission and distribution utilities, natural gas utilities, or natural gas pipeline utilities to enter into, an Energy Cost Reduction Contract ("ECRC") for long-term pipeline capacity.[121] The MePUC has invited ECRC proposals and intends to perform an independent cost-benefit analysis of each proposal to determine whether sufficient benefits will result to Maine consumers to warrant entering an ECRC.[122] Already some parties are arguing that the ECRC program is preempted by federal law and that any ECRC would be invalid because it would interfere with the operation of FERC-regulated wholesale markets.[123] As of April 9, 2015, the litigation in Maine is still pending.

B. PJM

PJM also experienced reliability challenges during unusually cold weather conditions in January 2014. PJM set a new all-time winter peak load of 141,846 megawatts on January 7, 2014.[124] During the peak hour, 22 percent of total installed generation capacity in PJM

extension of time on the NEPOOL vote so as to provide Massachusetts State officials time to evaluate options associated with moving forward. *Id.* at 21.

120. Maine Energy Cost Reduction Act, Pub. L. 2013, ch. 369, Pt. B, § 1 (codified at ME. REV. STAT. tit. 35-A, §§ 1901-1912 (2013)).

121. ME. REV. STAT. tit. 35-A, §§ 1904.2-1904.3.

122. Order – Phase 1 at 1, 3, 4, Me. Pub. Utils. Comm'n Investigation of Parameters for Exercising Auth. Pursuant to the Me. Energy Cost Reduction Act, No. 2014-00071 (Me PUC Nov. 13, 2014).

123. *Id.* at 28 ("Because the Act sets out a scheme that seeks to directly impact wholesale electric and gas rates in interstate markets, CLF argues it impinges on FERC's exclusive jurisdiction over wholesale rate setting as established by the FPA and the NGA and violates the Commerce Clause. Accordingly, CLF reasons, the Act and any ECRCs entered into based upon it, violate the Supremacy Clause and the dormant Commerce Clause of the U.S. Constitution and are preempted by the FPA and NGA.").

124. PJM INTERCONNECTION, L.L.C., ANALYSIS OF OPERATIONAL EVENTS AND MARKET IMPACTS DURING THE JANUARY 2014 COLD WEATHER EVENTS 4, 9, 19, 36 (May 8, 2014), http://www.pjm.com/~/media/documents/reports/20140509-analysis-of-operational-events-and-market-impacts-during-the-jan-2014-cold-weather-events.ashx, *archived at* http://perma.cc/3SJ5-D23N.

was unavailable.[125] Generation units experienced forced outages resulting from equipment failure, cold temperature operations, and fuel supply issues.[126]

PJM had to initiate several emergency procedures on January 6-7, 2014.[127] On January 7, 2014, locational marginal prices in PJM reached $1,800 per MWH.[128] PJM paid $597 million in uplift in January 2014.[129] Most of these costs were caused when PJM had to call upon resources that were both inflexible and expensive in order to maintain reliability.[130]

Significant uplift payments create financial hardship for consumers and signal real reliability threats. Acting FERC Chair LaFleur stated at a technical conference, "I am also very concerned about price, both the absolute magnitude of the price spikes and increases we saw this winter, and also the variability . . . . [W]hen you see these price spikes, it is a symptom that protecting reliability is causing this issue."[131] Similarly, Commissioner Moeller testified:

> After two unusually warm winters in most of the country, our latest winter exposed an increasingly fragile balance of supply and demand in many areas in the Eastern Interconnection. Prices at times were extraordinarily high and consumers used more power because of the cold weather, which multiplied the impact of higher prices. Consumers are now beginning to receive utility bills that in some cases are reportedly several times what they paid during similar periods in previous years. Although the operators of the power grid worked hard to keep the system working, the experience of this winter strongly suggests

125. *Id.* at 4, 9, 24, 31, 37, 39.
126. *Id.* at 24-25.
127. *Id.* at 14.
128. *Id.* at 19, 27, 48.
129. *Id.* at 5.
130. *Id.* at 49.
131. Transcript at 111:6-111:15, *Technical Conference on Winter 2013-2014 Operations & Mkt. Performance in RTOs & ISOs*, No. AD14-8-000 (F.E.R.C. Apr. 1, 2014).

