Journal of Technology Law & Policy

Volume XV – Spring 2015

ISSN 2164-800X (online)

DOI 10.5195/tlp.2015.168

http://tlp.law.pitt.edu

Prioritizing Demand Response: How Federal Legislation and Technological Innovation Changed the Electricity Supply Market and the Need to Revitalize FERC Order 745

Bradley J. McAlllister

Prioritizing Demand Response: How Federal Legislation and Technological Innovation Changed the Electricity Supply Market and the Need to Revitalize FERC Order 745

Bradley J. McAlllister*

I. INTRODUCTION

The wholesale electric power network, or grid, delivers the product on which modern life depends, but it is the last major network to hold out against fundamental change.[1] Over the past ten years, the federal government has committed billions of dollars to update the nation's grid.[2] These updates are redefining the way electric power is sold and creating business opportunities for new entrants in the power supply market.[3] However, new entrants are facing strong opposition from traditional power utilities and independent power producers.[4] In May 2014, a coalition of power companies successfully overturned an administrative order promulgated by the Federal Energy Regulatory Commission ("FERC") to promote competition in the wholesale market for electricity.[5] Now, the nation's largest grid operator faces a legal challenge to remove more than $9

* J.D. Candidate, University of Pittsburgh School of Law, May 2016. The author is pursuing a concentration in energy and environmental law. He would like to thank the staff and editorial team from the *Journal of Technology Law & Policy* for their contributions to this Note. The author would also like to thank his family, friends, and professors for their inspiration and support.

[1] Joel B. Eisen, *Smart Regulation and Federalism for the Smart Grid*, 37 HARV. ENVTL. L. REV. 1, 3 (2013).

[2] EXEC. OFFICE OF THE PRESIDENT, A POLICY FRAMEWORK FOR THE 21ST CENTURY GRID: ENABLING OUR SECURE ENERGY FUTURE 10 (2011) [hereinafter SECURE ENERGY WHITEPAPER], *available at* https://www.whitehouse.gov/sites/default/files/microsites/ostp/nstc-smart-grid-june2011.pdf.

[3] *See* Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216 (D.C. Cir. 2014); Complaint of FirstEnergy Service Co., FERC Docket No. EL14-55-000 (May 23, 2014); Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216 (D.C. Cir. 2014), petition for rehearing *en banc* of PJM Interconnection, L.L.C., at 6 (July 7, 2014)) [hereinafter PJM petition for rehearing *en banc*].

[4] *Id.*

[5] *See* Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216 (D.C. Cir. 2014); *see also* Demand Response Compensation in Organized Wholesale Energy Markets, Order No. 745, 76 Fed. Reg. 16,658 (Mar. 24, 2011) [hereinafter FERC Order 745].

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

billion of electricity supply from its network.[6] In response, FERC petitioned the U.S. Supreme Court for a *writ of certiorari* in January 2015, arguing that the D.C. Circuit construed FERC's authority too narrowly and that the value of electricity supply from new entrants is critical to the nation's interest.[7] If the D.C. Circuit's decision is upheld, technological progress will be stifled and electricity consumers will miss out on revolutionary new ways to interact with the power market that will reduce overall costs and increase transparency in electricity pricing.

Electric power generators spend billions of dollars annually to operate what are known as "peaking plants." These plants provide a reserve supply during extreme temperatures or unplanned surges in demand, but are otherwise rarely used.[8] The traditional way that wholesale-market operators meet unexpected spikes in demand for electricity is by adding more electricity supply to the grid by generating additional megawatts.[9] However, incremental increases in generation can be enormously expensive during unexpected increases in demand, such as hot summer days.[10] Since electricity is not currently stored in an economically viable manner, the grid must call on the most expensive and inefficient power plants to meet the unanticipated peak demand.[11]

An alternative way to balance the ever-changing supply of electricity on the grid is to decrease demand.[12] While traditional power generators produce megawatts, reductions in consumer demand create "negawatts," a unit that measures the amount of energy that has been saved through any given conservation or electrical efficiency effort.[13] An emerging energy efficiency program enables electricity consumers to sell reductions in electricity demand to grid operators, a program that has come to be known as demand response ("DR").[14] DR is a cost-

---

[6] Complaint of FirstEnergy Service Co., FERC No. EL14-55-000 (May 23, 2014); *see also* PJM petition for rehearing *en banc*, *supra* note 3.

[7] Petition for Writ of Certiorari, Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216, 226 (D.C. Cir. 2014) (No. 14-840) [hereinafter FERC *petition for cert.*].

[8] SECURE ENERGY WHITEPAPER, *supra* note 2, at 31.

[9] FERC *petition for cert.*, *supra* note 7.

[10] *Id.*

[11] *Id.*

[12] *Id.*

[13] Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216, 226 (D.C. Cir. 2014) (Edwards, J., dissenting).

[14] Diane Cardwell & Matthew L. Wald, *Legal Fight Pits Sellers of Energy Against Buyers*, N.Y. TIMES (Nov. 26, 2014), http://www.nytimes.com/2014/11/27/business/energy-environment/legal-fight-pits-sellers-of-energy-against-buyers.html?_r=1.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

effective regulatory policy and business model used to offset the need to fire up the most costly power generators that only operate on a few days per year.[15] It has been referred to as the "safety valve" of the modern grid.[16]

DR works by paying energy consumers for commitments to reduce their electricity consumption during peak demand periods, a time when energy is the most expensive.[17] Smoothing these expensive peaks is the primary goal of these new entrants into the energy market, known as DR aggregators.[18] DR aggregators reduce operating costs for grid operators, provide savings to electricity consumers, and add value by contracting with several electricity consumers at once to supply additional capacity to the grid at peak times.[19]

Barriers to entry in the electricity market have collapsed.[20] Independent power producers are no longer excluded by the cost-prohibitive infrastructure required to compete in the traditional electricity supply market.[21] Instead, their competitive advantage rests on algorithms, sensors, processing power, and effective marketing.[22] As such, advancements in smart grid technology have created a new market for DR aggregation companies that reduce electricity demand in peak hours and sell that voluntary reduction in power back to the national grid.[23] The services offered by these new entrants into the electricity market undercut the traditional business model of utilities.[24] The DR aggregator supplies additional electricity in a transformative new way: energy efficiency.[25] Likening themselves to virtual power

---

[15] Joel B. Eisen, *Who Regulates the Smart Grid?: FERC's Authority Over Demand Response Compensation in Wholesale Electricity Markets*, 4 SAN DIEGO J. CLIMATE & ENERGY L. 69, 74–75 (2013).

[16] *Id.* at 78.

[17] FERC *petition for cert.*, *supra* note 7.

[18] SECURE ENERGY WHITEPAPER, *supra* note 2, at 31.

[19] *Id.*

[20] *New Business Models All Change: The Power Industry's Main Concern Has Always Been Supply. Now It Is Learning to Manage Demand*, THE ECONOMIST (Jan. 17, 2015), http://www.economist.com/news/special-report/21639019-power-industrys-main-concern-has-always-been-supply-now-it-learning-manage.

[21] *Id.*

[22] *Id.*

[23] Cardwell & Wald, *supra* note 14.

[24] *Id.*

[25] SECURE ENERGY WHITEPAPER, *supra* note 2, at 7.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

plants,[26] DR aggregators are independent power producers that pay energy consumers to reduce their demand at critical times of grid instability and sell the aggregated load reduction to grid operators, who in turn pay them for the capacity delivered.[27] Firms such as EnerNOC serve as intermediaries for the wholesale energy market by enabling commercial, industrial, and residential electricity consumers to sell reductions in power usage to grid operators in exchange for a payment.[28] EnerNOC sells reductions in demand, called DR resources, to the grid.

On the national level, DR has the potential to reduce market prices for electricity, while mitigating generator market power, and increasing competition for DR aggregators and other clean-tech developments in the private sector. With additional DR resources, instead of the most costly generation resources, wholesale prices are lower at peak times.[29] The impact of additional supply resources from DR is greatest during peak hours when the marginal cost of generation is the highest, resulting in the highest prices to consumers.[30] Thus, more DR amounts to greater cost savings for electricity consumers because a less costly form of power supply is substituted for the most expensive form of power generation. Further, the ability to reduce demand at peak times mitigates blackout conditions in regional grids, which lies squarely within the national interest because of the threat to economic and social welfare caused by electricity blackouts.[31] Additionally, DR shares little or none of the negative externalities that traditional peak capacity generation resources exhibit, such as air pollution, greenhouse gas emissions, and land and water use.[32]

In 2011, FERC issued Administrative Order 745 to promote the participation of DR aggregators and the sale of DR resources in wholesale electric markets.[33]

---

[26] ENERNOC, *What is Demand Response* (Dec. 30, 2014, 1:00 PM), http://www.enernoc.com/our-resources/term-pages/what-is-demand-response (additional names used to describe companies providing DR resources include curtailment service providers or load servicing entities).

[27] SIEMENS, *Enrolling with a Demand Response Aggregator* (Dec. 29, 2014, 4:00 PM), https://w3.usa.siemens.com/buildingtechnologies/us/en/energy-efficiency/demand-response/Documents/BT_DR_aggregatorwhitepaper.pdf.

[28] Eisen, *supra* note 15, at 80.

[29] *Id.* at 78.

[30] *Id.*

[31] Federal Energy Regulatory Commission, *Assessment of Demand Response & Advanced Metering Staff Report* (2013), *available at* http://www.ferc.gov/legal/staff-reports/12-20-12-demand-response.pdf.

[32] Eisen, *supra* note 15, at 78.

[33] Federal Energy Regulatory Commission, 18 C.F.R. pt. 35 (Mar. 15, 2011).