> that parts of the nation's bulk power system are in a more precarious situation than I had feared in years past.[132]

FERC recently approved changes to PJM's price formation rules that are expected to boost annual capacity payments to generators.[133] Estimates of the increase range from $216 million[134] to $1.7 billion per year.[135] On December 12, 2014, PJM filed a "Capacity Performance Proposal," which was intended to ensure that generation which clears the capacity auction will be available when called upon to serve load.[136] On March 31, 2015, FERC found that the proposal was deficient and requested additional information.[137] Thus, the proposed changes will not take effect prior to PJM's May 2015 base residual action. Concerns about resource adequacy linger, with FERC recently approving PJM's scarcity pricing proposal to allow cost-based offers up to $1,800/MWh to set the price in the energy market through March 2015.[138]

Some PJM states attempted to promote the development (or retention) of generation resources in order to support reliability and mitigate high scarcity prices for the benefit of consumers. FERC has allowed some subsidies for renewable energy resources[139] and conventional resources needed to address a short term reliability

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132. *See Hearing on "Keeping the Lights On – Are We Doing Enough to Ensure the Reliability and Security of the U.S. Electric Grid?" Before the S. Comm. on Energy & Natural Resources*, 113th Cong. (Apr. 10, 2014) (testimony of Philip D. Moeller, Commissioner, F.E.R.C.).

133. *PJM Interconnection, LLC*, 149 F.E.R.C. ¶ 61,183, at PP 20, 26-27, 53 (2014).

134. *Id.* at P 53.

135. Protest of Maryland Public Service Commission at 1, 3, *PJM Interconnection, L.L.C.*, No. ER14-2940-000 (F.E.R.C. Oct. 16, 2014).

136. Reforms to the Reliability Pricing Market ("RPM") and Related Rules in the PJM Open Access Transmission Tariff ("Tariff") and Reliability Assurance Agreement Among Load Serving Entities ("RAA"), *PJM Interconnection, L.L.C.*, F.E.R.C. Docket No. ER15-623-000 (Dec. 12, 2014).

137. Letter from F.E.R.C. Office of Energy Market Regulation to PJM, *PJM Interconnection, L.L.C.*, F.E.R.C. Docket No. ER15-623-000 (March 31, 2015).

138. PJM Interconnection, LLC, 150 F.E.R.C. ¶ 61,020 (2015).

139. *ISO New England Inc.*, 147 F.E.R.C. ¶ 61,173, at P 81-83 (2014) (allowing subsidies for up to 200 MW of Renewable Technology Resources in ISO New England's forward capacity market to complement state policies promoting the development of such assets).

need,[140] but has rejected state sponsored price supports for baseload conventional generation. The Third and Fourth Circuits upheld FERC's view that state initiatives in Maryland and New Jersey were unconstitutional.[141]

1. Maryland

In May 2007, in response to concerns regarding the operation of the wholesale market, the Maryland General Assembly enacted Senate Bill 400,[142] calling for the Maryland Public Service Commission ("MdPSC") to study the adequacy of generation and transmission assets in the state.[143] The MdPSC reported that "*Maryland faces a critical shortage of electricity capacity* . . . because Maryland sits in a highly congested portion of the regional electric transmission system (which makes it difficult to bring more power in) and because we use more electricity than is generated here."[144] The MdPSC noted that the wholesale markets had not responded to Maryland's need for additional generation and/or transmission capacity and opined that those markets were unlikely to

140. See *infra* Part VI.C.

141. N.J. Bd. of Pub. Utils. v. F.E.R.C., 744 F.3d 74 (3d Cir. 2014); PPL EnergyPlus, LLC v. Nazarian, 753 F.3d 467 (4th Cir. 2014); PPL EnergyPlus, LLC v. Solomon, 766 F.3d 241 (3d Cir. 2014). See also CPV Shore, LLC, 148 F.E.R.C. ¶ 61,096 at P 30 (2014) (finding the contracts unconstitutional and invalid). Both projects moved forward without the state subsidies, but the project sponsor claimed that the cost of capital was higher, and the benefits to consumers will be lower, than if the state sponsored programs had been upheld. Jamie S. Hopkins, *Waldorf Power Plant Gets Financing to Build*, BALTIMORE SUN (Aug. 8, 2014), *available at* http://articles.baltimoresun.com/2014-08-08/business/bs-bz-power-plant-financing-20140808_1_cpv-plant-competitive-power-ventures-gas-fired-plant, *archived at* http://perma.cc/EWP6-Q2H8; "Christie Helps Break Ground on 845M Natural Gas Plant in Woodbridge," NJBiz (Oct. 23, 2013), *available at* http://www.njbiz.com/article/20131023/NJBIZ01/131029916/Christie-helps-break-ground-on-$845M-natural-gas-plant-in-Woodbridge, *archived at* http://perma.cc/4QFF-6UXF.

142. S.B. 400, 2007 Md. Gen Assemb., Reg. Sess. (2007).

143. *See id.*

144. MD. PUB. SERV. COMM'N, INTERIM REPORT OF THE PUBLIC SERVICE COMMISSION OF MARYLAND TO THE MARYLAND GENERAL ASSEMBLY, PART I: OPTIONS FOR RE-REGULATION AND NEW GENERATION 1 (Dec. 3, 2007) ("Interim Report") (emphasis in original).

respond in the immediate future to the state's "looming capacity shortage."[145]

In order to induce the construction of new electric generation facilities in Maryland, the MdPSC directed Baltimore Gas and Electric Company, Potomac Electric Power Company, and Delmarva Power & Light Company to enter into a Contract for Differences ("CfD") with CPV Maryland, LLC ("CPV").[146] Under the CfD, CPV agreed to:

- Construct, own, operate, and maintain a generation facility physically located within the SWMAAC zone of PJM (which includes portions of Maryland and the District of Columbia);
- "[W]arrant[] that the Facility . . . will participate in and offer [its output and products] into all PJM Markets . . . including but not limited to the [Base Residual Auction], the Day-Ahead Energy Market, Real-Time Energy Market and the Ancillary Services Market consistent with PJM Rules;"
- Not enter into any "bilateral contract or other arrangement to sell any of its output, products or services, . . . with another third party, PJM, or any Government Agency during the Term of the Agreement, unless approved by the [MdPSC];"
- Beginning on the Commercial Operation Date, have the generation facility offer and participate in the PJM Wholesale Energy Market and Capacity Market and submit only cost-based offers; and
- Engage in a monthly compensation scheme with the Maryland [electric distribution companies] based upon a comparison of the revenue received by CPV for its actual sales of energy and capacity into the PJM Markets and the

145. *Id.*

146. Order No. 84815 at 27, *In the Matter of Whether New Generating Facilities Are Needed to Meet Long-Term Demand for Standard Offer Serv.*, No. 9214 (Md. PSC Apr. 12, 2012) ("Generation Order").

> "contract price" for energy and capacity provided for in the CfD.[147]

A federal district court invalidated Maryland's program, finding that it violated the Supremacy Clause of the U.S. Constitution:

> While Maryland may retain traditional state authority to regulate the development, location, and type of power plants within its borders, the scope of Maryland's power is necessarily limited by FERC's exclusive authority to set wholesale energy and capacity prices under, *inter alia*, the Supremacy Clause and the field preemption doctrine. Based on this principle, Maryland cannot secure the development of a new power plant by regulating in such a manner as to intrude into the federal field of wholesale electric energy and capacity price-setting. Furthermore, Maryland's stated purpose to use the Generation Order to secure the existence of sufficient and reliable electric energy for Maryland residents does not permit invasion into a federally occupied field. Where a state action falls within a field Congress intended the federal government alone to occupy, the good intentions and importance of the state's objective are immaterial to the field preemption analysis. Field preemption requires the state to "yield to the force of federal law . . ., notwithstanding that [the state's action] is constructed upon values familiar to many and cherished by most, and notwithstanding that it may fit neatly within or alongside the federal scheme." *See French v. Pan Am Exp., Inc.*, 869 F.2d 1, 6 (1st Cir. 1989).[148]

The U.S. Court of Appeals for the Fourth Circuit affirmed, finding that the MdPSC order was preempted "because it functionally sets the rate that CPV receives for its sales in the PJM auction."[149]

147. PPL EnergyPlus, LLC v. Nazarian, 974 F. Supp. 2d 790, 831 (D. Md. 2013), *aff'd*, 753 F.3d 467 (4th Cir. 2014).

148. *Nazarian*, 974 F. Supp. 2d at 829-30.