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

Under the Federal Power Act ("FPA"), FERC is empowered to regulate the transmission of electric energy in interstate commerce and the sale of electric energy at wholesale in interstate commerce.[34] Under § 201 of the FPA, FERC's jurisdiction extends "only to those matters which are not subject to regulation by the states."[35] FERC has the authority to issue administrative orders to ensure just and reasonable rates for the sale of electricity at wholesale in interstate commerce.[36] Order 745 is a marginal cost pricing mechanism under which "the price to withdraw electric power . . . at each location in the grid at any given time reflects the cost of making available an additional unit of electric power for purchase at that location and time."[37] In issuing Order 745, FERC reasoned the sale of DR resources in the wholesale market promotes just and reasonable wholesale rates: "demand response helps to ensure the competitiveness of organized wholesale energy markets and remove barriers to the participation of demand response resources, thus ensuring just and reasonable wholesale rates."[38]

Order 745 treats DR as functionally comparable to generation in the organized wholesale energy market. Equivalent pricing is appropriate because DR is capable of balancing supply and demand just as traditional forms of generation can.[39] Applying this logic, reducing demand for electricity by 1,000 megawatts through DR is just as effective as producing 1,000 megawatts of supply via a coal-fired electricity plant to meet demand.[40] In operation, Order 745 effectively prioritizes DR as the first type of electricity to be dispatched by regional grid operators because it is the supply equivalent to traditional generation as well as a preferable alternative due to its ability to provide electricity faster, cleaner, and more efficiently. Industry commentators to the notice and proposed rulemaking for Order 745 suggested that the unique characteristics of DR, including the rapid dispatchability of the resource and its ability to stabilize the grid in periods of unexpected peak demand, are even more valuable than an equivalent increase in

[34] 16 U.S.C. § 824(b)(1) (2012).

[35] 16 U.S.C. § 824(a) (2012).

[36] 16 U.S.C. § 824d(a) (2012).

[37] Eisen, *supra* note 15, at 85 (quoting Electric Energy Mkt. Competition Task Force, Report to Congress on Competition in Wholesale and Retail Markets for Electric Energy: Pursuant to Section 1815 of the Energy Policy Act of 2005, at 58 (2006)); *see also* Amended and Restated Operating Agreement of PJM Interconnection, L.L.C., Rate Schedule FERC No. 24, § 1.19 (defining "Locational Marginal Price" or "LMP" as the hourly integrated market clearing marginal price for energy at the location the energy is delivered or received).

[38] FERC Order 745, *supra* note 5, at 1.

[39] *Id.* at 52; *see also* Eisen, *supra* note 15, at 77–79.

[40] Eisen, *supra* note 15, at 77.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

generation.[41] Under Order 745, now vacated, DR resources would be compensated at the locational marginal price ("LMP"), the cost of generation at that specific location on the grid, to encourage DR as a more efficient means to supply electricity to the grid at peak demand.[42]

On May 23, 2014, the United States Court of Appeals for the District of Columbia Circuit ruled FERC overstepped its jurisdictional authority and encroached on the retail market when it passed Order 745.[43] The D.C. Circuit vacated Order 745 in its entirety as an *ultra vires* agency action, holding that sales of DR are retail transactions and therefore subject to the jurisdictional authority of the states under the FPA.[44] On the same day as the D.C. Circuit's ruling, FirstEnergy Solutions, an Ohio corporation, filed a claim against PJM Interconnection ("PJM"), the nation's largest grid operator, before FERC seeking to remove all portions of the PJM ratemaking structure allowing or requiring PJM to include DR aggregators as suppliers in the PJM capacity market.[45] Now, the jurisdictional ratemaking authority over DR aggregators in wholesale electric markets is uncertain, and PJM faces a legal challenge to remove all DR resources from its grid.[46] According to FirstEnergy, if PJM's May 2014 capacity auction removed DR resources from the grid and that difference is annualized, prices to electricity consumers in the PJM market may increase by $9.3 billion.[47]

This Note argues that a unified compensation and regulatory scheme, as proposed under FERC Order 745, is critical to harness the full potential of DR resources and the multiple benefits that DR offers, such as increased national and regional grid reliability, increased competition in the electricity supply industry, and auxiliary benefits including reductions in pollution and reductions in wasted energy from inefficient power generation. In its decision, the U.S. Supreme Court should reverse the ruling of the D.C. Circuit and hold FERC has jurisdiction over DR in wholesale markets under a proper interpretation of the FPA because DR transactions directly affect the wholesale market. Alternatively, if the Supreme

---

[41] *Id.* at 78–79.

[42] *Id.* at 77–79.

[43] Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216 (D.C. Cir. 2014).

[44] *Id.* (*Ultra vires*, literally "beyond the powers" in Latin, is defined as "unauthorized; beyond the scope of power allowed or granted by a corporate charter or by law" in *Black's Law Dictionary* (10th ed. 2014)); *see* 16 U.S.C. § 824 (2012).

[45] Complaint of FirstEnergy Service Co., FERC No. EL14-55-000 (May 23, 2014).

[46] *Id.*; *see also* PJM petition for rehearing *en banc*, *supra* note 3, at 6.

[47] Bruce W. Radford, *$9 Billion at Risk*, PUBLIC UTILITIES FORTNIGHTLY, Nov. 2014, at 4.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

Court upholds the ruling of the D.C. Circuit, then Congress must act to protect the federal taxpayer investment in the modern smart grid and draft new legislation to promote competition and provide access for technology-based participants in electricity markets.

This Note is presented in three parts. Part I explains the key federal legislation and government programs that, over the past decade, built the modern electricity grid and created the market for DR in wholesale markets. Part II discusses recent technological advances and economic conditions in the electricity market that provide new opportunities for grid operators, DR aggregators, and energy consumers. Part III argues that courts have interpreted the FPA more broadly in similar cases of mixed federal-state jurisdiction over electricity markets, and the Supreme Court must do the same to find Order 745 is within FERC's jurisdictional grant of authority.

II. LEGISLATIVE FOUNDATIONS FOR SMART GRID DEVELOPMENT AND THE EVOLUTION OF DR

The federal and state governments share jurisdiction over the electricity system in the United States.[48] The boundaries of federal jurisdiction remain grounded in the Federal Power Act of 1935.[49] Under the FPA, FERC regulates the transmission of electric energy in interstate commerce and the sale of electric energy at wholesale in interstate commerce.[50] Advances in technology have dramatically changed the market for power generation in the United States since the FPA was enacted in 1935.[51] Over the past ten years, federal lawmakers have worked hard to keep pace with technology in the wholesale market for electricity. Recent legislation highlights the congressional intent to invest in smart grid infrastructure, increase competition in wholesale electricity markets, and promote DR.[52] Indeed, this "smart grid" aims to capitalize on technological advancements in order to overhaul an existing grid built to restrict competition and transparency in electricity markets.[53]

[48] Andrew H. Meyer, *Federal Regulatory Barriers to Grid-Deployed Energy Storage*, 39 COLUM. J. ENVTL. L. 479, 505 (2014).

[49] *Id.*

[50] 16 U.S.C. § 824(b)(1) (2012).

[51] New York v. F.E.R.C., 535 U.S. 1, 5 (2002).

[52] SECURE ENERGY WHITEPAPER, *supra* note 2, at 1–7.

[53] Eisen, *supra* note 1, at 22.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

Building the smart grid requires both new technologies and transformative regulatory change.[54] In 2009, the Department of Energy ("DOE") stated in its first biennial report to Congress that the smart grid may transform America as much as the Internet has done, redefining every aspect of electricity generation, distribution, and use.[55] The goal of increasing investment in U.S. energy infrastructure is well founded.[56] At peak times, the power grid is stressed. Like a rubber band stretched to the limit, supply is strained to meet peak demand.[57] Under certain circumstances, that strain leads to service disruptions, such as forced outages or rolling blackouts.[58] The most notable recent infrastructure failure was the blackout of August 2003, which left more than 50 million people in the Great Lakes, New England, and Mid-Atlantic regions of the United States, as well as certain areas in Canada, without power and caused $10 billion in damage in the United States alone.[59] Such failures cause a ripple effect of disruption and damage far beyond the energy industry alone, because of the substantial economic investments that are based on electricity being available at predicted levels and costs.[60]

A. How DR Works in the Electricity Grid

The efforts to develop a smart grid have two objectives: updating the grid's outdated infrastructure with advanced hardware and software; and providing electricity consumers with transformative ways to make, use, and conserve electricity.[61] The two objectives are mutually dependent. Electricity consumers generally lack the information or incentive to alter their electricity use during peak demand, when the cost of electricity is the highest.[62] More hardware installed on the grid promotes greater network interoperability and two-way communication between electricity suppliers and electricity consumers.[63] Additionally, the federal government has encouraged states to develop markets for time-varying rates that

---

[54] *Id.* at 3.

[55] *Id.* at 6.

[56] Joshua P. Fershee, *Misguided Energy: Why Recent Legislative, Regulatory, and Market Initiatives are Insufficient to Improve the U.S. Energy Infrastructure*, 44 HARV. J. LEGIS. 327 (2007).

[57] Eisen, *supra* note 15, at 78.

[58] *Id.*

[59] Fershee, *supra* note 56, at 328.

[60] Fershee, *supra* note 56, at 328 (quoting Robert C. Fellmeth, *Plunging Into Darkness: Energy Deregulation Collides with Scarcity*, 33 LOY. U. CHI. L.J. 823, 825, 830 (2002)).

[61] Eisen, *supra* note 1, at 3.

[62] SECURE ENERGY WHITEPAPER, *supra* note 2, at 31.

[63] *Id.*

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

more accurately capture the hour-to-hour variations in the cost of supplying electricity.[64]

With real-time data on energy consumption and regional energy needs supplied by DR aggregators, grid operators and energy consumers have more opportunities to capitalize on advanced data monitoring created by the smart grid.[65] DR aggregators sell voluntary reductions in power at times of peak demand, where the marginal cost and dispatch speed of additional supply directly impacts the market clearing price for energy.[66] Experts and grid operators value participation by DR aggregators because these companies make electricity service more reliable and lower overall consumer costs, as grid operators buy less of the most expensive power to meet peak demand needs.[67] These virtual power plants provide cost savings to consumers, while delivering efficient and reliable electricity supply to grid operators.[68]

As a consequence of technological, legislative, and regulatory changes over the last two decades, much of the nation's wholesale electricity market is now run by regional nonprofit entities.[69] There are currently six independent grid operators in the United States that control the wholesale market for electricity and are subject to federal jurisdiction.[70] These regional nonprofit entities set the rates for wholesale purchases of electricity by matching supply and demand in real-time and day-ahead markets.[71]

PJM is the largest centrally dispatched power market in the world and the largest Regional Transmission Organization ("RTO"), or regional grid operator, in the United States.[72] PJM ensures the continuous flow of electricity for 61 million

---

[64] *Id.*

[65] SECURE ENERGY WHITEPAPER, *supra* note 2, at 30–31.