149. PPL EnergyPlus, LLC v. Nazarian, 753 F 3d 467, 476 (4th Cir. 2014).

2. New Jersey

New Jersey's legislature also foresaw crisis. The legislature found that "New Jersey is experiencing an electric power capacity deficit and high power prices."[150] The legislature warned that, "[a]s a result of a lack of new, efficient electric generation facilities, New Jersey has become more reliant on coal-fired power plants."[151] The legislature found that PJM's capacity market "has not resulted in large additions of peaking facilities or any additions of intermediate or base load resources available to the region and the State."[152] New Jersey concluded that it needed more electric energy generators.

The Long Term Capacity Pilot Program Act empowered New Jersey's Board of Public Utilities ("Board") to promote the construction of new power-generating facilities in the state. The Board crafted a set of contracts similar to Maryland's CfD.[153] The Third Circuit invalidated the program, finding that the state had impermissibly entered into a field of regulation within FERC's exclusive jurisdiction.[154] The court acknowledged that states may select the type of generation to be built—wind or solar, gas or coal—and where to build the facility.[155] States also may elect to build no electric generation facilities at all.[156] However, the states may not regulate the rates at which power is sold into wholesale markets.[157]

3. Ohio

In Ohio, FirstEnergy's utility affiliates filed an application[158] with the Public Utilities Commission of Ohio ("PUCO") to acquire the

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150. PPL EnergyPlus, LLC v. Solomon, 766 F.3d 241, 248 (3d Cir. 2014) (citing N.J. STAT. § 48:3-98.2(e)).

151. *Id.* (citing N.J. STAT. § 48:3-98.2(f)).

152. *Id.* (citing N.J. Stat. § 48:3-98.2(b)).

153. N.J. STAT . § 48:3-98.3(c)(12), *invalidated by* PPL EnergyPlus, LLC v. Solomon, 766 F.3d 241 (3d Cir. 2014).

154. *Solomon*, 766 F.3d at 252-54.

155. *Id.* at 255.

156. *Id.* (citing Conn. Dep't of Pub. Util. Control v. F.E.R.C., 569 F.3d 477, 481 (D.C. Cir. 2009)).

157. *Id.* at 247 (citing Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953 (1986)).

158. Application, *In the Matter of the Application of Ohio Edison Co., et al. for Auth. to Provide for a Standard Serv. Offer in the Form of an Elec. Sec. Plan*, No. 14-1297-EL-SSO (PUCO Aug. 4, 2014).

output from existing nuclear and coal-fired generation assets from a merchant affiliate through a purchased power transaction.[159] The acquired generation would be sold into the PJM markets and the utilities' net costs or revenues would be recovered or credited through retail rates.[160] FirstEnergy argued that the agreement was necessary in order to avoid premature retirement of plants that could provide long-term benefits to Ohio customers.[161] As of April 9, 2015, litigation relating to the FirstEnergy proposal was still pending.

AEP's utility affiliates filed a similar application with PUCO to purchase power from a marketing affiliate.[162] In AEP's case, PUCO authorized the utility to include a "placeholder rider" in its tariff but did not approve the recovery of any specific costs. In a future proceeding, AEP will be required to justify the recovery of costs associated with specific power purchase agreements. In such proceedings, AEP must address, at a minimum, the following factors, which PUCO "will balance, but not be bound by, in deciding whether to approve the Company's request for cost recovery":

- financial need of the generating plant;
- necessity of the generating facility, in light of future reliability concerns, including supply diversity;

159. The Companies propose to purchase the output of two generating plants operated by FirstEnergy Solutions Corp. ("FES") – Davis-Besse Nuclear Power Station ("Davis-Besse") in Oak Harbor, Ohio and W.H. Sammis Plant ("Sammis") in Stratton, Ohio (collectively, the "Plants") – as well as FES's entitlement to the output of two generating units owned and operated by Ohio Valley Electric Corporation ("OVEC"). *See* Direct Testimony of Steven E. Strah at 5:13-5:17, *In the Matter of the Application of Ohio Edison Co., et al. for Auth. to Provide for a Standard Serv. Offer in the Form of an Elec. Sec. Plan*, No. 14-1297-EL-SSO (PUCO Aug. 4, 2014).

160. *Id.* at 5:1-5:5; Application, *supra* note 157, at 9.

161. Application, *supra* note 157, at 1; Direct Testimony of Donald Moul at 4-5, 9, *In the Matter of the Application of Ohio Edison Co., et al. for Auth. to Provide for a Standard Serv. Offer in the Form of an Elec. Sec. Plan*, No. 14-1297-EL-SSO (PUCO Aug. 4, 2014).

162. Ohio Power Company's Electric Security Plan, *In the Matter of the Application of Ohio Power Co. for Auth. to Provide for a Standard Serv. Offer in the Form of an Elec. Sec. Plan*, No. 13-2385-EL-SSO (PUCO Dec. 20, 2013). Ohio Power proposes a non-bypassable rider to recover from retail customers the net costs or revenues accruing to AEP Ohio from the sale of its OVEC entitlement into the PJM market (including energy, capacity, ancillaries, etc.) less all costs associated with the Company's OVEC entitlement. *Id.* at 8-9.

- description of how the generating plant is compliant with all pertinent environmental regulations and its plan for compliance with pending environmental regulations; and
- the impact that a closure of the generating plant would have on electric prices and the resulting effect on economic development within the state.[163]

PUCO did not address the Supremacy Clause issue, finding that it was "best reserved for judicial determination."[164]

C. New York

The NYPSC recently stepped in to prevent "mothballing"[165] of two generating assets – NRG Energy, Inc.'s coal-fired Dunkirk generating station in Dunkirk, NY ("Dunkirk"), and Cayuga Operating Company, LLC's coal-fired Cayuga generating facility in Lansing, NY (Cayuga) – that do not earn enough revenue in the wholesale market to continue operating, but are needed for reliability. The NYPSC determined that the Dunkirk and Cayuga units should remain operational for an interim period until longer-term solutions can be implemented.[166]

The reliability support agreement for the Dunkirk facility requires the asset owner, NRG, to defer mothballing actions and to operate

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163. *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan*, Case No. 13-2385-EL-SSO, slip op. at 25 (PUCO Feb. 25, 2015), *reh'g pending*.

164. *Id.*, slip op. at 26 ("Some of the parties have also raised the issue of federal preemption. The Commission declines to address constitutional issues raised by the parties in these proceedings, as, under the specific facts and circumstances of these cases, such issues are best reserved for judicial determination").

165. Order Deciding Reliability Issues and Addressing Cost Allocation and Recovery at n.2, *Petition of Dunkirk Power LLC & NRG Energy, Inc. for Waiver of Generator Retirement Requirements*, No. 12-E-0136 (NYPSC Aug. 16, 2012) ("The term 'mothball' is synonymous with a 'retirement' for purposes of providing notice . . . . However, . . . 'mothballing,' in comparison to 'retirement' may have unique implications for establishing appropriate levels of compensation.").

166. *Id.* at 26; Order Deciding Reliability Issues and Addressing Cost Allocation and Recovery, *Petition of Cayuga Operating Co., LLC to Mothball Generating Units 1 & 2*, No. 12-E-0400 (NYPSC Dec. 17, 2012).

and maintain the unit until May 31, 2015.[167] It includes a Fixed-Cost Charge of approximately $2.1 million/month,[168] to be recovered in retail rates.[169] The NYPSC explained that "it is essential that the mothballing or retirement of generation units that are subject to a lightened regulatory regime do not jeopardize the reliability of the electric system. We have taken the necessary steps herein to ensure the procurement of sufficient generation facilities necessary for the provision of safe and adequate service, as required under the [New York] Public Service Law."[170] The NYPSC approved two similar reliability support service agreements for the Cayuga facility.[171] The agreement with Cayuga required the asset owner to bid into the New York Control Area Installed Capacity spot market auctions at a *de minimis* price.