[66] Meyer, *supra* note 48, at 522.

[67] Diane Cardwell & Matthew L. Wald, *Legal Fight Pits Sellers of Energy Against Buyers*, N.Y. TIMES (Nov. 27, 2014), http://www.nytimes.com/2014/11/27/business/energy-environment/legal-fight-pits-sellers-of-energy-against-buyers.html?_r=1.

[68] Eisen, *supra* note 15, at 75.

[69] FERC *petition for cert.*, *supra* note 7.

[70] Meyer, *supra* note 48, at 507–08 n.144 ("The following RTOs and ISOs are subject to FERC: PJM Interconnection, LLC ('PJM'); New York Independent System Operator, Inc. ('NYISO'); Midwest Independent Transmission System Operator, Inc. ('MISO'); ISO New England Inc. ('ISO-NE'); California Independent System Operator Corp. ('CAISO'); and Southwest Power Pool, Inc. ('SPP')"); *see* FERC *petition for cert.*, *supra* note 7.

[71] FERC *petition for cert.*, *supra* note 7.

[72] PPL Energy Plus, LLC v. Solomon, 766 F.3d 241 (3d. Cir. 2014).

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

people across 13 states and the District of Columbia.[73] Its mission is to deliver cost-efficient and reliable electricity service to energy consumers.[74] Given the operation's heightened importance, grid operators at PJM receive military-like training for their daunting task.[75] They manage the continuous flow of electricity throughout the interstate grid, dispatching energy in real-time to where it is needed most.[76]

The RTO facilitates the interstate sales of electricity products, including energy and capacity, by managing marketplaces where those products may be exchanged.[77] DR aggregators, including EnerNOC, participate in the wholesale market for electricity in the states in which PJM operates.[78] PJM has made tremendous investments in grid upgrades and DR resources.[79] While utilities have offered DR programs for decades, they have underinvested in them because the utility is in effect anti-selling its product, and states traditionally reward utilities for increased sales.[80]

Barriers to entry in the PJM marketplace for energy generation and ancillary economic services have receded in the past 15 years as new membership in PJM's

---

[73] PJM 2013 Annual Report, *Building Resilience* 8 (Oct. 23, 2014, 10:00 PM) [hereinafter PJM 2013 Annual Report], *available at* http://www.pjm.com/about-pjm/who-we-are/annual-report.aspx; *see also* PJM, *Territory Served* (Jan. 24, 2015, 12:00 AM), *available at* http://www.pjm.com/about-pjm/who-we-are/territory-served.aspx (stating PJM coordinates the movement of electricity through all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia).

[74] PJM 2013 Annual Report, at 8 (Oct. 23, 2014, 10:00 PM); *see also* PJM, *Territory Served* (Jan. 24, 2015, 12:00 AM); *see also* PJM, *PJM's Mission and Vision*, *available at* http://www.pjm.com/about-pjm/who-we-are/mission-vision.aspx (stating PJM's mission as follows: "As the primary task, to ensure the safety, reliability and security of the bulk electric power system. Create and operate robust, competitive and non-discriminatory electric power markets. Understand customer needs and deliver valued service to meet those needs in a cost-efficient manner. Achieve productivity through the efficient union of superior knowledge workers and technology advances.").

[75] *See* Matthew L. Wald, *On the Front Lines of the Power Grid*, N.Y. TIMES (Oct. 25, 2011), *available at* http://www.nytimes.com/2011/10/26/business/energy-environment/ behind-the-power-grid-humans-with-high-stakes-jobs.html?pagewanted=all&_r=0.

[76] PPL Energy Plus, LLC v. Solomon, 766 F.3d 241, 247 (3d Cir. 2014).

[77] *Id.*

[78] PJM Member List, Sortable List of PJM members (Jan. 24, 2015, 12:00 PM), http://www.pjm.com/about-pjm/member-services/member-list.aspx.

[79] Michael Milligan, Erik Ela, Jeff Hein, Thomas Schneider, Gregory Brinkman & Paul Denholm, *Renewable Electricity Futures Study, Volume 4: Exploration Bulk Electric Power Systems: Operations and Transmission Planning*, National Renewable Energy Laboratory, 29-2; 29-3 (2012).

[80] Eisen, *supra* note 1, at 12.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

wholesale market has increased dramatically.[81] In 2003, PJM had a total of 250 members that contributed to the energy business cycle through transmission, generation, distribution, and other supplier services.[82] There were 879 members by the end of 2013 and currently there are 940 members.[83]

B. Federal Legislation and National Policy to Support DR

With the passage of the Energy Policy Act of 2005 ("EPAct"), Congress established a national policy to eliminate unnecessary barriers to DR participation in organized wholesale energy markets.[84] The EPAct added new provisions to § 132(a) of the Public Utility Regulatory Policies Act of 1978 ("PURPA") to promote federal assistance for advanced metering and communications technologies in DR programs.[85] The EPAct ensures that DR plays a role on the agenda of the federal government, as the legislation orders FERC to publish an annual report, by region, to assess DR resources.[86] FERC has published an annual report on DR resources and advanced metering infrastructure ("AMI") since 2006.[87] AMI is an integrated system of technologically advanced meters, communications networks, and data management systems that enable two-way communication between utilities and consumers via the smart grid.[88] AMI serves as the building blocks for the smart grid and the foundation for new technologies like DR.

Two years after its enactment of the EPAct, Congress passed the Energy Independence and Security Act of 2007 ("EISA") and declared it the policy of the United States to support the modernization of the electrical grid.[89] Specifically, the

---

[81] PJM 2013 Annual Report, *supra* note 73, at 28.

[82] *Id.*

[83] *Id.*

[84] 16 U.S.C. § 1252(f) (2012) ("It is the policy of the United States that time-based pricing and other forms of demand response, whereby electricity customers are provided with electricity price signals and the ability to benefit by responding to them, shall be encouraged, the deployment of such technology and devices that enable electricity customers to participate in such pricing and demand response system shall be facilitated, and unnecessary barriers to demand response participation in energy, capacity and ancillary service markets shall be eliminated.").

[85] 16 U.S.C. § 1252(c) (2012).

[86] Energy Policy Act of 2005, Pub. L. No. 109-58, § 1252(e)(3), 119 Stat. 594; *see* FEDERAL ENERGY REGULATORY COMMISSION, ASSESSMENT OF DEMAND RESPONSE & ADVANCED METERING STAFF REPORT 1 (2013) [hereinafter ASSESSMENT], *available at* http://www.ferc.gov/legal/staff-reports/2013/oct-demand-response.pdf.

[87] *Id.*

[88] Eisen, *supra* note 1, at 10.

[89] SECURE ENERGY WHITEPAPER, *supra* note 2, at 9.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

EISA introduced ten characteristics of the smart grid that the United States must achieve in order to maintain a reliable and secure electricity infrastructure ready to meet future demand growth.[90] Similar to the EPAct, the EISA calls for increased research and development of technologies to capture efficiency savings from advanced metering and improve grid communication through AMI.[91] The EISA established the Smart Grid Investment Grant ("SGIG") program, a federal matching fund for smart grid investment, which provided up to a 50% reimbursement for qualifying private investments.[92] Federal grant programs like the SGIG encouraged auxiliary growth in the private sector. Private investment in AMI technology has prompted a revolution in clean-tech, and the consulting firm Navigant Research forecasts that the global smart city technology market will be worth $20.2 billion annually by 2020.[93]

In the wake of a depressed economy, Congress passed the American Recovery and Reinvestment Act of 2009 ("Recovery Act").[94] The Recovery Act provided the single largest smart grid investment in U.S. history when it funded the SGIG program within the DOE.[95] The SGIG received $4.5 billion in federal funding, matched by an additional $4.5 billion investment from the private sector.[96] AMI projects funded through the DOE's SGIG program have added 15 million

[90] Energy Independence and Security Act (EISA), 42 U.S.C. §§ 17381 (2007) (this section is entitled: Statement of policy on modernization of electricity grid and it states "It is the policy of the United States to support the modernization of the Nation's electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth and to achieve each of the following, which together characterize a Smart Grid: (1) Increased use of digital information and controls technology to improve reliability, security, and efficiency of the electric grid; (2) Dynamic optimization of grid operations and resources, with full cyber-security; (3) Development and integration of distributed resources and generation, including renewable resources; (4) Development and incorporation of demand response, demand-side resources, and energy-efficiency resources; (5) Deployment of 'smart' technologies (real-time, automated, interactive technologies that optimize the physical operation of appliances and consumer devices) for metering, communications and status, and distribution automation; (6) Integration of "smart" appliances and consumer devices; (7) Deployment and integration of advanced electricity storage and peak-shaving technologies, including plug-in electric and hybrid electric vehicles, and thermal-storage air conditioning; (8) Provision to consumers of timely information and control options; (9) Development of standards for communication and interoperability of appliances and equipment connected to the electric grid, including the infrastructure serving the grid; (10) Identification and lowering of unreasonable or unnecessary barriers to adoption of smart grid technologies, practices, and services.").

[91] Energy Independence and Security Act (EISA), 42 U.S.C. §§ 17384 (2007).

[92] Energy Independence and Security Act (EISA), 42 U.S.C. §§ 17386 (2007).

[93] *Smart City Tracker 1Q13*, NAVIGANT CONSULTING (Sept. 27, 2014, 12:00 PM), http://www.navigantresearch.com/wp-content/uploads/2013/02/TR-SCIT-1Q13_Navigant_Research_Brochure.pdf.

[94] American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, 123 Stat. 115 (2009).

[95] SECURE ENERGY WHITEPAPER, *supra* note 2, at v.

[96] *Id.*

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

smart meters to the grid since 2010.[97] The purpose of the grant program was to support the transition to a smarter, stronger, and more efficient and reliable electric system.[98] More recently, the Executive Office of the President issued a White Paper to encourage participants in the United States to take advantage of opportunities made possible by modern information, energy, and communications technology based on four pillars: (1) enabling cost-effective smart grid investments, (2) unlocking the potential for innovation in the electric sector, (3) empowering consumers and enabling them to make informed decisions, and (4) securing the grid.[99] The preceding laws set the foundation for the enactment of FERC Order 745 in 2011.

C. FERC Order 745: Demand Response Compensation in Organized Wholesale Energy Markets

In promulgating Order 745, FERC recognized the tension between federal and state authority over the smart grid, stating, "[j]urisdiction over demand response is a complex matter that lies at the confluence of state and federal jurisdiction."[100] Specifically, §§ 205 and 206 of the FPA grant FERC the authority to ensure all rates and charges for the transmission or sale for resale of electric energy in interstate commerce, and all rules and regulations *affecting or pertaining to* such rates or charges, are just and reasonable.[101] FERC rooted its jurisdictional authority over DR in organized wholesale energy markets, based on the fact that the sale of DR resources directly affects wholesale rates.[102] Moreover, FERC acknowledged that a unified approach to DR compensation is necessary to overcome barriers to entry for DR aggregators, as opposed to regional or state-by-state payment variations, that might valuate DR below the LMP.[103] Commentators in support of Order 745 argued that a uniform compensation level is needed to provide a catalyst for private sector engagement in improved energy management practices.[104]

---

[97] Advanced Metering Infrastructure and Customer Systems: Smart Meters Deployed, *available* at https://www.smartgrid.gov/recovery_act/deployment_status/ami_and_customer_systems##SmartMeters Deployed (data updated to Q3 2014) (accessed Oct. 5, 2014 3:44 PM).

[98] SECURE ENERGY WHITEPAPER, *supra* note 2, at v.

[99] *Id.*

[100] FERC Order 745, *supra* note 5, at 86.

[101] 16 U.S.C. §§ 824e(a), 824d(a) (2012) (emphasis added).

[102] FERC Order 745, *supra* note 5, at 86.

[103] *Id.* at 35–37.

[104] *Id.* at 36.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

With unprecedented support from the federal government to develop smart grid technologies, remove barriers to competition, and encourage consumer involvement in the smart grid, FERC issued Order 745. By enacting Order 745, FERC amended its regulations under the FPA to ensure that when a DR resource participating in an organized wholesale energy market has the capability to balance supply and demand as an alternative to a generation resource, that DR resource is compensated at the LMP: the market price for an additional megawatt of electricity.[105] FERC determined that compensating DR resources at the cost of generation at the LMP would ensure the competitiveness of organized wholesale energy markets and remove barriers to the participation of DR resources, thus ensuring just and reasonable wholesale rates.[106] The issuance of Order 745 also ensures that inconsistent compensation for DR in the wholesale power market would not inhibit meaningful participation from DR aggregators on the supply side and electricity consumers on the demand side.[107] But Order 745 is not simply about providing electricity generation supply at the lowest possible cost. DR resources provide additional benefits that increase grid operability at the most critical times.[108]

Order 745 mandates that when an RTO or Independent Service Operator (ISO) dispatches DR resources, the price for the additional energy is paid at the LMP.[109] The LMP is the price calculated by the ISO or RTO at particular locations or electrical nodes or zones within the ISO or RTO footprint and it functions as the market price to compensate generators for additional units of power at that location on the grid.[110] FERC also established a net benefits test to guide grid operators in determining whether they should dispatch DR.[111] The net benefits test is a cost-benefit calculation to guide RTOs and ISOs when it is economically efficient to dispatch DR resources to the grid.[112] The net benefits test is a safeguard that takes

[105] *Id.* at 38–39.

[106] *Id.* at 46–47.

[107] Demand Response Compensation in Organized Wholesale Energy Markets, Notice of Proposed Rulemaking, 75 FR 15362 (Mar. 29, 2010), FERC Stats. & Regs. ¶ 35,656 (2010).

[108] Eisen, *supra* note 15, at 73.

[109] FERC Order 745, *supra* note 5, at 39.

[110] *Id.* at 2 n.5.

[111] *Id.* at 61–64.

[112] *Id.* at 62–63 (stating that the RTO or ISO should determine the threshold price corresponding to the point along the supply stack for each month beyond which the benefit to load from the reduced LMP resulting from dispatching DR resources exceeds the increased cost to load associated with the billing unit effect, and update the calculation monthly).

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

into account the totality of the circumstances surrounding a peak demand event and the need to obtain additional power quickly. Under the net benefits test, the grid operator relies on a pre-calculated threshold price to determine at what point the dispatch of DR will stabilize the LMP and prevent it from rising.[113] Thus, Order 745 prioritizes the dispatch of DR when it is cost-effective for grid operators to use the resource because it mitigates price spikes in the LMP at peak demand. Moreover, an additional unit of DR may be dispatched more quickly than traditional generation, and with fewer negative externalities, because deploying DR resources is achieved when energy consumers turn off their power or use less electricity.

For years, FERC has largely defined its regulatory role as fostering competition in electricity generation and promoting the sale of electricity at its lowest cost.[114] Order 745 requires DR to be compensated at the cost of generation because it impacts system-wide prices and reliability, in addition to other social and environmental benefits.[115] Experts argue that FERC is well within its administrative authority to promote DR on the federal level if state programs are insufficient to encourage more demand side participation and competition in wholesale electricity markets.[116] Further, Order 745 neither eliminates nor preempts state DR programs, and the Supreme Court has empowered FERC to regulate the grid in similar situations of intertwined federal and state jurisdiction, which is discussed in Part III.[117]

III. ECONOMIC NEED FOR DR IN WHOLESALE ELECTRICITY MARKETS

A 2012 final rule promulgated by the Environmental Protection Agency ("EPA") is scheduled to impose strict mercury and air toxics standards on power plants, including some of the costliest regulations ever passed under the authority of the Clean Air Act ("CAA").[118] The new standards will apply to at least 600

[113] *Id.* at 63 n.162 (stating that "the test is to determine where: (Delta LMP x MWh consumed) > (LMPNEW x DR); where LMPNEW is the price before DR is dispatched minus the market clearing price after DR is dispatched").

[114] Eisen, *supra* note 15, at 72.

[115] *Id.*

[116] *Id.* at 73.

[117] *Id.*; *see* New York v. FERC, 535 U.S. 1 (2002).

[118] Jessica Coomes, *D.C. Circuit Upholds Key EPA Air Rule Setting Mercury Standards for Power Plants*, BLOOMBERG BNA (Oct. 24, 2014, 12:00 PM), http://www.bna.com/dc-circuit-upholds-n17179889608.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

power plants in the United States, and the EPA has estimated the rule will cost the power industry $9.6 billion annually to reach compliance.[119]

The cost-effective solution to managing future shortfalls in electricity supply is to create a uniform compensation and regulatory scheme to promote DR resources, and build upon the updated grid infrastructure to ensure DR reaches its full potential as an additional form of energy generation. Yet, FirstEnergy is attempting to remove approximately $9 billion in electricity supply from the Mid-Atlantic PJM grid by removing DR resources from PJM's annual capacity auction.[120] A scenario analysis conducted by the independent market monitor for the PJM region estimated that if all DR offers were removed from PJM's 2013 annual capacity auction, consumers would have paid $10 billion more to procure the same amount of energy.[121] In sum, the cost to comply with new regulations will cost the traditional power industry $9.6 billion annually, while the added benefit of DR resources in 2013 was equivalent to $9 billion worth of electricity supply and approximately $10 billion in savings for consumers. The clear solution to these perilous conditions in the traditional electricity supply market is to encourage and add as much DR to the grid as possible in upcoming years.

A. The Value of DR Resources to RTOs

Managing new generation and efficiency is vital to PJM because there is currently a massive fuel transition in the PJM market as many coal-fired plants retire and natural gas becomes a larger part of the generation mix.[122] As of the end 2013, proposed new generation sources in the PJM demonstrated a transition from coal to natural gas: 118 proposed natural gas projects were under consideration by PJM, compared with 73 for wind, and only six for coal.[123] As coal-fired plants retire, the market will be challenged to match supply and demand, and total generational capacity may be unpredictable, which is a catastrophic problem in the most capital-intensive major industry in the United States.[124] DR requires less capital and infrastructure than other forms of generation and it may be dispatched

[119] *Id.* (referencing 77 Fed. Reg. 9,304 (Feb. 16, 2012)).

[120] Bruce W. Radford, *$9 Billion at Risk*, PUBLIC UTILITY FORTNIGHTLY, Nov. 2014, at 4.

[121] PJM petition for rehearing *en banc*, *supra* note 3, at 6–9.

[122] PJM 2013 Annual Report, *supra* note 73, at 14.

[123] *Id.*

[124] DANIEL YERGIN, THE QUEST: ENERGY, SECURITY, AND THE REMAKING OF THE MODERN WORLD 401 (2011).

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

quickly to smooth inefficiencies in the market.[125] Because new construction and updates to existing infrastructure for traditional coal-fired plants are intensive, consumers necessarily suffer during the lag time between market signals of infrastructure deficiencies and the completion of infrastructure improvements, prompted new regulations or supply shortages.[126]

In the last annual capacity auction for the 2016-2017 delivery year, record amounts of new generation and capacity imports were committed to meet the demands of the PJM region.[127] The forward-capacity auction secured 169,000 total megawatts for future service by PJM; including 5,400 megawatts of new generation, 7,483 megawatts of capacity imports, 12,400 megawatts of demand response, and 1,117 megawatts of energy-efficiency resources.[128] Thus, PJM depends upon DR resources to contribute approximately 7% of capacity and more than double the amount of new generation that will be added to the grid in 2016–2017.