Competing suppliers filed a complaint at FERC asserting that the agreements for the Dunkirk and Cayuga facilities create impermissible out-of-market payments to prop up otherwise uneconomic units and will improperly suppress wholesale capacity market prices.[172] The NYPSC responded that allowing the units to

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167. Order Deciding Reliability Need Issues and Addressing Cost Allocation and Recovery at 5, *Petition of Dunkirk Power LLC & NRG Energy, Inc. for Waiver of Generator Retirement Requirements*, No. 12-E-0136 (NYPSC May 20, 2013).

168. *Id.* The agreement also provided for the following adjustments: (a) property tax costs of up to $13 million to be paid by National Grid for the 24 month period; (b) a Capacity Revenue True-Up to be paid by NRG to National Grid in the amount of capacity revenues earned by the RSS Units during the Term of the Agreement; and (c) a Take or Pay Coal Contract True-Up to be paid by National Grid based upon actual coal deliveries to the plant. *See id.*

169. *Id.* at 6. A portion of the costs also will be submitted for recovery in FERC jurisdictional transmission rates. *Id.* at 7.

170. *Id.* at 7-8.

171. Order Deciding Reliability Issues and Addressing Cost Allocation and Recovery, *Petition of Cayuga Operating Co., LLC to Mothball Generating Units 1 & 2*, No. 12-E-0400 (NYPSC Dec. 17, 2012); Order Providing Clarification and Denying Petition for Rehearing, *Petition of Cayuga Operating Co., LLC to Mothball Generating Units 1 & 2*, No. 12-E-0400 (NYPSC July 25, 2014).

172. Complaint of the Independent Power Producers of New York, Inc., *Indep. Power Producers of N.Y., Inc. v. N.Y. Indep. Sys. Operator, Inc.*, No. EL13-62 (F.E.R.C. May 10, 2013); Motion to Amend, and Amendment to, Complaint of the Independent Power Producers of New York, Inc. *Indep. Power Producers of N.Y., Inc. v. N.Y. Indep. Sys. Operator, Inc.*, No. EL13-62 (F.E.R.C. Mar. 25, 2014).

retire would "create an artificial scarcity in the statewide capacity market, thereby sending an improperly high price signal."[173]

NYISO supported the NYPSC and acknowledged that the reliability needs addressed by agreements "are not otherwise captured by NYISO capacity market requirements."[174] According to NYISO:

> Relatively narrow local reliability needs associated with maintaining the security of the transmission system are particularly difficult to fully account for within existing organized markets. When such needs are not captured in a market's requirements, the market will not set prices at a level that reflects the marginal costs of satisfying the need. Thus, a resource that contributes to satisfying the need may not receive revenues that reflect the full value that its services provide. In this situation, a capacity resource can appear to be "uneconomic" when, in fact, it is economic, but revenue inadequate, because the market requirements do not include the reliability needs. Dr. Patton[, NYISO's Independent Market Monitor,] believes that both the Cayuga and Dunkirk units fall into this category.[175]

FERC denied the Complaint. FERC agreed with Dr. Patton that "if the reliability needs satisfied by these units were reflected in the capacity market, the units would both clear," and that "any provisions imposed that would cause them not to clear would be unreasonable."[176] However, FERC was concerned that one of the challenged agreements may procure more capacity than is needed for short-term reliability, and for a much longer term. According to FERC:

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173. Notice of Intervention and Protest of the New York State Public Service Commission at 9, *Indep. Power Producers of N.Y., Inc. v. N.Y. Indep. Sys. Operator, Inc.*, No. EL13-62 (F.E.R.C. May 30, 2013).

174. Answer of New York Independent System Operator, Inc. at 3, *Indep. Power Producers of N.Y., Inc. v. N.Y. Indep. Sys. Operator, Inc.*, No. EL13-62 (F.E.R.C. May 30, 2013) (footnote omitted).

175. *Id.* at 12 (footnote omitted).

176. *Indep. Power Producers of N.Y., Inc. v. N.Y. Indep. Sys. Operator, Inc.*, 150 F.E.R.C. 61,214 at P. 66 (2015).