In 2012, PJM invested $4.7 billion in transmission upgrades to address reliability impacts of generation retirements, and the PJM Board of Trustees approved an additional $5.8 billion to address fuel transition and grid stabilization in 2013.[129] Further, through the support of matching SGIG funding from the DOE, PJM is working to increase synchrophasor placement on the grid, with PJM reporting that the industry is deploying these revolutionary units by the thousands.[130] These synchrophasors provide real-time measurement of electrical quantities from across the power system.[131] Synchrophasor units improve grid-monitoring capability and communicate warnings of grid instability to PJM more quickly, which is a critical tool in the fight to mitigate the risk of blackouts or brownouts.[132] The device coordinates GPS-satellite tracking of electrical quantities at key junctions on the grid and sends the data 90 times faster than current

---

[125] *Id.* at 401–02 ("A new coal plant may cost as much as $3 billion, if it can be built in the face of environmental opposition and carbon regulation. A new nuclear plant may be double that—$6 billion or $7 billion or even more. Assuming the nuclear plant can make its way through the permitting process, it can take a decade or two to site and build.").

[126] Fershee, *supra* note 56, at 350.

[127] PJM 2013 Annual Report, *supra* note 73, at 14.

[128] *Id.*

[129] *Id.* at 15.

[130] *Id.* at 24.

[131] Schweitzer Engineering Laboratories, *Synchrophasors Overview, available at* https://www.selinc.com/synchrophasors (last visited Oct. 23, 2014, 10:00 PM).

[132] *Id.*

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

transmission monitoring devices.[133] The data is read by phasor measurement units, which can show system changes that would not be revealed with conventional monitoring technology.[134]

DR has become a major contributor to the PJM system's need for capacity.[135] On September 11, 2013, PJM called on and received approximately 5,949 megawatts of DR resources, which represented the largest amount of DR that PJM has ever dispatched in a single day.[136] This increase in DR resources helped address the imbalance between supply and demand caused by unusually hot weather and local equipment problems that created emergency conditions in four states.[137] In many respects, this is the behavior FERC sought to encourage when it issued Order 745.[138] Traditional power generators, on the other hand, oppose DR because the timing of its dispatch coincides with the highest demand for power, i.e. when supply from traditional generation is most profitable.

DR is more than just an efficient means to supply new generation to the grid; it is an invaluable resource for the wholesale power market. Currently, there are no viable means of large-scale storage to regulate unexpected demand fluctuations on the grid.[139] A recent FERC analysis demonstrates that DR could play an important role in maintaining frequency regulation on the grid, which is the most efficient way to handle the national fuel transition away from coal.[140] Further, DR is dispatchable immediately and does not suffer from the time lag that occurs when a grid operator orders the startup of a power plant.[141] Large-scale deployment of DR provides RTOs with a tool to respond quickly to changes in generation capacity

---

[133] Matthew L. Wald, *For the Smart Grid, a Synchophasor*, N.Y. TIMES (Apr. 1, 2010), *available at* http://green.blogs.nytimes.com/2010/04/01/for-the-smart-grid-a-synchophasor/?_php=true&_type=blogs&_r=0 (Oct. 23, 2014, 10:00 PM) (referencing speeds of data monitoring at 90 times the current monitoring rates; a change from "a report once every two to four seconds, which is an eternity in the world of the high-voltage grid. The synchrophasors will report back 30 times a second.").

[134] PJM 2013 Annual Report, *supra* note 73, at 25.

[135] PJM petition for rehearing *en banc*, *supra* note 3, at 6.

[136] ASSESSMENT, *supra* note 86, at 12–13.

[137] *Id.*

[138] PJM petition for rehearing *en banc*, *supra* note 3, at 6.

[139] Eisen, *supra* note 15, at 80.

[140] *Id.* (citing North American Electric Reliability Corporation, *Accommodating High Levels of Variable Generation*, at i (2009), *available at* http://www.nerc.com/files/ivgtf_report_041609.pdf).

[141] *Id.*

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

needs, without placing undue strain on the power system.[142] Thus, it is a more efficient way to generate power than traditional methods.

B. Technological Developments for DR in the Private Sector

Empowering all electricity consumers, industrial and residential alike, to reduce consumption in response to price signals could be enormously beneficial.[143] Investments in smart grid development and DR have created new business opportunities in the private sector that did not exist 15 years ago. Boston-based EnerNOC, founded in 2001, uses advanced energy intelligence software ("EIS") to function as a virtual power plant; adding supply to the grid through pooled reductions in electricity consumption from commercial, institutional, industrial, and residential consumers.[144] DR aggregators pay electricity consumers for these voluntary reductions in power use, on top of the cost reduction achieved by decreased energy use.[145] For the most part, DR aggregators, like EnerNOC, deliver cost savings and provide revenue for industrial consumers, but the prospects for residential DR are beginning to materialize and serve as the next frontier for two-way electricity pricing and regional electricity network development.[146] In December 2014, the confirmed DR participation in PJM by segment consisted of 48% from the industrial/manufacturing sector and 16% from the residential sector.[147] Approximately 22% of national DR capacity is from residential customers.[148] According to a 2014 Government Accountability Report, residential DR remains a key source of untapped potential.[149] DR activities from residential consumers would be particularly important because residential consumers are responsible for a large share of peak demand.[150]

---

[142] *Id.*

[143] *Id.* at 83.

[144] *See* ENERNOC, *supra* note 26.

[145] *Id.*

[146] James McAnany, *2014 Demand Response Operations Market Activity Report: December 2014* (Dec. 9, 2014), Figure 3: DY 14/15 Confirmed Load Management DR Registrations Business Segments, http://www.pjm.com/~/media/markets-ops/dsr/2014-demand-response-activity-report.ashx.

[147] *Id.*

[148] U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-14-73, DEMAND-RESPONSE ACTIVITIES HAVE INCREASED, BUT FERC COULD IMPROVE DATA COLLECTION AND REPORTING EFFORTS 31 (2014), *available at* http://www.gao.gov/assets/670/662032.pdf (referencing a 2009 study by FERC).

[149] *Id.*

[150] *Id.*

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

Most residential customers cannot interact directly with the wholesale markets, as market rules in RTOs and ISOs require small-scale customers to transact with regional grid operators and licensed intermediaries.[151] New opportunities for delivering DR services to consumers have developed a market for residential DR.[152] By pooling demand reductions from a number of energy consumers, a DR aggregator enables individual residential consumers to participate in the wholesale electricity market when they otherwise could not do so and assists in lowering overall electricity costs because of increased data on consumer behavior and market statistics.[153]

Over time, firms that specialize in data analytics may become adept at parsing through the massive data that smart meters generate and develop a market to compete with utilities for a share of electricity sales via DR.[154] Experts believe if market conditions are encouraged, entrepreneurs may eventually make more effective use of the smart grid than utilities.[155] Software companies working with advanced algorithms might be in the best position to profit from the modern smart grid.[156] Additionally, DR aggregators may have advantages over utilities in bringing about demand reductions and bridging the gap between consumers and grid operators through marketing strategies involving customer outreach and social media platforms.[157]

Leading technology companies, such as Google, have demonstrated a strong interest in building a portfolio devoted to clean-tech and smart meter technology for home use.[158] In the near future, technology companies may play an equally important role as traditional electric utilities in providing energy services through

---

[151] Eisen, *supra* note 15, at 81.

[152] Jeff St. John, *Ohmconnect Debuts New Demand Response Model*, GREENTECHGRID (Sept. 29, 2014), http://www.greentechmedia.com/articles/read/Ohmconnects-Home-Energy-to-Grid-Connection-is-a-New-Demand-Response-Model.

[153] Eisen, *supra* note 15, at 81.

[154] *Id.* at 12.

[155] *Id.* at 13.

[156] *Id.* at 13.

[157] *Id.* at 100; *see also* St. John, *supra* note 152 (referencing social media influenced aspects of Ohmconnect's customer platform).

[158] Carlos Watson, *Three Takeaways from Google's Purchase of Nest*, USA TODAY (Jan. 22, 2014, 3:25 PM), http://www.usatoday.com/story/money/business/2014/01/22/google-buys-nest-labs/4778693.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

the use of data analytics and DR programs.[159] In January 2014, Google acquired Nest Labs ("Nest"), a manufacturer of smart thermostats and smoke alarms, for $3.2 billion.[160] Nest now sells its product across North America and in Britain.[161] Nest was founded by ex-Apple executive Tony Fadell in 2010, whose prior work included development of the iPod.[162]

Nest is primarily a system that encourages people to save energy and money in a user-friendly manner.[163] The Nest thermostat auto-schedules itself to adjust the temperature when one is outside the home as well as allows the temperature to be adjusted via a smart phone app.[164] During Nest "Rush Hour Rewards" programs, customers receive notice of a two-to-four hour time period in the next day market where a reduction in electricity demand results in a payment from Nest.[165] These rush hour events are the future of the residential DR market and the example demonstrates the potential benefits of real-time electricity pricing and two-way communication technology, a feature only made available because of the modern technological advancements and taxpayer funding that created the smart grid.

Ohmconnect, a San Francisco-based start-up, combines Wi-Fi controlled devices, such as the Nest thermostat, with utility market signals to notify customers of OhmHour events that prompt the consumer to reduce energy use in exchange for points which are redeemable for cash via PayPal or Venmo deposits.[166] DR aggregators like Ohmconnect then deliver DR resources to the wholesale grid.[167] These new firms aggregate consumer's reductions in demand and offer a large portion for sale in the wholesale energy markets.[168]

---

[159] H. Russell Frisby, Jr. & Jonathan P. Trotta, *The Smart Grid: The Complexities and Importance of Data Privacy and Security*, 19 COMM LAW CONSPECTUS 297, 298 (2011).

[160] Rolfe Winkler & Daisuke Wakabayashi, *Google to Buy Nest Labs for $3.2 Billion*, WALL ST. J. (Jan. 13, 2014), http://online.wsj.com/articles/SB10001424052702303595404579318952802236612.

[161] *New Business Models, All Change: The Power Industry's Main Concern Has Always Been Supply. Now It Is Learning to Manage Demand*, THE ECONOMIST (Jan. 17, 2015), http://www.economist.com/news/special-report/21639019-power-industrys-main-concern-has-always-been-supply-now-it-learning-manage.

[162] Winkler & Wakabayashi, *supra* note 160.

[163] Watson, *supra* note 158.

[164] *Nest Learning Thermostat 2nd Generation: Overview*, http://store.apple.com/us/product/HA895LL/A/nest-learning-thermostat-2nd-generation (last visited Oct. 20, 2014, 11:00 PM).

[165] *Id.*

[166] St. John, *supra* note 152.

[167] Eisen, *supra* note 1, at 11.

[168] Eisen, *supra* note 15, at 71.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

An increase in private sector DR services would create a historic shift in the electricity system and open up far more consumer interaction on the demand side, loosening the control that utilities and grid operators have over the supply of electricity.[169] As consumers become more familiar with the services DR aggregators provide, they will better understand how energy-saving technologies can redefine the existing market for electricity.[170] If permitted to stand, the D.C. Circuit's decision to vacate Order 745 will stifle growth in the private sector and prevent increased competition and fairness in wholesale electricity markets. At present, inefficiencies arise in the wholesale markets due to limited opportunity for resources on the demand side to adjust preferences for electricity consumption as well as barriers to entry for DR aggregators and an overall lack of information in wholesale electricity markets.

C. Supply Considerations in the Market for Electric Power

In 2012, the EPA finalized the National Emissions Standards for Hazardous Air Pollutants ("NESHAPs") for coal and oil fired electric utility steam generating units.[171] The rule imposes the first federal limits on a number of formerly non-regulated hazardous air pollutants from power plant emissions and requires overall reductions in mercury emissions of 90% as well as reductions in acid gases and other air toxins, known as mercury air and toxins standards.[172] The 2012 NESHAP standards confirmed the agency's findings dating back to 2000, following a recommendation to add a number of hazardous air pollutants emitted by coal and oil fired power plants to a source list under EPA authority, pursuant to § 112(c) of the Clean Air Act ("CAA").[173] In support of its findings, the EPA relied on § 112(n)(1)(A) of the CAA, which requires the EPA to study how power plant emissions affect public health and gives the agency authority to regulate power plants if it finds that doing so is appropriate and necessary.[174] In April 2014, the D.C. Circuit approved the NESHAP regulation as appropriate and necessary.[175]

---

[169] *Id.*

[170] *Id.*

[171] White Stallion Energy Center v. EPA, 748 F.3d 1222, 1229 (D.C. Cir. 2014), *cert. granted*, 135 S. Ct. 702 (2014).

[172] Carrie Jenks & Kathy Robertson, *D.C. Circuit Upholds Mercury and Air Toxic Standards (MATS) for Existing Sources*, M.J. BRADLEY & ASSOCIATES, 1 (Apr. 16, 2014), http://www.mjbradley.com/sites/default/files/MJBA%20Issue%20Brief%20-%20EGU%20MACT%20Decision%2016April2014.pdf.

[173] *White Stallion*, 748 F.3d at 1229.

[174] *Id.* at 1240.

[175] *Id.*

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

Using EPA-based data modeling, the Institute for Energy Research estimates that 72 gigawatts of electrical generation capacity will retire because of the NESHAP regulations.[176] To put 72 gigawatts in perspective, it matches the capacity needed to power 44.7 million homes, or every home in every state west of the Mississippi River excluding Texas.[177] Since coal is the single largest source of electricity generation in the United States, the ability to meet future electricity generation supply needs will require the construction of new generation facilities and massive infrastructure improvements.[178] As a result, policy measures to promote regulatory and technological developments in non-traditional power generation, such as DR, are critical at the present moment and should be valued equally or higher than traditional generation resources.[179]

IV. D.C. CIRCUIT RULING TO VACATE FERC ORDER 745 AND THE IMPLICATIONS FOR RTOS

As mentioned previously, in May 2014, the D.C. Circuit held 2-1 that FERC exceeded its authority in promulgating Order 745.[180] The court vacated the rule in its entirety as an *ultra vires* agency action because the rule encroached on the states' exclusive jurisdiction to regulate the retail market.[181] The petitioner in the action, Electric Power Supply Association ("EPSA"), represents approximately 480 electricity generation facilities in 40 states and Washington D.C.[182] EPSA argued that FERC has no authority to draw customers into retail markets by paying them, or incentivizing them not to make retail purchases, through a DR program.[183]

In opposition, FERC argued that when retail customers voluntarily participate in the wholesale market through DR aggregators they fall within FERC's exclusive

[176] INST. FOR ENERGY RESEARCH, IMPACT OF EPA'S REGULATORY ASSAULT ON POWER PLANTS: NEW REGULATIONS TO TAKE MORE THAN 72 GW OF ELECTRICITY GENERATION OFFLINE AND THE PLANT CLOSING ANNOUNCEMENTS KEEP COMING, 1 (2014), *available at* instituteforenergyresearch.org/wp-content/uploads/2014/10/Power-Plant-Updates-Final.pdf.

[177] *Id.*

[178] INST. FOR ENERGY RESEARCH, *supra* note 176, at 1.

[179] Eisen, *supra* note 15, at 77.

[180] *See* Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216 (D.C. Cir. 2014).

[181] *Id.* at 225.

[182] *What is EPSA*, EPSA: The Electric Power Supply Association, https://www.espa.org/about (last visited Feb. 19, 2015, 12:00 AM).

[183] Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216, 220 (D.C. Cir. 2014).

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

jurisdiction over rates affecting the wholesale market.[184] FERC rooted its argument in two provisions of the FPA. First, FERC argued that § 201 of the FPA empowers it to regulate "the sale of electric energy at wholesale in interstate commerce," which includes DR aggregators.[185] Second, pursuant to §§ 205 and 206 of the FPA, FERC argued it had authority to regulate DR because the sale of DR resources directly affects wholesale rates for electricity.[186]

The majority rejected the argument that DR is a sale of electricity, holding that FERC cannot have jurisdiction over DR pursuant to § 201 alone.[187] The court stated, "[DR] resources do not *actually* sell into the market. [DR] does not involve a sale, and the resources 'participate' only by declining to act."[188] Additionally, the majority held that FERC's jurisdiction under §§ 205 and 206 is insufficient to confer jurisdiction over the market for DR.[189] FERC argued that reductions in retail consumption lower the wholesale price of electricity because the forgone energy is redistributed to the grid by DR aggregators, who serve as direct participants in the wholesale energy market.[190] The majority disagreed, finding DR to be a retail sale that is subject to regulation by the states, not the federal government.[191]

The court conceded that DR affects the wholesale market for electricity based on the zero-sum nature of a mixed retail-to-wholesale transaction, stating, "[A] change in one market will inevitably beget a change in the other."[192] The majority held that the congressional intent is articulated within the "specific limits" of § 201, which confers FERC's jurisdiction "only to those matters which are not subject to regulation by the states," specifically sale of electric power directly to the retail consumer.[193] The court found that DR is not exclusively a retail sale of energy, but

---

[184] *Id.*

[185] *Id.* at 233; *see* 16 U.S.C. § 824(b)(1) (2012).

[186] *Elec. Power Supply Ass'n*, 753 F.3d at 221.

[187] *Id.*

[188] *Id.* (emphasis in original).

[189] *Id.* at 222.

[190] *Id.*

[191] *Id.* at 232.

[192] *Id.* at 221.

[193] *Id.* at 222 (citing Niagara Mohawk Power Corp. v. FERC, 452 F.3d 822, 824 (D.C. Cir. 2006)).

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

it is indeed part of the retail market, therefore the authority over DR falls within the jurisdiction of the states.[194]

The court found the broad language of §§ 205 and 206 does not erase the specific limits of § 201, and FERC's interpretation of §§ 205 and 206 would have no limiting principle.[195] The majority held that if §§ 205 and 206 permit FERC to regulate the non-sale of power, *a fortiori* FERC could extend its authority to "regulate any number of areas, including the steel, fuel, and labor markets."[196] This logic drastically oversimplifies the problem FERC sought to address with Order 745 and fails to properly consider the scope of the regulatory action on interstate markets. After the decision, PJM joined FERC to file a petition for rehearing *en banc* before the D.C. Circuit, but the D.C. Circuit denied the petition on September 17, 2014.[197]

A. A Proper Interpretation of the FPA Grants FERC Jurisdiction over DR

The D.C. Circuit interpreted FERC's authority under the FPA too narrowly. In a convincing dissent, Senior Circuit Judge Harry Edwards argued that Order 745 requires deference to agency expertise in determining the appropriate pricing mechanism and compensation level used to incentivize the sale of DR resources in the wholesale market.[198] The dissent accurately described the scope and significance of the inefficiencies Order 745 sought to correct and rightly found FERC jurisdiction over DR in wholesale markets.[199] First, the dissent explained that electricity is a unique commodity in that it cannot be stored for later use; and the dispatch of electricity requires a continual, contemporaneous matching of supply to meet demand.[200] Second, Judge Edwards posited that not all power plants are created equal, as some are efficient and cost less, while others are inefficient and expensive.[201] Third, the dissent stated that a majority of retail consumers are

[194] *Id.* at 222 n.1.

[195] *Id.* at 221.

[196] *Id.*

[197] FERC *petition for cert.*, *supra* note 7.

[198] *Elec. Power Supply Ass'n*, 753 F.3d at 238 (Edwards, J., dissenting).

[199] *Id.* at 239.