> We are concerned that if the additional capacity created by the repowering agreement above the amount needed for short-term reliability is allowed to offer into the NYISO capacity market at prices below the cost of repowering, such capacity might deter new entry or displace less-costly existing capacity in NYCA. As a result, capacity market prices could be artificially suppressed.[177]

FERC directed NYISO to initiate a stakeholder process to consider prospective rule changes that would impose minimum bid requirements on repowering agreements similar to Dunkirk's.[178] Minimum bid requirements can cause a subsidized unit not to clear the capacity market. In those circumstances, ratepayers may be forced to pay for the same capacity twice: first they pay the subsidized unit through the state program, and then they pay the unsubsidized unit through the wholesale capacity market. Such an outcome would fail the basic "common sense" test and likely provoke vociferous consumer complaints.

D. *Nuclear Retirements*

Nuclear power accounts for 20% of the U.S. electric generation resource mix and is more than half of the carbon-free generation in the country.[179] Nuclear power is highly reliable under extreme weather conditions.[180] In January 2014, when gas, coal, and oil-fired units experienced very high outages, nuclear units performed relatively very well.[181] In Georgia, a state with vertically integrated utilities that are subject to integrated resource planning requirements, new nuclear generating facilities are being constructed to create fuel

177. *Id.* at P. 69.

178. *Id* at P. 71.

179. Transcript of the Joint Meeting of the Federal Energy Regulatory Commission and the Nuclear Regulatory Commission on Grid Reliability at 4:25-5:2 (May 28, 2014) (discussion of F.E.R.C. Acting Chairman LaFleur).

180. *See, e.g.*, Evan Bayh, *Nuclear Energy Plants Well Worth Saving in Illinois*, CHICAGO SUN-TIMES, Feb. 4, 2015, http://chicago.suntimes.com/other-views/7/71/344004/evan-bayh, *archived at* http://perma.cc/5AX9-43WG; James Conca, *Polar Vortex – Nuclear Saves The Day*, FORBES, Jan. 12, 2014.

181. *See* N. AM. ELEC. RELIABILITY CORP., POLAR VORTEX REVIEW 13 (2014) ("[T]he polar vortex had the least impact on nuclear plants").

diversity and help to address long-term energy and environmental issues such as fossil fuel price volatility and carbon emissions.[182]

Yet in the absence of either market reform or some form of subsidy or out-of-market payment, the owners of nuclear assets have indicated that significant nuclear retirements could occur in the jurisdictions with organized capacity markets. According to FirstEnergy, "total PJM market revenues are not covering the total annualized costs of nuclear units in any part of PJM."[183] While five U.S. nuclear plant construction projects are scheduled to come online by the end of 2018, all of them are located outside of organized energy markets.[184]

Commissioner Moeller recently testified:

> [N]uclear plants are under increasing economic pressure to close as a result of record low capacity prices. In addition to several announced nuclear plant closures, some utilities have predicted additional retirements if specific units are unable to operate profitably. Losing these plants has long-term implications both to the reliability of the system and on the nation's emission profile.[185]

182. Georgia Power's Application for the Certification of Units 3 and 4 at Plant Vogtle and Updated Integrated Resource Plan, *Georgia Power Co.*, No. 27800-U (Ga. PSC June 17, 2010).

183. Direct Testimony of Donald Moul at 4:16-17, *In the Matter of the Application of Ohio Edison Co., et al. for Auth. to Provide for a Standard Serv. Offer in the Form of an Elec. Sec. Plan*, No. 14-1297-EL-SSO (PUCO Aug. 4, 2014).

184. Wayne Barber, *Current Market Rough on Nuclear, NRC Commissioner Says*, TRANSMISSIONHUB (May 28, 2014), http://www.transmissionhub.com/articles/2014/05/current-market-rough-on-nuclear-nrc-commissioner-says.html, *archived at* http://perma.cc/967F-9YXS.

185. *Hearing on "Keeping the Lights On – Are We Doing Enough to Ensure the Reliability and Security of the U.S. Electric Grid?" Before the S. Comm. on Energy & Natural Resources*, 113th Cong. (2014) (testimony of Philip D. Moeller, Commissioner, F.E.R.C.).