[200] *Id.*

[201] *Id.*

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

charged a fixed price for electricity that does not adjust to the cost of producing electricity.[202]

The critical issue in the *EPSA* case is the federalism tension between FERC and state public utility agencies to regulate electricity rates and the added complexity third-party DR aggregators bring to the situation.[203] In its brief filed before the D.C. Circuit, FERC argued that its affecting jurisdiction can be appropriately limited to direct participants in the wholesale energy markets, and Order 745 will not disrupt the federalism tension over wholesale electric sales.[204] In the United States, any electricity that enters the grid immediately becomes part of a vast pool of energy that is constantly moving in interstate commerce.[205] The D.C. Circuit should not have limited the ability of FERC to exercise its Congressional authority in promulgating Order 745, because the rule directly affects wholesale electric markets that are closely tied to the national interest for the following reasons: national security, economic productivity, health considerations, and social welfare from increased competition.[206]

Additionally, Order 745 does not infringe upon the rights of the states to regulate DR; rather, Order 745 does not require anything of retail electricity consumers and leaves it to the states to decide whether to permit DR within intrastate electricity markets.[207] The dissent in *EPSA* correctly noted that Order 745 preserves state regulation over retail markets and carves out exceptions whereby ISOs and RTOs will not always be required to compensate DR resources at the LMP because of the net benefits test.[208]

B. FERC Jurisdiction Upheld in Similar Situations of Mixed Federal-State Jurisdiction

The following two cases demonstrate that FERC's authority to regulate the wholesale market is generally construed broadly by courts in situations of mixed federal-state jurisdiction. In *Connecticut Department of Public Utility Control v. FERC*, the D.C. Circuit ruled that FERC had the authority to raise the installed

---

[202] *Id.*

[203] *See generally* Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216 (D.C. Cir. 2014).

[204] *Id.* at 221.

[205] *New York*, 553 U.S. at 32 (U.S. 2002) (Thomas, J. dissenting).

[206] *Elec. Power Supply Ass'n*, 753 F.3d at 236 (Edwards, J., dissenting).

[207] *Id.*

[208] *Id.* (see explanation of the net benefits test, discussed herein at 175–76).

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

capacity requirement ("ICR")[209] in the New England-ISO ("NE-ISO"), the New England power grid, because it was a practice affecting rates at wholesale, pursuant to § 206 of the FPA.[210] In *New York v. FERC*, the U.S. Supreme Court ruled that FERC did not overstep its authority by forcing utility providers to unbundle transactions that consist of mixed generation and transmission services.[211]

1. Connecticut Department of Public Utility Control v. FERC

The D.C. Circuit's ruling in *Connecticut* is blatantly inconsistent with its ruling in *EPSA*. In *Connecticut*, the court acknowledged the benefit of DR to match supply needs in the NE-ISO market in 2009; however, it rejected FERC's attempt to develop a market mechanism to promote the use of DR resources to meet capacity shortages in the PJM market in 2014. In *EPSA*, the D.C. Circuit denied FERC the authority to mandate that RTOs and ISOs compensate DR resources at the same price as generation, as long as certain conditions were met. As the dissent in *EPSA* stated, "This is hardly the stuff of grand agency overreach."[212] FERC Order 745 incorporates a number of contingencies that determine whether or not DR resources are compensated at the LMP, including state regulations over DR[213] and a net benefits test that is calculated by participating ISOs and RTOs.[214] Therefore, the D.C. Circuit diverged significantly from the its prior interpretation of FERC authority under the FPA in its consideration of Order 745 and it should have supported Order 745 for its ability to promote competitive bidding in the

---

[209] Connecticut Dept. of Pub. Util. Control v. FERC, 569 F.3d 477, 481 (C.A.D.C. 2009) (the Court explained "The 'Installed Capacity Requirement' is misnamed because increasing it doesn't actually 'require' anyone to 'install' any new 'capacity' at all . . . the ICR is better understood not as a capacity *requirement* but as something more like a peak demand estimate (PDE)-perhaps, in FERC-speak, a PDE-and the purpose of the Forward Market is only to locate the price at which market incentives will be sufficient to meet that expected demand.").

[210] *Id.* at 485.

[211] Eisen, *supra* note 15, at 103.

[212] *Elec. Power Supply Ass'n*, 753 F.3d at 233.

[213] *Id.* at 232–33 (Edwards, J., dissenting) (stating that "the regulation's requirement that ISOs and RTOs accept bids from [DR] resources comes with a key caveat: the requirement applies 'unless not permitted by the laws or regulations of the relevant electric regulatory authority.' *Id.* § 35.28(g)(1)(i)(A); *see also id.* § 35.28(g)(1)(iii). In other words, there is a carve-out from the compensation requirement for ISOs and RTOs in States where local regulatory law stands in the way. Thus, the Order preserves State regulation of retail markets. This is hardly the stuff of grand agency overreach." (citation omitted)).

[214] *Id.* at 233–34 (Edwards, J., dissenting) ("All Order 745 says is that if a State's laws permit [DR] to be bid into electricity markets, and *if* a [DR] resource affirmatively decides to participate in an ISO's or RTO's wholesale electricity market, and *if* that [DR] resource would in a particular circumstance allow the ISO or RTO to balance wholesale supply and demand, and *if* paying that [DR] would be a net benefit to the system, *then* the ISO or RTO must pay that resource the LMP. That is it.").

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

power supply market and prioritize more efficient generation resources that dispatch electricity at a lower cost.

In *Connecticut*, D.C. Circuit held that FERC did not overstep its jurisdictional authority when it increased the ICR of the NE-ISO, even though the ICR is "a key input into the market-based mechanism that determines transmission tariffs and *end-user costs* in the New England bulk power system."[215] In opposition, the Connecticut Department of Public Utility Control ("CT PUC") argued that FERC's review of the ICR established capacity increases that would incentivize the construction of new generation facilities; a matter explicitly subject to state control.[216] The *Connecticut* court disagreed and the court ruled that additional capacity requirements may incentivize the procurement of additional resources, including new generation facilities, but the states retain their ultimate authority over the construction of new facilities and could determine the appropriate way to meet the requirements.[217]

The CT PUC conceded that FERC and the NE-ISO could directly set the price of capacity at a level to incentivize the procurement of resources to meet their estimate of peak demand.[218] However, the procurement of resources does not necessarily order the construction of new generation facilities.[219] Therefore, the peak demand estimate is necessarily tied to prices, but it is not necessarily tied to new capacity construction.[220]

The court held explicitly that FERC's jurisdiction over wholesale rates and transmission includes the authority to review tariff elements, such as capacity, because of its impact on wholesale rates.[221] The court reasoned that decisions about capacity affect the pool of bidders in the forward market, which in turn affects the market clearing price for electricity.[222] The court explained the correlation between capacity and price via an example:

---

[215] *Id.* at 478–79 (emphasis added).

[216] *Id.* at 479.

[217] *Id.* at 481–82.

[218] *Id.*

[219] *Id.* at 482.

[220] *Id.*

[221] Petition of PJM Interconnection for Approval of *Revisions 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")*, at 10, FERC Docket No. ER15-852-000 (Jan. 14, 2015) (citing *CT PUC v. FERC*, 569 F.3d 477, 483 (D.C. Cir. 2009)).

[222] Connecticut Dept. of Pub. Util. Control, 569 F.3d at 481.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

> And in an extreme situation where local regulators utterly refused to allow creation of any new capacity to offset increases in the ICR, the price would rise towards the initial offering price of two times the cost of new entry. But this is all quite natural: if consumer-constituents of state commissions prefer to forbid the construction of new power plants, they will appropriately bear the costs of that decision, including paying more for system reliability from older and less efficient units.[223]

In essence, FERC sets the quantity required in a certain power market when it sets the ICR, with a specific threshold price in mind. But, FERC leaves the decision to the states and the NE-ISO to meet that peak demand estimate with whichever supply mix it chooses. By setting the ICR, FERC is effectively "setting a target for capacity demand and using a market mechanism to locate the price appropriate to that quantity."[224] The court found that regulators and grid operators have various means to respond to increases in the ICR besides construction of new capacity or paying escalating costs.[225] There is a third option: DR.[226] Thus, DR is referenced because of its ability to balance supply in the capacity market, and, consequently, balance the clearing price for power. The court validated FERC authority to set the ICR in order to promote competitive bidding in the NE-ISO from existing generators, new entrants, and demand-side resources.[227] The court stated, "By using competitive bidding for future capacity contracts, this system both incentivizes and accounts for new entry by more efficient generators, while ensuring a price both adequate to support reliability and fair to consumers."[228]

The court's interpretation of the FPA in *Connecticut* grants FERC much broader authority than Order 745, which merely orders RTOs and ISOs to establish a threshold price where grid operators may purchase supply from DR aggregators to stabilize the marginal price of electricity when demand unexpectedly exceeds

---

[223] *Id.*

[224] *Id.* at 482.

[225] *Id.*

[226] *Id.* (stating that load servicing entities "may also seek capacity from interconnected utilities outside the New England power system or 'demand response' contracts where users are compensated for committing to use less electricity during shortages").

[227] *Id.* at 480.

[228] *Id.*

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

supply.[229] A critical factor in balancing supply in the PJM region is the PJM Region Reliability Requirement.[230] The PJM Region Reliability Requirement functions similarly to the ICR, in that it establishes the target reserve level to be procured for the three-year forward capacity auction.[231] PJM has secured over 10,000 megawatts of DR resources for the summer peak season its three-year base residual auction beginning in 2015.[232] If the D.C. Circuit's ruling to vacate Order 745 is allowed to stand, these resources will be squandered and the power supply market will have to adjust, forcing prices higher for energy consumers.

2. New York v. FERC

In *New York*, the Court ruled that FERC did not exceed its jurisdiction by including unbundled retail transmissions within the scope of a Final Rule issuance, Order 888, and that the FPA's plain language readily supported FERC's jurisdiction over the unbundled transmissions of electric energy for sale to retail consumers.[233] In Order 888, FERC found that electric utilities were discriminating in the bulk power markets, in violation § 205 of the FPA, by providing either inferior access to their transmission networks or no access at all to third-party providers of services to the electricity industry.[234] As a result, FERC ordered the functional unbundling of wholesale generation and transmission services, requiring each utility to set separate rates for its wholesale generation, transmission, and ancillary services.[235]

The Supreme Court emphasized that the electricity industry has changed dramatically since the FPA was enacted in 1935, and the electricity universe is no longer neatly divided into spheres of retail versus wholesale transactions.[236] With the enactment of the FPA, Congress authorized federal regulation not only of wholesale sales that had been beyond the reach of state power, but also the regulation of wholesale sales that had been *previously subject* to state regulation.[237] Additionally, the FPA authorized federal regulation over interstate transmissions of

---

[229] *See Elec. Power Supply Ass'n*, 753 F.3d at 233–34 (Edwards, J., dissenting).

[230] Petition of PJM Interconnection for Approval, *supra* note 221, at 10.

[231] *Id.*

[232] PJM petition for rehearing *en banc*, *supra* note 3, at 9.

[233] *New York*, 535 U.S. at 4.

[234] *Id.* at 11.

[235] *Id.*

[236] *Id.* at 16.

[237] *Id.* at 21 (emphasis in original).

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

electric power.[238] In opposition of Order 888, New York argued that FERC improperly invaded the States' authority over facilities used in local distribution.[239] The Court explained that Order 888 did not claim jurisdiction over local facilities, but merely provided a seven-factor test for identifying these facilities, without purporting to regulate them in their entirety.[240] This multi-factor test in Order 888 is akin to the net benefits test in Order 745. The net benefits test limits FERC's authority over DR and it does not mandate that RTOs or ISOs include any specified amount of DR.

Order 745 does not infringe on state jurisdiction of the retail market because a DR transaction applies only to sales of electric energy at wholesale. Similar to the unbundling of transmission services in *New York*, a DR transaction is a type of bundled transaction. A DR transaction begins with the pooling of non-sales of electricity that never reach the retail level simply because the power is not purchased by the retail consumer. Instead, the consumer voluntarily decides to reduce their power usage; therefore, the marginal non-utilized power remains on the grid. The ultimate consequence of dispatching DR resources to the grid increases wholesale supply to RTOs like PJM and the energy remains on the interstate grid, where it directly affects sale of electricity at wholesale and the clearing price for electric power. Thus, the effect on *interstate* rates is clearly more pronounced than any affect on intrastate rates when DR aggregators sell DR to grid operators who then purchase DR resources at the LMP. The Court in *New York* referenced an amicus brief that explains how electricity flows on the modern grid and it is helpful to understand why DR sales do not affect the sale of electricity at retail:

> As *amici* explain in less technical terms, "[e]nergy flowing onto a power network or gird *energizes the entire grid*, and consumers then draw undifferentiated energy from that grid" . . . . As a result, explain *amici*, any activity on the interstate grid affects the rest of the grid . . . *Amici* dispute the States' contentions that electricity functions "the way water flows through a pipe or blood cells flow through a vein" and "can be controlled, directed and traced" as these substances can

[238] *Id.*

[239] *Id.* at 22.

[240] *Id.* at 23.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

> be, calling such metaphors "inaccurate and highly misleading."[241]

In *New York*, the majority determined that FERC had the authority to regulate a portion of a retail sale, the unbundling of the transmission of the sale of electric power, under both § 201 of the FPA as well as §§ 205 and 206, partly because the Court construes the language of the FPA broadly in close decisions.[242] The Supreme Court affirmed the ruling of the D.C. Circuit because FERC's factual determinations were reasonable, and §§ 205 and 206 gave FERC the authority to prescribe a market-wide remedy for a market-wide problem.[243]

FERC's goal of removing barriers to entry in wholesale energy markets via Order 745 is strongly reflected in the Supreme Court's 2002 ruling in *New York*.[244] In *New York*, FERC emphasized that the legal and policy cornerstone of Order 888 is to "remedy undue discrimination in access to the monopoly owned transmission wires that control whether and to whom electricity can be transported in interstate commerce."[245] Moreover, FERC recognized the need to eliminate the use of monopoly power over the transmission of electricity and other components that comprise the sale of electric energy.[246] The objective of FERC Order 745 aligns with FERC Order 888 in that both administrative orders support the agency's mission is to foster competition in the wholesale market for power generation, reduce monopoly control, and promote the sale of electricity at its lowest cost.[247]

The Court in *New York* held that in circumstances where the language of the FPA is ambiguous, the Court should defer to FERC's interpretation of the key provisions of the FPA because of the technological complexities of national electric grids.[248] It is unclear why the D.C. Circuit did not follow a similarly logical path in the *EPSA* decision, and the fallout from its ruling has created a jurisdictional quandary for PJM and other RTOs whose DR resources have been challenged by power companies within their generation and distribution networks. The Court

---

[241] *Id.* at 8 (quoting the Brief for Electrical Engineers et al. as *Amici Curiae* at 2, 5).

[242] *Id.* at 15.

[243] *New York*, 535 U.S. at 14.

[244] Eisen, *supra* note 15, at 103.

[245] *Id.* at 35.

[246] *Id.*

[247] Eisen, *supra* note 15, at 72.

[248] *Id.* at 15.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

must act to reverse the decision of the D.C. Circuit in accordance with precedent set in *New York* because the advantages of DR resources are felt on a national, market-wide scale, just as the unbundling of electricity transmission corrected a market-wide problem.

C. FirstEnergy's Challenge and Future Implications for RTOs like PJM

Within hours of the *EPSA v. FERC* decision, First Energy filed a complaint before FERC seeking to remove DR resources from PJM's 2014 capacity auction.[249] Specifically, FirstEnergy requested "the removal of all portions of the PJM Tariff allowing or requiring PJM to include [DR] as suppliers to PJM's capacity markets, with a refund effective date of May 23, 2014."[250] In its petition for rehearing *en banc* to the D.C. Circuit, PJM argued that DR is a major contributor to PJM's need for capacity, and over the last ten years PJM and other grid operators have allowed voluntary DR commitments to compete alongside traditional generators for capacity needs.[251] PJM argued that the holding in *EPSA v. FERC* poses a serious threat to the compensation model currently in place for DR resources, and calls into question the future of DR resources offered by DR aggregators, who have become increasingly more important in meeting supply needs on the grid in recent years.[252] Variations in compensation paid to DR resources is a barrier to entry for DR aggregators because the advantage that DR has over other forms of electricity supply is the ability to dispatch megawatts faster and at a lower cost.[253]

As a result of the D.C. Circuit ruling, there is substantial uncertainty whether PJM must now deny access to DR aggregators as suppliers in the wholesale market. Additionally, even if the resources are permitted, there is still question as to the appropriate level of compensation for DR resources procured by RTOs for redistribution at wholesale.[254] In its petition for rehearing *en banc*, PJM explained that it would be a challenge to find a substitute for the over 8,000 megawatts of DR committed to manage the 2014 winter season.[255] Similarly, PJM will be stressed to

---

[249] Complaint of FirstEnergy Service Co., FERC Docket No. EL14-55-000 (May 23, 2014).

[250] Complaint of FirstEnergy Service Co., FERC Docket No. EL14-55-000, 1 (May Complaint of FirstEnergy Service Co., FERC Docket No. EL14-55-000, 1 (May 23, 2014)).

[251] PJM petition for rehearing *en banc*, *supra* note 3, at 6 (noting this has occurred "with FERC approval").

[252] *Id.* at 4–5.

[253] *Id.* at 13–14.

[254] PJM petition for rehearing *en banc*, *supra* note 3, at 14.

[255] *Id.* at 12.

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

find substitutes for the 10,000+ megawatts of DR that have been committed as capacity for each of the 2015, 2016, and 2017 peak seasons.[256] Also in its petition, PJM argues that removing DR resources from its wholesale market will increase the clearing prices in the PJM market because DR offers tend to be made at a lower cost than offers from traditional generation resources.[257]

In the present wholesale market, DR competes with traditional methods of generation to meet the various reliability needs described above, and the additional supply competition is an effective way to mitigate price increases.[258] Removing DR resources from the grid will hinder competition and impede efficiency in the wholesale market, which is particularly challenging in this unprecedented period of transition away from coal-fired power generation.[259] The fact that the largest grid operator in the United States opposes the D.C. Circuit's ruling on Order 745 with such vigor is strong evidence that DR resources are a valuable part of the wholesale market for electricity and should fall under FERC's jurisdiction.

V. CONCLUSIONS AND RECOMMENDATIONS

On May 4, 2015, the Supreme Court granted FERC's petition for *certiorari* on appeal from the *EPSA v. FERC* decision.[260] In close cases of mixed state-federal jurisdiction, the Court has construed the language of the FPA broadly and they should do the same in *FERC v. EPSA*.[261] The Court should interpret the FPA more broadly than the D.C. Circuit and grant FERC federal ratemaking authority over DR because the transaction affects the wholesale market more significantly than the retail market. Additionally, the Supreme Court must consider the legal and policy reasons for a broad interpretation of the FPA, including: the encouragement of technological developments in the electricity industry, removing barriers to entry in electricity markets, and promoting competition for rates in the wholesale market.[262] Additionally, Supreme Court precedent supports federal measures to

[256] *Id.*

[257] *Id.* at 13.

[258] *Id.*

[259] *Id.*

[260] Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216 (D.C. Cir. 2014), *cert. granted*, 575 U.S. __ (U.S. May 4, 2014) (No. 14-840).

[261] *New York*, 535 U.S. at 15.

[262] Elec. Power Supply Ass'n v. F.E.R.C., 753 F.3d 216, 238–39 (D.C. Cir. 2014) (Edwards, J., dissenting).

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu

remove competition in the electricity supply industry.[263] DR resources should be compensated at the same level as traditional generation, in accordance with FERC Order 745, to promote the development of the smart grid and the market for DR aggregators.

In total, the Court should permit Order 745 to stand. First, Order 745 was enacted in 2011 and DR technology is only now beginning to reach its full potential. The billions of dollars invested by the federal government and the private sector to build the smart grid and promote technological progress through programs like DR is squarely within the country's national interest. Secondly, the D.C. Circuit's decision injects tremendous uncertainty into the federal-state balance of authority over wholesale electricity markets, which could cost energy consumers millions of dollars in additional costs and lead to electricity supply shortages. Lastly, other federal programs are aligned with the promotion of cleaner and more environmentally conscious forms of power generation and consumption. Therefore, FERC should be able to work in coordination with the EPA and the DOE to promote energy generation that will improve air quality and combat the health and societal challenges related to generation from inefficient power sources.

[263] *See* New York v. FERC, 535 U.S. 1 (2002).

Volume XV – Spring 2015 ● ISSN 2164-800X (online)
DOI 10.5195/tlp.2015.168 ● http://tlp.law.pitt.edu