FERC Commissioner John Norris stated that baseload nuclear power plants are critical to the nation's power infrastructure and that it is important to keep them around as a resource.[186]

The unique advantages of nuclear power are not considered in organized markets that require these units to compete solely on the basis of short-term price.[187] In response to questions by Senator Portman about the January 2014 polar vortex, Chairman LaFleur acknowledged that FERC needs to make sure that the rules for capacity markets are written correctly so that base load capacity gets "what it needs" to remain in service.[188] Yet it is not clear how, under current market rules, considerations other than short-term marginal cost will be taken into account.

VII. MOVING FORWARD

Current market rules are not efficiently solving for long-term energy and environmental goals that remain important to the states. It is not enough to say that federal law is supreme, and that state policies must yield to the market-design preferred by FERC. Federal law assigns to the states important public policy responsibilities that are broader than the short-term economic interests that remain FERC's focus.

Legitimate competitive concerns are raised when out-of-market payments are made to specific resources for public policy reasons.[189] However, when an out-of-market payment is made in order to secure the resource that achieves an important public policy objective at the

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186. *See id.*; Transcript of the Joint Meeting of the Federal Energy Regulatory Commission and the Nuclear Regulatory Commission on Grid Reliability at 34:19-35:22 (May 28, 2014) (comments of F.E.R.C.Commissioner Norris).

187. *See generally* KATHLEEN L. BARRÓN, SENIOR VICE PRESIDENT, FED. REGULATORY AFFAIRS & WHOLESALE MKT. POLICY, EXELON CORP., NUCLEAR POWER IN COMPETITIVE MARKETS, NARUC SUMMER MEETINGS (July 15, 2014).

188. Webcast, *Hearing on "Keeping the Lights On – Are We Doing Enough to Ensure the Reliability and Security of the U.S. Electric Grid?" Before the S. Comm. on Energy & Natural Resources*, 113th Cong. (2014) (testimony of Cheryl A. LaFleur, Acting Chairman, F.E.R.C.), *available at* http://www.energy.senate.gov/public/index.cfm/2014/4/electric-grid-reliability-and-security-are-we-doing-enough, *archived at* http://perma.cc/4UPN-7Z4X.

189. *E.g.*, JOHANNES PFEIFENBERGER ET AL., BRATTLE GROUP, A COMPARISON OF PJM'S RPM WITH ALTERNATIVE ENERGY AND CAPACITY MARKET DESIGNS 31 (Sept. 2009).

least cost, the payment is not necessarily uneconomic or inefficient.[190] FERC has recognized that out-of-market payments can be appropriate to maintain short-term reliability.[191] It is not obvious why out-of-market payments aimed at achieving other important policy objectives, including, for example, fuel diversity and environmental objectives, should be viewed differently.

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190. *See generally* Answer of New York Independent System Operator, Inc. at 3, *Indep. Power Producers of N.Y., Inc. v. N.Y. Indep. Sys. Operator, Inc.*, No. EL13-62 (F.E.R.C. May 30, 2013); *see supra* text accompanying note 179.

191. Chairman LaFleur has acknowledged that, while FERC needs to be fuel-neutral it also must be guided by reliability considerations. *Hearing on "Keeping the Lights On – Are We Doing Enough to Ensure the Reliability and Security of the U.S. Electric Grid?" Before the S. Comm. on Energy & Natural Resources*, 113th Cong. (2014) (testimony of Cheryl A. LaFleur, Acting Chairman, F.E.R.C.), *available at* http://www.gpo.gov/fdsys/pkg/CHRG-113shrg87851/html/CHRG-113shrg87851.htm, *archived at* http://perma.cc/R4PY-N5MG ("I think FERC should try to be guided by reliability and what the customers need not by a preference for a particular fuel."). Similarly, Commissioner Moeller recently testified:

I have long-stated that I can be "fuel-neutral" but I cannot be "reliability-neutral." That is, I can be neutral as a regulator with regard to how competitive markets ultimately decide which types of power plants are most efficient and affordable, regardless of whether those power plants are fueled by water, natural gas, fuel oil, uranium, coal, wind, the sun or any other fuel. But I cannot be neutral about the reliability of our electricity.

Hearing on "Keeping the Lights On – Are We Doing Enough to Ensure the Reliability and Security of the U.S. Electric Grid?" Before the S. Comm. on Energy & Natural Resources, 113th Cong. (2014) (testimony of Philip D. Moeller, Commissioner, Federal Energy Regulatory Commission).